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HABEAS MARINUS: DUE PROCESS OF INNER SPACE— A PROPOSAL

LUIS KUTNER*

"We must ensure that the deep seas and the ocean bottom are, and remain, the legacy of all human beings."

President Truman, 1945 Continental Shelf Proclamation

I. TECHNOLOGY	630
II. THE DEVELOPING LAW OF THE SEA	638
III. THE GROWTH OF CONTINENTAL SHELF PRACTICE	638
IV. THE CONVENTION ON THE CONTINENTAL SHELF	644
A. <i>Defining the Shelf</i>	645
B. <i>The Rights Conferred</i>	652
C. <i>Regulating Uses</i>	655
D. <i>Shelf Boundaries</i>	663
E. <i>Settling Disputes</i>	667
V. FREEDOM OF THE SEAS—AN INDIVIDUAL RIGHT	667
VI. CONCLUSION	673

The lawyer and the social scientist must anticipate the problems arising from man's technical expansion.¹

Submarine colonialism is not yet a major international issue, but it could become on in the 1970's. The term refers to a possible race among nations to appropriate the sea-bed—and the riches lying over and under it. The incentive for such appropriation becomes stronger with every advance in man's ability to live and work under the ocean's surface.

Illustrative of the treasures waiting to be tapped in the future is the rich concentration of gold, silver, zinc and copper ores recently found in just one area under the Red Sea at a depth of 7,000 feet. A very conservative estimate puts the value of ores in this deposit alone at about 1.5 billion dollars.

There is no reason to suppose that this find is unique. On the contrary, much evidence suggests that more mineral wealth lies under the seas and oceans than under the world's present area of dry land. It is now neither technically feasible nor profitable to attempt commercial mining operations under depths like that at which the Red Sea gold has been found. But in an era when men routinely send rockets to the moon, there can be little doubt that mining the sea bed under 7,000 feet of water—or

* Member, Illinois Bar, Indiana Bar; University of Chicago; former visiting Associate Professor, Yale Law School; Chairman, World Habeas Corpus Committee, World Peace Through Law Center; former Consul, Ecuador; former Counsel General, Guatemala; former Special Counsel to the Attorney General of Illinois; author of numerous law journal articles and several books, including *World Habeas Corpus* and *I, The Lawyer*.

The research assistance of Ernest Katin, Ph.D., is acknowledged.

1. See Lasswell, *Political Science of Science*, 50 AM. POL. SCI. REV. 961 (1956); Schachter, *Scientific Advances and International Law Making*, 55 CALIF. L. REV. 423 (1967).

even at deeper levels—will some day be both possible and economical. If that were true today the Red Sea states would almost certainly be arguing acrimoniously about ownership of this sea-bed.

An attractive proposal to avoid such quarrels was suggested at the World Peace Through Law conference in Geneva in July, 1967. The more than 2,000 lawyers who met there urged the United Nations General Assembly to assume "jurisdiction and control" over the huge mineral resources in the oceans and under them. Such a move would ultimately make it possible for the United Nations to have its own independent income and to use for the benefit of all men and all nations riches that now belong to nobody and benefit no one. And such a resolution of the issue would forever prevent submarine colonialism from threatening the world's peace.²

While the focus of technical wonderment has been the exploits in the outer atmosphere and the project to reach the moon, greater attention is now being placed on inner space: the use of the sea and the sea-bed. These developments are sure to create new legal problems. The sea has long been a subject of international regulation and control, culminating in the conventions adopted at the United Nations conference on the Law of the Sea in 1958 (ratified by the United States in 1964). In this paper, viewpoints will be presented of current and future uses of inner space, the relevance of contemporary international law in dealing with these technical developments, and a consideration of possible changes in international law and practice to meet new situations.

I. TECHNOLOGY

The ocean bottom consists of the continental shelves, the continental slope, and the floor of the deep sea.³ The continental shelf is that region of the ocean bottom which extends outward from the coastline of the continents for varying distances and to an outer depth usually of 100 fathoms or 200 meters. The shelves begin at the tidelands and extend seaward as a gently sloping platform with the 100-fathom counter generally considered as the boundary between the continental shelf and the continental slope.⁴ Because of its shallow depth sunlight penetrates the shelf with plants abounding, and on it is situated most of the world's fishing. Throughout the world, the continental shelves total 10,000,000 square miles in area, equal to one fifth of the dry land area of the world. The

2. N.Y. Times, Aug. 7, 1967, Editorial page.

3. R.L. CARSON, *THE SEA AROUND US* 58-9 (1953); SHEPARD, *THE EARTH BENEATH THE SEA* 70 (1959).

4. Memorandum from the Secretariat of the United Nations Educational, Scientific and Cultural Organization, *Scientific Conditions Relating to the Continental Shelf* Prep. Doc. No. 2, U.N. Doc. A/CONF. /13/2-(1958), reprinted in 1 U.N. CONFERENCE ON THE LAW OF THE SEA, OFFICIAL RECORDS (U.N. Pub. Sales No. 58.v.4) (1958) [hereinafter cited as OFFICIAL RECORDS].

continental United States has 300,000 square miles of shelf, and Alaska has an additional 600,000 square miles. The shelves are rich in petroleum deposits. There are an estimated fifty billion barrels of petroleum in the Gulf of Mexico and the Persian Gulf alone.⁵

Rachel Carson well described the area beyond the continental shelf:

Once beyond the edge of the shelf, as we visualize the steeper declivities of the continental slope, we begin to feel the mystery and the alien nature of the deep sea—the gathering darkness, the growing pressure, the starkness of a seascape in which all plant life has been left behind and there are only the unrelieved counters of rock and clay, of mud and sand.⁶

The continental slope extends as the declivity from the outer edge of the continental shelf.⁷ The slope extends to the sea-bed, the floor of the sea, where darkness prevails and rare species exist. The depths of the oceans are:⁸

	<u>Depth Excluding Adjacent Seas</u>	<u>Depth Including Adjacent Seas</u>
Pacific Ocean:	2,340 fathoms	2,200 fathoms
Atlantic Ocean:	2,150 fathoms	1,820 fathoms
Indian Ocean:	2,180 fathoms	2,140 fathoms

The deep landlocked seas, such as the Gulf of Mexico, the Caribbean, the Mediterranean and the Black Sea, have comparable depths exceeding 2,000 fathoms in large areas. Trenches have been found in the Pacific Ocean with depths of over 6,000 fathoms.⁹

The inner space may be said to comprise exploration in research on the continental shelf, the continental slope and the deep sea-bed. But, in the scientific sense, it cannot be limited merely to the ocean bottom. The sea bottom contains minerals, and on its surface are situated some types of organisms such as sponges and sea cucumbers which are used commercially. Their lives are interrelated with the total marine environment. The environment of a species is its cosmos, the *milieu* in which it lives and comprises an ecological unit. Moreover, the process of exploiting any resource in inner space may well have an effect on other resources in upsetting the balance of nature. Clearly the concept of inner space must encompass the entire benthonic and pelagic environment.¹⁰

As *homo sapiens* continue to be fruitful and to multiply, the need for exploiting the resources of the sea and of inner space will become even

5. *The Wealth of the Shelf*, 190 *ECONOMIST*, at 221-22 (Jan. 17, 1959).

6. R.E. CARSON, *supra* note 3, at 59.

7. SHEPARD, *supra* note 3.

8. *Id.* at 184.

9. *Id.*

10. WALFORD, *LIVING RESOURCES OF THE SEA* (1958). The benthonic environment consists of the aggregate of organisms living on or at the bottom of the ocean, while the pelagic environment consists of organisms living at or near the surface.

more pressing. No longer will man be permitted to allow the riches of the sea to remain untapped. Today man's entire food crop of the sea is a mere fraction of one percent of the full measure of growth in the sea. Man's utilization of sea food is most primitive, that of reaping without sowing as a primitive hunter.¹¹ Nearly ninety percent of the world's total vegetation is produced, largely unseen by man, beneath the salt surface of the sea.¹² The oceans contain tiny plant and animal organisms called plankton, which bear much nutritive value if means could be developed for their harvesting. Some writers visualize the placing of atomic reactors underneath the sea to destroy starfish and other species which eat the plankton and thereby deprive the edible fish of food.¹³ The possibility has been envisioned of fishermen operating tractors or other devices on the sea bottom with contacts with a mother ship for extended periods of time.¹⁴

The production of living resources from the seas increased from about seventeen million tons in 1948 to a little more than forty-five million tons in 1965 and is still increasing.¹⁵ Regarding ocean fisheries, the greatest growth has been in the yield from herring-like or clupeoid fisheries. This trend has occurred since there are many more herring-like fish in the world than any other kind; they aggregate in large schools, enabling them to be caught efficiently and cheaply. They are an excellent source of animal protein. The potential harvest of the living resources of the sea could support six billion people, not quite double the present world population.¹⁶ Scientific calculations demonstrate that there is more than adequate wild stock of usable animals being produced by the ocean at present to satisfy our total animal protein needs and, in fact, the protein needs of a world population substantially larger.¹⁷ Increased protein may also be developed from the single cell plant algae.¹⁸

Aquaculture, the marine equivalent of agriculture, has been regarded by some as a means for more efficient exploitation of ocean resources. But practical experience is lacking. The equivalent of cheap fencing on land is lacking. There has been some experimentation with acoustical fencing, and Maine sardine fishermen are using bubble fencing—simple holes through which compressed air is forced. Fish are not inclined to pass

11. *Id.*

12. F.G.W. SMITH & H. CHAPIN, *THE SUN, THE SEA AND TOMORROW* 191 (1954).

13. Hardy, *THE OPEN SEA: ITS NATURAL HISTORY*, Part I, *The World of Plankton* (1958); Part II: *Fish and Fisheries*, at 303-04 (1958).

14. Hardy, *supra* note 13, Part II.

15. Chapman, *Food Production From the Sea and the Nutritional Requirements of the World*, paper published in 113 CONG. REC. S9275-8 (daily ed. July 10, 1967).

16. *Id.*

17. Chapman, *Implications of Space Research to Fishery Development*, paper published in 113 CONG. REC. S10052-64 (daily ed. July 24, 1967). The use of fish protein concentrates is discussed in Gilmore, *For Fifteen Cents a Pound He Could Feed the World*, TRUE, May, 1967, and reprinted in 113 CONG. REC. A2280-2 (daily ed. May 9, 1967).

18. Chapman, *supra* note 15.

through these bubble fences.¹⁹ Japan has been the leader in marine aquaculture through the production of fish, shrimp and shell fish. Limited experiments on farming the sea in Scottish lochs have indicated that fish production can be increased sometimes as much as sixteen to eighteen times by fertilization.²⁰ However, such efforts, aside from the development of certain species, may not be worth the unit cost.²¹ A conference of plenipotentiaries, convened by the Food and Agricultural Organization of the United Nations (FAO) met in Rio de Janeiro in May, 1966, to consider the rational utilization of tuna resources in the Atlantic Ocean. Conservation regimes are matters of international concern, involving problems of international jurisdiction.²²

The inner space contains great mineral wealth. The sea water contains salt, copper, gold, radium and other minerals.²³ The seas are constantly being replenished, as 7,000 cubic miles of fresh water from rivers enter the sea each year bringing additional supplies of minerals, including an estimated 160,000,000 tons of common salt alone.²⁴ The ocean floor contains a vast supply of minerals. One square mile of ocean floor contains 6,000 tons of manganese, 4,000 tons of iron and 125 tons of nickel, as well as such other minerals as gold and uranium.²⁵

As the cost of obtaining minerals from the sea becomes less than the cost of exploiting the resources on land, the inner space will be utilized more and at increasingly deeper depths. Inner space, particularly the continental shelf, has already become a major source for petroleum. From 1960 to 1965, the percentage of the world's oil supply pumped from beneath the ocean increased from eight to sixteen percent and may increase to forty percent by 1970.²⁶ The continental shelves of the United States in 1964 produced 204.2 million barrels of crude oil and 815.2 million cubic feet of gas.²⁷ Offshore oil exploration has centered in the Gulf of Mexico, the Gulf of Paria—particularly the Trinidad side—and in the Persian Gulf.²⁸ However, there have been explorations elsewhere, particularly in the North Sea, where petroleum exploitations are expected to have a wide-

19. Iselin, *The Ocean Depths: Solution to Many of Man's Problems*, TIME, June 16, 1967, at 45.

20. REPORT OF THE PANEL ON OCEANOGRAPHY, PRESIDENT'S SCIENCE ADVISORY COMM., EFFECTIVE USE OF THE SEA (1966).

21. Chapman, *supra* note 15.

22. Carrol & Roche, *Proposed International Commission for Conservation of Atlantic Tunas*, 61 AM. J. INT'L L. 673 (1967).

23. *Id.*

24. STEEL MAGAZINE, September 17, 1960, at 82.

25. SMITH & CHAPIN *supra* note 12, at 183.

26. N.Y. Times, July 17, 1967, § F, at 12.

27. U.S. DEP'T OF COMMERCE, DEVELOPMENT POTENTIAL OF U.S. CONTINENTAL SHELVES (1966).

28. OIL & GAS J. 93-98, June 6, 1960; *Id.*, 98-107, July 10, 1961; Symposium, *Submarine Exploration for Oil*, 45 INST. OF PETROLEUM J. 263 (1959). Surveys are being conducted as to the possibility of finding petroleum off the Atlantic Coast. Wall Street J., May 2, 1967, at 32.

spread impact upon the economy of the coastal states.²⁹ The pace of offshore drilling has been remarkable. Investments continue at a dizzying pace.³⁰

The offshore oil installations have included self-contained fixed platforms, self-contained floating barges, self-contained mobile units with submersible pontoons, self-contained and self-elevating mobile units, and fixed surface vessels for drilling in deep waters. The self-contained floating barges, first used off the coast of Louisiana and measuring 38 feet by 76 feet, were towed to a drilling location and the pontoons were flooded to sink to the bottom. The larger mobile units may be either submersible or self-elevating. The former, some of which are 204 feet by 202 feet, are towed to the desired location and the pontoons are flooded to sink to the bottom. Piles may be driven into the sea-bed for further support. The self-elevating type are lifted or lowered to the bottom by hydraulic or electric power. The derrick is carried in a movable structure placed over a slot in the barge on an elevator or caisson as the spud begins. When the well is drilled, water is pumped out by a drill pipe and then a coating of cement is placed around the well.³¹ Oil companies are in the process of constantly developing new equipment for deeper drilling, and devices are being developed which would eliminate the familiar platform drilling rig and locate the well head and drilling equipment on the ocean bottom.³² The undertaking of offshore operations has required the development of onshore auxiliary industries with supplies shipped to the installations by helicopter.³³

Aside from petroleum, diamonds have been dredged from the continental shelf off the coast of South Africa, and sulfur off the coast of Louisiana. Plans are being made for the exploitation of other minerals from the ocean floor.³⁴

Inner space may become a habitat for man. The eminent French scientist and adventurer, Jacques Yves Cousteau, has developed a device enabling him to live for a long period of time underneath the Mediterranean and speculates it may be possible to build cities and live underneath the sea.³⁵ The possibility exists that by 1971 a vacationer could live in a glass home, which would be lowered into inner space. The design and idea have already been developed, and the materials are available.³⁶

29. Chicago Tribune, June 12, 1966.

30. OIL & GAS J., Jan-Apr., *passim* 1962.

31. OIL & GAS J., *supra* note 28. A spud is a device for staying or supporting earth boring equipment.

32. OIL & GAS J., March 15, 1962.

33. *Id.*

34. N.Y. Times, July 17, 1966, § F, at 12. The shelf is also a place for recreation. U.S. DEP'T OF COMMERCE, DEVELOPMENT POTENTIAL OF U.S. CONTINENTAL SHELVES (1966).

35. *Man and the Sea*, ENGINEERING OPPORTUNITIES 22ff (July, 1966).

36. Gould, *An Aquarium for People*, ESQUIRE, at 47ff (July, 1966). The Navy has also carried on experiments on undersea living as illustrated by Sealab. *The Exploration of "Inner*

Buckmeister Fuller has envisioned skyfloating geodesic spheres along with floating tetrahedrons, submarine islands and other new sites as new dwelling sites for man.³⁷

A stimulant to the utilization of inner space has been the increased efforts devoted to oceanic research. Biological investigations were first carried on by biological stations acting as extensions of university biology departments, such as the Naples Zoological station and the Marine Biological Laboratory at Woods Hole. Later, institutes directed to the study of the ocean as such were established, among the earliest of which were the Scripps Institution of Oceanography and the Woods Hole Oceanographic Institution. During the past thirty years there has been a marked increase in the number of oceanographic institutes with a permanent staff drawn from a wide range of basic scientific disciplines who are associated with universities. Government sponsored fishery laboratories have also undertaken research activities and industry has entered into this area. A concern has developed for training in oceanography, but a heavy financial burden is involved for the establishment of adequate facilities. Groups of universities may organize to undertake projects.³⁸

The United States Government has also become involved in oceanic research. The Navy, through the Office of Naval Research, has joined with the ocean-science community in the study of the ocean bottom, particularly regarding underwater detection and in the recovery of devices from the sea-bed. The Navy has financed private research and made use of research facilities for its own purposes, such as the use of the *Alvin*—the deep research vehicle operated by the Woods Hole Oceanographic Institution—for the recovery of a nuclear device off the coast of Palomares, Spain. The *Alvin* is also being used to conduct research on the continental shelf by scientists of the Geological Survey and the Woods Hole Oceanographic Institution. Survey scientists, which had compiled the first detailed topographical map of the entire Eastern continental shelf, are using submarines to collect rock and sediment samples of the area where the shelf meets the ocean floor to determine how and when the shelf was formed and what mineral treasures it may hold.³⁹

Other devices developed by the Navy, such as the Controlled Undersea Recovery Vehicle—CURV, and the *Sealab II*, have been useful for private oceanic research.⁴⁰ The loss of the *Thresher*, a nuclear submarine, in 8,400 feet of water off the New England coast in 1963 led to the es-

Space," A newly Legitimized Child, ENGINEERING OPPORTUNITIES 37ff (July, 1966). Soviet scientists have undertaken similar programs. N.Y. Times, May 13, 1967.

37. SAT. REV., April 1, 1967, at 15.

38. Smith, *Role of the Universities in Ocean Science and Technology*, published in 112 CONG. REC. 25080 (daily ed. Oct. 11, 1966).

39. N.Y. Times, Aug. 31, 1967, at 29.

40. Speech by Navy Secretary Paul H. Nitze, 112 CONG. REC. A2947 (daily ed. May 31, 1966).

establishment of the Deep Submergence Research Group (DSRG) to analyze naval techniques relating to undersea operations. This led, in 1964, to the establishment of the Deep Submergence Systems Project to implement DSRG recommendations and to another project, SEABED. Private industries have been active in these projects and are in the process of constructing, or have constructed, deep ocean vehicles such as Lockheed's *Deep Quest*,⁴¹ General Dynamics' *Star Series*, Westinghouse's *Deepster*, and Reynolds Aluminum *Aluminaut*.⁴²

The 89th Congress has further encouraged oceanic research by the enactment of the Marine Resources and Engineering Development Act of 1966 which established national policy for the development, encouragement and maintenance of a coordinated, comprehensive and long-range national program in the marine sciences, creating the National Council on Marine Resources and Engineering Development under the chairmanship of the Vice President, which is of temporary duration to lay the foundations for future oceanographic research.⁴³ A report has been submitted.⁴⁴

Many private firms are eager to get in on the ground floor of oceanic research. They range in size from such corporate giants as Standard Oil Company of New Jersey, General Dynamics and Litton Industries, to a host of small specialty companies.⁴⁵ Inner space also poses new challenges to the lawyer. It has been compared to a new "Wild West":

With so much wealth there is a wide scope for national and commercial rivalry. The day cannot be far off when the first ranch will be entailed, the first mining claim staked. Who will enforce a yet non-existent law in these huge territories which nobody owns? Nor is it just a matter of avoiding gun fights: in their enthusiasm, the first fish farmers could easily wrench the balance of nature in the sea.

Already there has been trouble. To the nuclear engineers, the ocean depths seemed a natural place to disembarrass themselves of shiploads of radioactive wastes; only the fire of usually gentle oceanographers has outlawed that practice—for the time being. Now, too, the oceans are becoming part of the nuclear weapon system of the United States and Russia; the first missile carrying submarines are slipping out to sea, and fixed undersea missile bases and communications centres are a real possibility:

41. *Deep Quest* has facilitated access to 20 per cent of the ocean floor. The United States leads in these submarine developments. Wenk, *Deep Sea Exploration*, *SAT. REV.*, July 1, 1967, at 43.

42. Graven, *Deep Submergence Systems Project*, published in 112 CONG. REC. A2929-31 (daily ed. May 31, 1966), reprinted from *NAVY MAGAZINE*, May 1966. A chart of underwater vehicles developed as of 1965 is presented in *ENGINEERING OPPORTUNITIES*, July, 1966, at 30-31.

43. Wilks, *The Fantastic Frontier of the Sea*, *Los Angeles Times*, Oct 30, 1966 (*Magazine*); provision is included for international cooperation.

44. *N.Y. Times*, March 14, 1967.

45. *N.Y. Post*, August 6, 1966; *N.Y. Times*, July 17, 1967.

the drums are beating for a new weird war dance among the fishes.

The story has all the traditional elements of a sea saga: the battle with winds, waves, and ice, the daring of exploration in bathoscopes at pressures where structural failure means instant death. It also has hard science and several embryo technologies. It has the promise of good fortune for all men; but it also has the threat of new stupidities and new cruelties. As man stretches his good spirit and greed, his scientific humility and his military pretension, into a new dimension, there are three quarters of the earth, almost virgin, to win, lose, or die for.⁴⁶

The invention of international institutions to cope with the problems of advancing science and technology has become a characteristic response of governments and scientific bodies as several hundred international organizations of varying sizes and forms have developed in such fields as the sea, outer space, weather control and nuclear energy. These are both governmental and nongovernmental and vary in geographical scope, functional compass and degree of institutionalization, constituting a vast network of decision-making bodies affecting the impact of science and technology on inter-state relations. Many of these decisions are taken through the assertion of unilateral claims and responses of governments involving reciprocity and allocation of spheres of national competence. This, as will be noted below, has been true of the law of the sea.

The advantages of this approach are that the decision makers are close to the facts and the lawmakers are the states which bear responsibility for action. However, the development of custom is inherently slow and is partial and uncertain. Adequate lawmaking must account for the range of factual situations likely to arise. In regard to the law of the sea, lawmaking has been sought through multilateral treaties. But procedures of treaty negotiation may stimulate claims for exclusive national competence which might not otherwise be made, as representatives of states, in making binding commitments having long duration and requiring parliamentary ratification, are impelled to press for national rights and to avoid concessions encroaching on sovereignty. Multilateral treaty-making procedures are long and protracted since there are delays in the process of ratification. In contrast, states may be more willing to adopt declaratory resolutions in the framework of international organizations because of their character as general statements without purporting to circumscribe state activity as much as detailed treaty commitments. Resolutions do not imply the degree of permanent commitment characteristic of treaties and can be changed by a later assembly. At the same time such resolutions, when realistically conceived and widely approved, may be sufficiently controlling to provide a reliable guide to future state conduct. Such an ap-

46. Calder, *The New Wild West*, 60 *NEW STATESMAN* 680 (1960).

proach permits flexibility in international rulemaking, so essential in anticipating technological change.⁴⁷

II. THE DEVELOPING LAW OF THE SEA

An aspect of international law which has been in a process of continuing development involves the regulation of the use of the sea. Rules have evolved regarding navigation, fishing, cable laying and the exploitation of the sea-bed. Many competing interests must yet be resolved, including the interest of the coastal states in security, the enforcement of criminal, customs and health regulations, the interests in conserving fisheries and other living resources, the interests in freedom of shipping and safety of navigation, the interests of the petroleum and mining industries, and the interests of oceanographers and other scientists in conducting scientific surveys. The rules of the sea seek to permit the maximum use of the sea by interest groups in a manner which minimizes conflicts with other groups. The criterion is that of reasonableness.⁴⁸

III. THE GROWTH OF CONTINENTAL SHELF PRACTICE

For the past two centuries, the principle has been generally established that the sea cannot be considered to be under the dominion of any single state or group of states, but is regarded as *res communis*—belonging to all states for the common use of the international community—or *res nullius*—subject to the ownership of nobody, because it is incapable of occupation.⁴⁹ In accordance with either conception, all members of the international community may use the sea for fishing, navigation, cable and pipeline laying, flight in the air space over the sea, or for other uses, subject to the accommodation for the rights of other users. No single state may arbitrarily restrict or license such use. The authority of each coastal state is limited to a maritime belt adjacent to its coast—the territorial sea or territorial waters—over which it may assert the same full measure of authority as it asserts upon its land territory, subject, however, to the right of innocent passage by vessels of other states. Beyond the territorial sea, which generally varies in breadth from three to twelve miles, the coastal state may claim the right to assert its authority for special purposes, such as security, conservation and fiscal policy, customs, sanitation and law enforcement. As developed from 18th century hovering laws, such authority over contiguous zones, or zones of special competence, must accommodate the inclusive uses of the international community, being acceptable when it meets the test of reasonableness. Within this context, exclusive claims have been asserted for the exploitation of the fishing and mineral resources of the sea.

47. Schachter, *supra* note 1.

48. McDUGAL & BURKE, *THE PUBLIC ORDER OF THE OCEANS* (1962).

49. FULTON, *SOVEREIGNTY OF THE SEA* (1910); RIESENFELD, *PROTECTION OF COASTAL FISHERIES UNDER INTERNATIONAL LAW* (1942).

In 1949, the International Law Commission of the United Nations, following suggestions of a memorandum from the Secretariat, decided to embark on an attempt to codify the international law of the sea and framed a series of draft conventions. In 1956, following the adoption by the Commission of a draft convention codifying the law of the sea, the General Assembly of the United Nations adopted a resolution⁵⁰ calling for the convening of a plenary conference on the law of the sea. It convened at Geneva in 1958 and adopted four conventions: (1) the Territorial Sea and the Contiguous Zone, (2) the High Seas, (3) Fishing and Conservation of the Living Resources of the High Seas, and (4) the Continental Shelf along with an optional protocol on settlement of disputes and a number of resolutions. These instruments were subsequently ratified and have come into force.⁵¹ These conventions constitute the framework for the contemporary law of the sea, the Convention on the Continental Shelf being particularly relevant.

The work of both the International Law Commission and the Conference involved the making as well as the restating of international law.⁵² The work on the Convention on the Continental Shelf necessarily involved the formulating of new rules of international law. The Convention reflected the practice among states, developed following World War II, of claiming exclusive rights to the continental shelf.

From ancient times a number of states have claimed exclusive rights to exploit sedentary fisheries such as pearl fishing in the Persian Gulf⁵³ and off the coast of Ceylon,⁵⁴ while Australia⁵⁵ has regulated the pearl shell and *beche de mere* fishing off its coast through legislation by state and federal authorities applying only to British and Australian ships.⁵⁶ From time immemorial the Irish authorities have made rules governing the Wixford Coast Oyster beds.⁵⁷ The Tunisian government has long claimed authority to regulate sponge fishing.⁵⁸ The Venezuelan Pearl Fisheries Act of July 22, 1935 protects and regulates pearl fishing in zones beyond the territorial waters,⁵⁹ and Panama has similar regulations.⁶⁰ Britain and the Commonwealth countries have regarded the regulation of

50. G.A. Res. 1105, 11 U.N. GAOR Supp. at 2265 (1957).

51. *Developments in the law of the Sea*, BRIT. INST. INT'L & COMP. L., 1958-1964 (1965). The Convention on Fishing and Conservation of the Living Resources of the Sea was the last to be ratified in March, 1966.

52. Manley, *The Geneva Conference on the Law of the Sea as a Step in the International Law-Making Process*, 25 ALBANY L. REV. 17 (1961).

53. Tresslor & Lennon, *MARINE PRODUCTS OF COMMERCE* 108 (2d. ed. 1951).

54. *Id.*

55. Francois, (*Second*) *Report on the High Seas*, [1951] 2 Y.B. INT'L L. COMM'N 75, U.N. Doc A/Conf. 4/42 (1951).

56. *Id.*

57. *Id.* at 60.

58. *Id.* at 57-9.

59. *Id.* at 60-1.

60. *Id.* at 61-2.

sedentary fishing on a different footing from other kinds of fishing.⁶¹ Another precursor to modern continental shelf practice is to be found in claims to tunneling by coastal states for the exploitation of subsoil resources situated adjacent to their coasts, as in a claim to coal mining by Britain.⁶² Similar claims were made by Canada, Chile and Japan, though often not exceeding the extent of the territorial sea. These claims were based upon the recognized right of a coastal state to occupy the subsoil under the high seas by the extension of mining installations whose entrance was located on the coastal state or in its territorial waters.⁶³ These claims did not use the words "continental shelf" because the term had not been invented. No hindrance to navigation was involved.⁶⁴

In 1910, the Portuguese government referred to the continental shelf in promulgating fishing regulations for depths of less than 100 fathoms.⁶⁵ The Imperial Russian Government, in 1916, was the first to claim the continental shelf in claiming certain islands as "a natural extension of the continental platform of Siberia."⁶⁶ But the theory of the continental shelf was not based in the contemporary sense. The right claimed by Russia was considered to be in relation to the theory of sectors involving claims to the Arctic.

The concept of the continental shelf first appeared in state practice in 1942 in the treaty between Venezuela and the United Kingdom delimiting the sea-bed and the subsoil of the Gulf of Paria, situated between Venezuela and the Bahamas.⁶⁷ Though the term "continental shelf" was not used, there was reference to offshore installations for the drilling of petroleum, and there were provisions assuring freedom of navigation. The treaty was a bilateral annexation by the two states based on the idea that the sea-bed beyond the limit of the territorial sea is a *res nullius*, subject to occupation. The matter was of little concern to other states, as the area was hemmed in by the two parties to the treaty.

The true catalyst for exclusive claims to the continental shelf were the two Truman Proclamations of September 28, 1945. One Proclamation, which involved the mineral resources of the continental shelf proclaimed that:

[T]he United States regards the natural resources of the subsoil and sea-bed of the continental shelf beneath the high seas but contiguous to the coast of the United States as appertaining to

61. FULTON, *supra* note 49, at 696-97; RIESENFELD, *supra* note 49, at 1966.

62. The Cornwall Submarine Mines Act of 1858, 21 & 22 Vict., c. 109; Norfolk Submarine Mine Act of 1846; Lincoln Estuary Act of 1851.

63. Franklin, 53 INT'L L. STUDIES, 32-34 (1959-60); U.S. NAVAL WAR COLLEGE, INT'L L. SIT. & DOC. (MacChesney ed. 1961).

64. Franklin, *supra* note 63.

65. UNITED NATIONS, I U.N. LEGIS. SERIES; LAWS AND REGULATIONS ON THE REGIME OF THE TERRITORIAL SEA 19-21 (1951).

66. Francois, *supra* note 55, at 34.

67. *Supra* note 65.

the United States, subject to its jurisdiction and control. . . . The character of high seas of the water above the continental shelf and the right to free and unimpeded navigation are in no way thus affected.⁶⁸

The preamble justified this claim, encompassing an area of 750,000 square miles,⁶⁹ to encourage the discovery and the making available of petroleum and other mineral resources which underlie the continental shelf. The extension of jurisdiction by the contiguous nation was regarded as "reasonable and just" since the effectiveness of measures to use or conserve these resources was contingent upon cooperation and protection from the shore. Since the continental shelf may be regarded as an extension of the land mass of the coastal nation and thus naturally appurtenant to it, these resources frequently form an extension of a pool or deposit lying within the territory. The United States claim was prompted by considerations of national defense and conservation. The uncertainty of oil entrepreneurs as to whether they would be subject to United States jurisdiction if they constructed installations beyond the territorial sea hindered exploration and exploitation.⁷⁰ The Proclamation was also motivated by domestic politics—the controversy as to whether the states or the federal government should assert authority over these submarine areas, the tidelands.⁷¹ The Truman Proclamation followed the American practice of claiming a narrow territorial sea while extending jurisdiction to contiguous zones for special purposes, such as customs, law enforcement and security. The claim was actually an assertion of jurisdiction rather than mere territory.⁷²

The second Truman Proclamation⁷³ dealt with fisheries and asserted the establishment of conservation zones in areas of the high seas contiguous to the coasts of the United States where fishing activities have been or may be developed and maintained on a substantial basis by its nationals alone (where it would be proper for the United States to regulate

68. 10 Fed. Reg. 12303 (1945).

69. Rose, *The Margins of the Continents*, 49 GEO. REV. 275 (1950).

70. Bishop, *The Exercise of Jurisdiction for Special Purposes in High Sea Areas Beyond the Outer Limits of Territorial Waters*, 99 CONG. REC. 2493 (1953).

71. BARTLEY, *THE TIDELANDS OIL CONTROVERSY: A LEGAL AND HISTORICAL ANALYSIS* (1953). Coastal states claimed territorial jurisdiction beyond the coastline and the matter was resolved by Supreme Court decisions which recognized title in the Federal Government. *United States v. California*, 332 U.S. 19 (1947); *United States v. Texas*, 339 U.S. 707 (1950); *United States v. Louisiana*, 339 U.S. 699 (1950); under the Eisenhower administration legislation was enacted which quit claimed the claims of the federal government to that part of the tidelands situated within the three-mile territorial sea or to where the states could show an historic boundary while the outer continental shelf was retained by the federal government, 43 U.S.C. §§ 1301-15 (1953). In subsequent litigation, the Supreme Court recognized the paramount claim of the federal government to the continental shelf beyond three miles with regard to Louisiana, California and Mississippi. *United States v. Louisiana*, 363 U.S. 1 (1959). A twelve-mile boundary was recognized as to Texas, *United States v. Texas*, 363 U.S. 35 (1959) and nine leagues as to Florida, *United States v. Florida*, 363 U.S. 62 (1959).

72. Bishop, *supra* note 70.

73. 10 Fed. Reg. 12304 (1945).

the fishing of its nationals) and where such zones have been established by United States nationals and nationals of other states. Agreement is to be entered into between the United States and such other states as to regulation. Other states are also recognized to have a right to establish similar zones provided that corresponding rights of nationals of the United States are recognized. While the Proclamation as to the continental shelf asserts an exclusive claim to the mineral resources, the Proclamation on fishing is inclusive in that it recognizes the rights of nationals of other states. In implementing this policy, the United States entered into a number of agreements with Latin American and European states.⁷⁴

However, the American position was confused by the United States Submerged Lands Act⁷⁵ which, in conferring title to the states, defines "natural resources" as including fishing. In addition, the states have enacted legislation which is applicable beyond the three-mile limit.⁷⁶ The State Department has contended that in the outer continental shelf the federal government incorporates and gives effect to the legislation of the littoral state and that this legislation is an internal matter having no bearing on relations with other states.⁷⁷

The American precedent was followed by the United Kingdom as affecting offshore claims to certain overseas possessions,⁷⁸ to claims by Saudi Arabia,⁷⁹ Iran,⁸⁰ Pakistan,⁸¹ India,⁸² the Philippines,⁸³ Australia,⁸⁴ Israel,⁸⁵ the United Arab Republic,⁸⁶ Iraq,⁸⁷ and Bulgaria.⁸⁸ Iceland⁸⁹ and Korea⁹⁰ used the continental shelf to assert zones of special competence

74. Selak, *Recent Developments in High Seas Fisheries Jurisdiction under Presidential Proclamation of 1945*, 44 AM. J. INT'L L. 670 (1950).

75. 43 U.S.C. §§ 1301-15.

76. Texas and Louisiana claim jurisdiction up to 27 miles. *Supra* note 65, at 14, 41.

77. Note of Feb. 29, 1956, to the United Nations, U.S. NAVAL WAR COLLEGE, INT'L L. SIT. & DOC., 410 (MacChesney ed. 1961). This legislation sought to correct Supreme Court decisions which conferred jurisdiction of the tidelands upon the federal government. *United States v. California*, 332 U.S. 19 (1946); *United States v. Texas*, 339 U.S. 707 (1950); *United States v. Louisiana*, 339 U.S. 699 (1950).

78. Orders in Council extended the boundaries of Trinidad and Tobago and the Bahamas, I U.N. LEGIS. SERIES, *supra* note 65, at 30-31; Jamaica, *id.* at 32; British Honduras, *id.* at 66; and the Falkland Islands, *id.* at 305. Similar Orders in Council were issued as to the Persian Gulf, *id.* at 27-30.

79. *Supra* note 65 at 22.

80. *Id.* at 81.

81. *Id.* at 303.

82. *Id.* at 13-14.

83. *Id.* at 19.

84. U.S. NAVAL WAR COLLEGE, *supra* note 77, at 441-44.

85. *Id.* at 475.

86. 54 AM. J. INT'L L. 491 (1960).

87. 14 REVUE EGYPTIENNE DE DROIT INTERNATIONAL 406 (1958).

88. U.S. NAVAL WAR COLLEGE, *supra* note 77, at 445-47.

89. *Id.* at 468-73. This claim led to a dispute with Britain over fisheries. Green, *Territorial Sea and the Anglo-Icelandic Dispute*, 9 J. OF PUB. L. 53 (1960).

90. U.S. NAVAL WAR COLLEGE, *supra* note 77, at 476-79.

for fishing. Cambodia,⁹¹ Ceylon⁹² and Burma⁹³ claimed sovereignty over the continental shelf for sedentary and pelagic fishing.

Latin American claims to the continental shelf purport to reserve maritime areas for exclusive control to protect the living resources of the sea.⁹⁴ The continental shelf was conceived by these states as a basis for asserting control over a wider maritime zone to conserve fisheries and necessitating the control of the superjacent waters.⁹⁵ Chile, Ecuador and Peru, in a joint declaration in 1952 at Santiago de Chile, claimed "sole sovereignty and jurisdiction over the area of sea adjacent to the coast of its own country and extending not less than 200 nautical miles from the said coast," including the "sea floor and subsoil thereof."⁹⁶ The right of innocent passage of all vessels through the zone was recognized. These principles were reaffirmed at Lima in 1954⁹⁷ and at Quito in 1955,⁹⁸ when Costa Rica also acceded to them. These claims were justified to conserve natural resources with the argument that the cormorants eat the anchovies and deposit the excrement as guano, used as fertilizer; location of the anchovies being determined by the flow of the Humboldt Current, situated 200 miles from the coast. Since anchovies are also used as bait for catching tuna, conservation regulations are required. Fishermen are required to secure licenses to fish within the zone. These claims are based on the notion that the sea and its environment constitute an ecological unit.⁹⁹ However, these claims have been criticized as being based on inadequate scientific data and because the governments have not conducted the necessary extensive investigations needed for formulating adequate conservation measures.¹⁰⁰ American tuna vessels have been seized, and the owners have been heavily fined.¹⁰¹ Negotiations to resolve the controversy

91. AUGUSTE, *THE CONTINENTAL SHELF: THE PRACTICE AND POLICY OF THE LATIN AMERICAN STATES WITH SPECIAL REFERENCE TO CHILE, EQUADOR AND PERU* 80 (1960).

92. *Id.*

93. *Id.*

94. *Id.*

95. *Id.*

96. U.S. NAVAL WAR COLLEGE, *supra* note 77, at 264ff.

97. UNITED NATIONS, U.N. LEGIS. SERIES; LAWS AND REGULATIONS ON THE REGIME OF THE TERRITORIAL SEA 723 (Supp. 1957).

98. *Id.* at 729.

99. AUGUSTE, *supra* note 91, at 114-15, 184-85.

100. McDougal & Burke, *The Community Interest in the New Territorial Sea*, 45 CORNELL L.Q. 171 (1960).

101. RIEFF, *THE UNITED STATES AND THE TREATY LAW OF THE SEA* 303ff (1959).

Between September 15, 1961, and June 28, 1963, more than 70 tuna clippers were seized by some half dozen Latin American countries, primarily Ecuador and Peru outside of the three-mile zone and in certain instances as far as 15, 18, 25 and 35 miles off the coasts, resulting in the imposition of individual fines against the ships ranging from \$1,200 to \$3,200 by Mexico to \$43,481.20 by Ecuador for the Arctic aid. These sums, though initially paid by the owners of the vessels were reimbursed by the United States Treasury. The State Department filed a claim only in three instances with Ecuador. Weissberg, *Fisheries, Foreign Assistance, Custom, Conventions*, 16 INT'L & COMP. L.Q. 704, 707-78 (1967). In 1965, a vessel was seized 96 miles from Peru. *Id.*, 710. The seizures resulted in the introduction of legislation amending the Foreign Assistance Act to restrict the granting of foreign aid to states which

have been unsuccessful. In 1954 Congress enacted the Reimbursement of Fines Act to reimburse ship owners and seamen where vessels were seized in situations involving territorial sea claims not recognized by the United States with the Secretary of State instructed to assert the claims against the seizing government.¹⁰²

The United States has contested the biological basis for these claims by contending that the relationship of the coastal communities to the sea is of an economical rather than a biological character. The products enter into trade and are consumed elsewhere. Furthermore, the ecological system is an essentially localized manifestation of major world-wide meteorological and oceanographic forces, such as the Humboldt Current, the several equatorial currents, and the California current. The stocks of fish, such as the tuna, roam wide over the oceans and do not respect the "bioma."¹⁰³ Though the 200-mile claims have not been recognized by other states, they represent a tendency toward extension apparent in the practice of other Latin American states as well as in other parts of the world.¹⁰⁴

IV. THE CONVENTION ON THE CONTINENTAL SHELF

With the Truman Proclamation of 1945 as the catalyst, there has been an assortment of individual claims to the continental shelf. Since most of these claims were unopposed, there appeared to be a tendency to recognize them as part of customary international law through acquiescence.¹⁰⁵ But it was doubtful that, on the eve of the Geneva Conference on the Law of the Sea in 1958, these claims had actually evolved into an established principle of international law. However, the evolution of state practice raised serious problems for preserving the freedom of the high seas as the continental shelf concept came to be merged with the extension of the territorial sea. Moreover, among states which claimed the sea-bed and subsoil there was the problem of maintaining freedom of navigation. Installations constructed for the extraction of mineral and petroleum deposits are obstacles to navigation. Leakages from such installations may hurt the living resources of the sea. Today, the basis for

seized American vessels on the high seas. As finally enacted the Foreign Assistance Act provides that, in determining whether or not to furnish assistance, consideration is to be given to excluding from such assistance any country which seizes or imposes any penalty against any United States fishing vessels on account of its fishing activities in international waters. *Id.*, Sec. 301(d)(4)(o) of the Foreign Assistance Act of 1965, Pub. L. No. 89-171; 79 Stat. 653 (approved Sept. 6, 1965).

102. 68 Stat. 883.

103. *Scientific Foundations of Santiago Legislation, Santiago Negotiations on Fishery Conservation Problems*, 37-38 Dep't of State Document No. 2.

104. A recent development in this controversy is the official proclamation by Ecuador that its territorial sea extends 200 miles. Report by Georgie Anne Geyer, *Chicago Daily News*, Feb. 11, 1967.

105. Mouton, *The Continental Shelf*, 851 HAGUE ACAD. RECUEIL DES COURS 348, 428ff (1954).

such claims and the basis for international law regarding inner space is the Convention on the Continental Shelf.

A. *Defining the Shelf*

As defined by article 1, the continental shelf refers:

(a) to the sea-bed and subsoil of the submarine areas adjacent to the coast and outside the area of the territorial sea, to a depth of 200 metres 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 sea-bed and subsoil of similar submarine areas adjacent to the coasts of islands.¹⁰⁶

To have set the outer limits of the continental shelf a set number of miles from the coast line was impractical because the continental shelves vary in width. The definition had to account for varying geographical and geological situations. The limit could not be set at the actual edge of the shelf, as scientists differ as to where the actual edge is situated. The Convention's definition is legal rather than scientific.

In 1951, the International Law Commission draft set the outer limits to "where the depth of the superjacent waters admits of the exploitation of the natural resources of the sea bed and subsoil."¹⁰⁷ In response to criticism that this definition was too vague, the 1953 draft set the outer limits "to a depth of 200 metres."¹⁰⁸ But this formulation was considered arbitrary by ruling out the possibility of exploiting the sea-bed at depths greater than 200 meters. The regions off the coast of some states, such as Chile, have exceptionally narrow continental shelves. In 1956, the International Law Commission adopted the formulation which became article 1 of the Convention.¹⁰⁹ The two criteria were combined.

The reference to 200 meters presents a rough idea as to the conception of the continental shelf as distinguished from the deep sea floor, while the reference to exploitability permits flexibility. The two criteria are to be regarded as complementary.¹¹⁰ A coastal state is assured of its right to exploit the continental shelf contiguous to its coast up to a depth of 200 meters. If feasible, it is assured of exploiting at greater depths. This for-

106. The text of the Convention, along with the other conventions on the law of the sea, is to be found in U.N. Doc. A/CONF. 13/L.55 (1958), 2 OFFICIAL RECORDS; 52 AM. J. INT'L L. 830 (1958); and in McDUGAL & BURKE, *THE PUBLIC ORDER OF THE OCEANS* (1962). A detailed analysis of the Convention is found in Katin, *The Legal Status of the Continental Shelf as Determined by the Conventions Adopted at the 1958 United Nations Conference on the Law of the Sea: An Analytical Study of an Instance of International Law Making, 1962* (unpublished thesis in University of Minnesota Library). The discussion dealing with the continental shelf is substantially derived from this work.

107. A/1316/III, 1951, Koh, *The Continental Shelf and the International Law Comm'n*, 35 B.U.L. REV. 522 (1955).

108. International Law Comm'n, Draft, 8 U.N. GAOR, Supp. U.N. Doc. A/2163 (1953).

109. International Law Comm'n, 8 U.N. GAOR, Supp. U.N. Doc. A/2934 (1956).

110. GARCIA-AMADORE, *THE EXPLORATION AND CONSERVATION OF THE SEA* 122ff (1959).

mulation also accounts for such areas as the Persian Gulf which, in a sense, consists entirely of a continental shelf with shallow water.¹¹¹ However, Norway has refused to ratify the Convention because of the Norwegian trough, a depression in the shelf off its coast, and claims it is entitled to this full expanse of shelf as far out as between Norway and the opposite states. It is reluctant to accept a shelf definition referring to the 200-meter line even though the alternative criterion of exploitability is also defined.¹¹²

The definition in article 1 of the term "continental shelf" is susceptible of at least two interpretations: (1) that the outer boundaries of the shelf are dependent upon the actual technological ability of the particular nations concerned; (2) that boundaries are determined by the technological ability of the most advanced nation. The contention may be advanced that to extend the offshore boundaries of a less developed nation to the farthest range capable of exploitation by the most advanced nation is wasteful and unproductive, unfairly depriving the world of large storehouses of natural resources. But the Convention was based on the proposition that each nation, whether technologically advanced or not, has sovereign rights over its portion of the continental shelf. Each nation's portion of the continental shelf is its alone to exploit as it deems fit. The contrary view would invite disputes. A nation slower than its neighbors in developing petroleum drilling facilities would find itself frozen out—a result not intended by the Convention. Moreover, the degree of technological advancement of most nations actually bears little relation to the extent of exploration and exploitation sponsored and undertaken by them. Many nations, comparatively undeveloped technologically, have nevertheless employed the technological skills of other states to engage in mutually rewarding enterprises.¹¹³

Article 1 is realistic in not limiting the shelf to a prescribed depth. As Jessup observed, "[A]ny attempt to define exploitability in metres is

111. MOUTON, *THE CONTINENTAL SHELF* 9-11 (1952).

112. Young, *Offshore Claims and Problems in the North Sea*, 59 *AM. J. INT'L L.* 507, 511 (1965).

Norway's position may be justified by the history of the convention, but others may argue that the solution is not as clear as it might be. The International Law Commission comments to article 1 state that the shallow area close to the coast could be considered as adjacent to the shelf. Unfortunately, however, the Commission's comments leave the question open by declaring that "it would be for the state relying on this exception to the general rule to establish its claim to an equitable modification of the rule. In case of dispute, it must be a matter for arbitral determination whether a shallow submarine area falls within the rules here formulated." While a wide channel might effectively detach the coastal state from the continental shelf, the Commission's presupposition that the channel is "narrow" may seemingly avoid such a problem. Perhaps the better practice may be to disregard all channels of less than a certain width, especially where the land lying beyond the channel seems geologically to be a part of the continental shelf. Dean, *Geneva Convention on the Continental Shelf*, 41 *TUL. L. REV.* 419, 426-27 (1967).

113. Dean, *Geneva Convention on the Continental Shelf*, 41 *TUL. L. REV.* 419, 426 (1967).

like the pre-World War I attempt to measure sovereignty of the air space by the height of the Eiffel Tower."¹¹⁴ However, as it becomes possible to exploit the sea-bed at increasingly greater depths, exploitation may occur in mid-ocean, hundreds and perhaps thousands of miles from the coast. A literal reading of article 1 would enable the coastal state from which base lines were drawn to claim such areas. But the background of the Convention indicates an intent to limit claims only to the shallower areas of the ocean reasonably adjacent to the coast. The international community should anticipate such situations by placing the deep sea-bed under international control. These areas do not require the contact with the shore which had been necessary for the exploitation of the continental shelf, and installations in mid-ocean do not directly affect the security of a coastal state.

The regime of the continental shelf begins at the outer limit of the territorial sea. Within the territorial sea the coastal state may assert exclusive rights to the resources of the superjacent seas, as well as those found in the sea-bed and subsoil, so that the obligations imposed by the Convention do not apply.¹¹⁵ Clearly, the delimitation of the territorial sea is of prime importance. The delimitation of the inner limits of the territorial sea under article 4 of the Convention on the Territorial Sea¹¹⁶ is to be based on the low water line. Paragraph 1 codifies the decision of the International Court of Justice in the *Anglo-Fisheries Case*¹¹⁷ in asserting that "in localities where the coast line is deeply indented into, or if there is a fringe of islands along the coast line in its immediate vicinity, the method of straight base lines joining appropriate points may be employed in drawing the base line from which the breadth of the territorial sea is measured." As to the manner in which the base lines shall be drawn, paragraph 1 lays down the conditions that they must not depart to any appreciable extent from the general direction of the coast; and the sea areas lying within the lines must be sufficiently closely linked to the land domain as to be subject to the regime of internal waters. Account may be taken, in determining particular base lines, of the economic interests peculiar to

114. Jessup, *The United Nations Conference on the Law of the Sea*, 59 COLUM. L. REV. 234, 251 (1959). Many experts are convinced that oil mining at a depth of 500 meters will be in operation by the mid 1970's, and it may already be technologically feasible to retrieve manganese nodules from any depth. JESSUP, *EXPLOITING THE OCEAN* (1966); NELSON & BURKE, *PETROLEUM RESOURCES OF THE CONTINENTAL MARGINS OF THE UNITED STATES IN EXPLOITING THE OCEAN* 116 (1966); papers presented at the Second Annual Conference of the Marine Technological Society, cited in Johnston, *Law, Technology and the Sea*, 55 CALIF. L. REV. 449, n.14 and 48 (1967).

115. Article 2 of the Convention on the Territorial Sea and Contiguous Zone, U.N. Doc. A/CONF 13/L.52 (1958) states: "The sovereignty of a coastal state extends to the airspace over the territorial sea as well as to its bed and subsoil." The regime of the continental shelf encompasses the high seas. Article 2 of the Convention on the High Seas, U.N. Doc. A/CONF 13/L.53 (1958) states: "The term 'high seas' means all parts of the sea that are not included in the territorial sea of the internal waters of a state."

116. U.N. Doc. A/CONF. 13/L.52 (1958), 2 OFFICIAL RECORDS.

117. *Anglo-Fisheries Case*, [1951] I.C.J. 118.

the region concerned, the reality and importance of which have been clearly made evident by long usage. Economic interests, however, can never justify the application of the method of straight base lines where the geographic conditions are not satisfied; they can only influence the drawing of particular lines in coasts where the method of straight base lines is applicable because of the geographic circumstances.¹¹⁸ The Conference could not agree on the maximum length of the base lines. Also unresolved was the measuring of the territorial sea of archipelagos. Indonesia and the Philippines urged grouping all the islands of the group within one system of base lines, but the leading maritime powers contest the legality of this approach.¹¹⁹

The Convention formula in establishing the inner limits of the continental shelf was employed by the United States Supreme Court in interpreting the Submerged Lands Act by holding that the federal control commences at the delineation of inland waters.¹²⁰ The approach is to base boundaries on the average of lower low tides. The closing line across the entrance of any body of inland water having pronounced headlands shall be drawn between the points where the plane of mean lower low water meets the outermost extension of the headland.¹²¹ Regarding bays, the Court chose the semi-circle test of the Convention rather than the Boggs formula, so that once the line is drawn across the mouth of the primary indentation, all bodies of the water connected with or within the primary indentation must be taken into account for the semi-circle test, regardless of the presence of islands within the indentation.¹²²

118. Sorenson, *Law of the Sea*, Int'l Conciliation Pamph. No. 520, 236-40.

119. Evenson, *Certain Legal Aspects Concerning the Delimitation of Territorial Waters of Archipelagos*, Prep. Doc. No. 5, U.N. Doc. A/CONF.13/8 (1958) 2 OFFICIAL RECORDS; Sorenson, "The Territorial Sea of Archipelagos," *Varia Juris Gentius Question de Droit International Liber Amicorum Offert*, A.J.P.A. Francois (1959).

120. *United States v. California*, 381 U.S. 139 (1965), noted in 7 HARV. INT'L L.C.J. 339 (1966) and commented upon in relation to the Convention in Erel, *The Submerged Lands Act and the Geneva Convention on the Territorial Sea and the Contiguous Zone*, 41 TUL. L. REV. 555 (1967). A technical description as to the methods used to determine tidal lines in determining delimitations is presented in Griffin, James, Alinden, *Establishing Tidal Datum Lines for Sea Boundaries*, U.S. Dep't of Commerce (1967) (paper 67-212 presented to the Joint American Society of Photogrammetry, American Congress on Surveying and Mapping Convention).

The Supreme Court had recognized the paramount claim of the federal government to the continental shelf beyond three miles as affecting Louisiana, California, and Mississippi, *United States v. Louisiana*, 363 U.S. 1 (1960), the claim of Texas to a 12-mile boundary, *United States v. Texas*, 363 U.S. 7 (1960), and of Florida to nine leagues, *United States v. Florida*, 363 U.S. 121 (1960). The outer areas are leased by the federal government with federal common law controlling as to property rights, *McKenna v. Wallis*, 344 F.2d 432 (5th Cir. 1964).

121. *United States v. California*, 382 U.S. 448, 450-51 (1966) (per curiam).

122. The Boggs formula requires a closing line to be drawn across the mouth of a bay and a belt drawn around the shore of the bay with a width equal at one-fourth the length of the closing line. The semi-circle test consists in comparing the area of the bay with the area of the semi-circle, whose diameter is a line drawn across the mouth of the bay; if the enclosed waters equal or surpass the area of the semi-circle, the waters of the bay are internal waters. Convention on the Territorial Sea and Contiguous Zone, Article 7, U.N. Doc. A/CONF. 13/L.52 (1958).

The most controversial issue is the outer limit of the territorial sea. The traditional limit, as asserted by the major maritime powers is three miles, a rule developed from the practice of the Scandinavian countries during the 16th and 17th centuries in asserting a three-mile neutrality zone.¹²³ Though the Scandinavians used a different unit of measurement so that their claim was actually set at four miles, the three-mile limit became accepted practice. During the 19th century, three miles was generally recognized as the limit of the territorial sea; though Portugal and the Mediterranean countries claimed six miles. In 1912 the Imperial Government of Russia asserted a twelve-mile claim, which was reaffirmed by the Soviets.¹²⁴ As was apparent at the Hague Codification Conference of 1930, the three-mile claim was no longer asserted by many states;¹²⁵ and, following World War II, claims of more than three miles, and especially of twelve miles, became more widespread.¹²⁶ The International Law Commission, after extensive deliberation, could not agree upon a formulation.¹²⁷

The trend toward the extension of the territorial sea is attributable to considerations of national security and economic development. With swifter transportation and communications and the new methods of waging war, many states feel—rightly or wrongly—that, for security reasons, a three-mile territorial sea is inadequate. A prime factor has been the concern, especially by the developing states, for the preservation and conservation of the fishing resources in the adjacent waters. The nationals of economically advanced states—such as the United States, the United Kingdom, Japan, and the Soviet Union—are able to engage in large-scale fishing in these areas with huge factory ships; while the coastal states, lacking the resources for large-scale operations, fear these resources will be depleted. The policy makers of these states, considering these resources as important for economic development programs, regard them as too vital to remain unregulated and maintain that it is essential to extend the breadth of their territorial seas for their protection.¹²⁸ These states also regard the three-mile limit as a rule imposed by Western colonial powers and no longer binding. Many of these nations recall 19th century gunboat diplomacy and are wary of a narrow territorial sea enabling warships of big powers to approach close to their shores.¹²⁹

123. Kent, *The Historical Origin of the Three-Mile Limit*, 48 AM. J. INT'L L. 537 (1954); Walker, *Territorial Waters: The Cannon Shot Rule*, 22 BRIT. Y.B. INT'L L. 210 (1945).

124. REINKEMEYER, *DIE SOWJETISCHE ZWOLFMEILEZON IN DER OSTSEE UND DIE FREIHEIT DES MEERES* (1955); Harben, *Soviet Attitudes and Practices Concerning Maritime Waters*, 15 JAG J. 149 (1961).

125. REISENFELD, *supra* note 49, at 120-24.

126. Claims on the eve of the 1960 Conference are presented in a synoptic Table, U.N. Doc. A/CONF. 19/4. (1960), reprinted in SECOND U.N. CONFERENCE ON THE LAW OF THE SEA, OFFICIAL RECORDS 157 (U.N. Pub. Sales No. 60.v.6) (1960).

127. U.N. Doc. A/CONF. 4/104. Same text as U.N. Doc. A/3159 (1956), 2 Y.B. INT'L L. COMM'N 253, U.N. Doc. A/3159 (1956). However, article 3 of the 1956 draft concerning the law of the sea recognized that international practice is not uniform and considers that "international law does not permit an extension beyond twelve miles." *Id.*

128. Sorenson, *supra* note 118, at 234.

129. Comments by Fenwick, AM. SOC'Y INT'L L. 116 (1956 Proc.).

During the 1958 Geneva Conference, bitter debate erupted over the resolutions delimiting the territorial sea. The Soviet Union, motivated by security considerations, joined with the Arab, Asian and Latin American states in supporting resolutions setting the territorial sea at twelve miles. These resolutions would have allowed the coastal state to set the breadth of the territorial sea at limits of from three to twelve miles.¹³⁰ The states which are members of N.A.T.O. failed to form a uniform bloc, as Iceland supported a twelve-mile territorial sea, while Canada sought an exclusive fishing zone. The maritime powers, notably the United States and the United Kingdom, opposed extending the territorial sea to twelve miles as impairing air and sea navigation. The United States also maintained that a twelve-mile extension would adversely affect national security by hampering the movement of submarines and battleships.¹³¹ But, aware that the three-mile limit would not be accepted by the Conference, the United States proposed, as a compromise, to set the breadth of the territorial sea at six miles with the coastal states granted an exclusive fishing zone up to twelve miles subject to prior treaty arrangements and the rights of foreign fishermen who have fished in the area for the past five years. But though this proposal received the most support, it failed to gain the necessary two-thirds majority.¹³²

In 1960, a second conference was convened from March 17 to April 26 at Geneva for the specific purpose of establishing a rule as to the breadth of the territorial sea. Much of the discussion of the previous conference was repeated, and the United States and Canada presented a joint proposal limiting the territorial sea to six miles with a twelve-mile fishing zone measured from the same base line as the territorial sea. Any state whose vessels had made a practice of fishing in the outer six miles for a period of five years as of January 1, 1958, could do so for a period of ten years beginning October 31, 1960; articles 9 and 11 of the Convention on Fishing and Conservation of the Living Resources of the High Seas would apply in the settlement of any disputes. This would not affect conventions or international agreements already in force.¹³³ But this proposal failed adoption by one vote.¹³⁴ The failure of the two conferences leaves the controversy unsettled.

The United States has reaffirmed its adherence to the three-mile limit, contending that the proposal for a six-mile limit was made as a compromise to reach agreement; and the failure to agree on a uniform rule

130. An account of the Conference is presented by Dean, *The Geneva Conference on the Law of the Sea: What Was Accomplished*, 52 AM. J. INT'L L. 607 (1958).

131. *Id.*

132. U.N. Doc. A/CONF. 13/C.1/L.159/Rev. 1 and Rev. 2 (1958), 3 OFFICIAL RECORDS 253.

133. U.N. Doc. A/CONF. 19/11 (1960); OFFICIAL RECORDS, SECOND U.N. CONFERENCE ON THE LAW OF THE SEA 171, U.N. Doc. A/CONF. 19/8(1960).

134. *Id.*

leaves the status quo intact.¹³⁵ But the United States has extended its jurisdiction beyond the three-mile limit for such particular purposes as law and fiscal enforcement, customs, the claim to the mineral rights of the continental shelf, conservation and defense. In the aggregate, this amounts to the same type of jurisdiction as is asserted in the territorial sea.¹³⁶ Though such jurisdiction is based on personality rather than on territoriality or sovereignty,¹³⁷ the practical effect is the same as to the individuals affected by it. But in many instances the nature of this jurisdiction is inclusive rather than exclusive, because states are engaging in bilateral and multilateral negotiations as to fisheries rather than seeking to lay down unilateral regulations establishing exclusive fishing zones. Moreover, the extension of jurisdiction beyond the territorial sea for particular purposes does not imply such restrictions on sea navigation as is normally associated with the territorial sea.¹³⁸

The American position is based on the distinction between the territorial sea and the contiguous zone. The former is a maritime belt wherein a state may, under international law, commit any act lawful on its land territory; the only exception being that the state cannot suspend the right of innocent passage for vessels of other states. In the contiguous zone or zones, the coastal state exercises limited control or jurisdiction for certain purposes; such claims or assertions of authority may be protested when considered unreasonable. The jurisdiction is exercised to the extent necessary to meet a particular situation.¹³⁹

The United States approach suggests the means by which a state could retain a narrow territorial sea while meeting the needs for extended jurisdiction. This approach is reflected in article 24 of the Convention on the Territorial Sea and the Contiguous Zone in establishing a zone of twelve miles measured from the base line from which the territorial sea is measured in which the coastal state may exercise jurisdiction for the prevention and punishment of infringements of customs, fiscal, immigration or sanitary regulations. A state claiming a twelve-mile territorial sea would not need this zone.¹⁴⁰ The intent was to make the concept of the contiguous zone something separate and distinct.¹⁴¹ The regime of the Convention on the Continental Shelf is based on the same concept.

135. Dean, U.N. CONFERENCE ON THE LAW OF THE SEA, 38 DEP'T OF STATE BULL. 1110 (1958).

136. Baxter, *The Territorial Sea*, AM SOC'Y INT'L L. 116 (1956 Proc.).

137. Allen, *Territorial Waters and Extraterritorial Rights*, 47 AM. J. INT'L L. 478 (1953).

138. McDougal & Burke, *Crisis in the Law of the Sea: Community Perspective Versus National Egoism*, 67 YALE L.J. 539 (1958), reprinted in McDougal & Assoc., *STUDIES IN WORLD PUBLIC ORDER* 844 (1960).

139. JESSUP, *THE LAW OF TERRITORIAL WATERS AND MARITIME JURISDICTION* 75-76 (1927).

140. Francois, *Regime of the High Seas and Regime of the Territorial Sea*, [1956] 1Y.B. INT'L L. COMM'N 8, U.N. Doc. A/CONF. 4/97 (1956).

141. *Id.*

Though from the perspective of the international community a narrow territorial sea is to be preferred, the trend is toward its extension. The three-mile limit will never be accepted as the uniform rule, but it is still adhered to by most of the leading maritime powers and is the minimum claim.¹⁴² As indicated by the opinion of the International Court of Justice in the Anglo-Norwegian Fisheries dispute, especially the concurring opinion of Judge Alvarez, this judicial body would probably not regard the three-mile limit as uniform. Considering international practice since 1960, a state may be regarded as free to set the limit of the territorial sea at a limit of from three to twelve miles. A three-mile limit will never be contested; and, considering the deliberations at the two conferences, a six-mile limit would also be accepted. There is also a growing tendency to accept the twelve-mile limit. Claims extending beyond twelve miles will not be likely to receive acceptance as reasonable, though there were some proposals at the conferences to confer competence on the coastal state to set its own limit.¹⁴³

Since the failure of the Second Conference, the joint Canadian-United States proposal regarding fisheries has been implemented by bilateral and multilateral agreements undertaken by Britain.¹⁴⁴ In the United States, pressure from fishing interests has led Congress to enact legislation extending American jurisdiction with regard to fishing to twelve miles.¹⁴⁵ Pursuant to this legislation, a Russian trawler has been detained when fishing off the coast of Alaska and the captain fined for trespassing.¹⁴⁶

B. *The Rights Conferred*

Article 2 of the Convention on the Continental Shelf asserts that the coastal state "exercises sovereign rights" for the purpose of exploiting and exploring its natural resources.¹⁴⁷ The rights conferred are exclusive in

142. DEAN, *supra* note 135.

143. McDougal & Burke, *supra* note 138.

144. Johnson, "European Fishery Limits," *Developments in the Law of the Sea*, BRIT. INST. INT'L N COMP. L. 46 (1965).

145. H.R. 9,531, 89th Cong., 2d Sess (1966); 112 CONG. REC. 23,880 (daily ed. Oct. 3, 1966), 112 CONG. REC. 12,972 (daily ed. June 20, 1966). The congressional resolution provided for an extension of fishing conservation zone nine miles beyond the territorial sea. The State Department acquiesced with the understanding that the width of the territorial sea would remain at three miles and believed that such a declaration would discourage states from making claims as to fishing beyond twelve miles. 60 AM. J. INT'L L. 831 (1966). A synoptic table to fishing claims is presented, *Id.* at 832.

146. Chicago Sun Times, March 6, 1927. The United States and the Soviet Union have negotiated an agreement under which the Soviets have agreed to refrain from fishing within twelve miles off the coast of the United States, particularly off the coasts of Washington and Oregon. 61 AM. J. INT'L L. 107 (1967); 55 DEPT. OF STATE BULL. 273 (1966). Though the United States has extended jurisdiction to twelve miles, the effect of this extension tends to encourage other states to also assert authority—but even more fully—and thus to strengthen the claim to a twelve mile territorial sea. Chapman, *Problems of the North Pacific and Atlantic Fisheries*, 113 CONG. REC. S100057 (daily ed. July 24, 1967).

147. There was considerable debate over the use of the term, "sovereign rights," as opposed to "exclusive rights," U.N. Doc. A/CONF. 13/38 (1958), VI *Official Records* 13-15.

that, if the coastal state does not explore the continental shelf or exploit its natural resources, no one may undertake these activities or make a claim to the continental shelf without the express consent of the coastal state, and the state's rights do not depend on occupation or any express proclamation. The natural resources "consist of the mineral and other non-living resources of the sea-bed and subsoil together with living organisms which, at this harvesting stage, either are immobile or are unable to move except in constant physical contact with the sea-bed or subsoil." Article 3 limits these rights by providing that "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 air space above these waters."

The exclusive right of the coastal state to the continental shelf is now based on the recognition provided by the Convention. The 1951 International Law Commission draft had limited the natural resources to mineral resources, while sedentary fisheries were dealt with in an article in the Draft Convention on the Conservation of the Resources of the Sea which recognized the coastal state's right to regulate such fishing yet allowed for the rights of other nationals.¹⁴⁸ The second draft in 1954, at the urging of Sir Hersch Lauterpacht, interpreted "natural resources" in the commentary as including the species living on the sea bed.¹⁴⁹ But this was too vague, as some species live part of their lives on the bottom and then come to the surface; in addition, fish which swim on the bottom might be included.¹⁵⁰ In 1956 the International Law Commission, having benefited from the reports of a technical conference, defined "natural resources" as limited to those species living on the sea-bed or subsoil at the "harvestable stage."¹⁵¹

At the Geneva Conference the delegates from the Federal Republic of Germany and the Netherlands wanted to limit the exclusive right of exploitation to mineral resources, while the delegates from Iceland, Korea and some of the Latin American states wanted to include fish and all other resources. The delegates from Australia and Ceylon cited historical claims in pleading for the inclusion of sedentary fish. The United States supported the adopted version as a compromise.¹⁵² The resources living at the harvestable stage at the bottom of the sea include sponges, a jelly

148. International Law Comm'n Report, 6 U.N. GOAR, Supp. 9, U.N. Doc. A/1858 (1951).

149. Young, *Sedentary Fisheries and the Convention on the Continental Shelf*, 55 AM. J. INT'L L. 359 (1961).

150. *Id.* of Memorandum of the Food and Agricultural Organization, Prep. Doc. No. 10, *Examination of Living Resources Associated with the Sea-Bed of the Continental Shelf with Regard to the Nature and Degree of Their Physical and Biological Association with Such Sea-Bed*, U.N. Doc. A/CONF. 13/13 (1958).

151. International Law Comm'n, Final Report, 11 U.N. GOAR, Supp. 9, U.N. Doc. A/3159 (1956).

152. Whiteman, *Conference on the Law of the Sea: Convention on the Continental Shelf*, 52 AM. J. INT'L L. 628 (1958).

fish eaten in Korea, Japan and China, red corals, sea cucumbers—trapang or *beche de mere*, oysters, lobsters, certain snails, trochus shells for jewelry, and a number of other species.¹⁵³ These species comprise a considerable portion of the sea food harvest.¹⁵⁴

The inclusion of sedentary fish has meant that certain coastal states need no longer rely on occupation or appropriation theories as a basis for their right to regulate the exploitation of these resources. But the coastal state has the right to exclude other nationals who have long had the right to engage in such fishing as in the Persian Gulf. Though there was justification for granting the coastal state exclusive rights to the mineral resources because of the need for onshore installations, it is questionable whether there is such justification for conferring exclusive rights to the exploitation of sedentary species.¹⁵⁵

The extension of the continental shelf to the exploitation of sedentary species may be a step towards arguing for exclusive rights for all fishing. There is an interdependence between the benthonic and the pelagic species. Ichthyologists, in discussing the pelagic species, refer to its entire environment.

The environment of a species is its cosmos, the *milieu* in which it lives. It includes its physical setting—the sea water, with all its mineral salts and dissolved organic chemicals, regimes of temperature and of solar radiation, and structure and composition of the bottom. It includes the whole assemblage of different species of plants and animals that live together and affect each other beneficially and harmfully. It is a system of systems, with inorganic and organic components.

An environment . . . is an ecological unit; that is to say, a part of the sea which has peculiar properties that satisfy the physiological requirements of a population of a number of species of populations which live together.¹⁵⁶

153. MARINE PRODUCTS OF COMMERCE, *passim* (Tressler & Lemon, eds. 1951).

154. These invertebrates comprise about 10% or 3,100,000 tons of the world seafood harvest. Walford, *Harvest from the Sea*, 17 BULL. OF ATOM. SCIENT. 415, 417 (1961).

155. Young, *supra* note 149, the Convention provisions were involved in the "lobster wars" between Brazil and France. Azzam, *The Dispute between France and Brazil over Lobster Fishing in the Atlantic*, 13 INT'L COMP. L.Q. 1453 (1964).

156. Walford, *supra* note 10, at 63 (1958). Fisheries are operated mainly on coastal waters on or near the continental shelf. About two-thirds of the 25,000 to 40,000 species of sea fish are coastal dwellers. Many spend their lives on or near the bottom, browsing on invertebrate animals abounding there. Each species has its own peculiar habitat requirements: some never leave the vicinity of the shore; others remain in the deep water on the slopes of the shelves; still others live among sea weeds, rocks or open plains. Few bottom dwellers venture beyond the shelf. Some, like the cod, from time to time rise to the surface but do not lose contact with the shelf for long. Other species are not bottom dwellers; these are active swimmers living near the surface, feeding on plankton or plankton-eating smaller fish. Their search for food takes them beyond the shelf to wherever surface waters are particularly fertile. But they, too, turn to shore periodically. Most coastal fish, both bottom and surface swimmers, migrate seasonally—some of them very long distances.

Any measures for the exploitation of the living resources of the sea necessitate a full dimensional picture of the whole environment. The legal compartmentalization of sedentary fisheries, as distinguished from the pelagic, was unsound. Sedentary fishing could best be handled by the Convention on Fishing and the Living Resources of the High Seas. Article 13 of this Convention enables the coastal state to regulate fisheries conducted by its nationals by means of equipment embedded in areas of the high seas adjacent to its territorial sea, provided that non-nationals are permitted to participate in such activities on an equal footing except in areas where such fisheries have, by long usage, been exclusively enjoyed by such nationals.¹⁵⁷

C. *Regulating Uses*

Articles 3, 4, and 5 of the Convention enumerate the obligations of a coastal state to maintain the freedom of the seas in utilizing the natural resources in the sea-bed and subsoil of the continental shelf. Article 3 asserts the general principle that the rights of the coastal state "do not affect the legal status of the superjacent waters as high seas, or that of the air space above those waters." According to article 1 of the Convention on the High Seas, these superjacent waters have the legal status of high seas,¹⁵⁸ making them, under article 2, freely open to all nations. Freedom of navigation, fishing, laying submarine cables and pipelines, flight, and other freedoms recognized by general principles of international law were granted. Articles 4 and 5 of the Convention on the Continental Shelf obligate a coastal state to take measures to assure that these freedoms will be maintained, and paragraphs 1 and 8 of article 5 also provide for the freedom to undertake fundamental research.

The adoption of the Convention on the Continental Shelf is a further indication that the freedom of the sea and the use of inner space are not

Generally, they move inshore and poleward in summer and then reverse their paths with the onset of cold weather. Some, like Atlantic mackerel, move toward shore to spawn; others, like the Pacific sardine, move offshore for that purpose. In both patterns, the young find their nursery grounds close to shore, near beaches, in bays, estuaries and sloughs. This movement brings many kinds of fish within the range of fishermen who fish for species determined by the demands of the particular market. Walford, *supra* note 154. These observations, though indicating the relationship of the continental shelf to pelagic fisheries, suggest that such fisheries, because of their migrating character, should not be placed under the coastal dominion of the coastal state.

157. U.N. Doc. A/CONF. 13/L.54 (1958), 2 OFFICIAL RECORDS. Rae, *The Law of the Continental Shelf*, 6 IND. J. INT'L L. 363, 380 (1966) presents a different view:

The main purpose of the doctrine of the continental shelf is to make available to the coastal states such of the resources as would form part of the shelf region. Conceived from this angle, claiming sovereignty over swimming fish would certainly be an abuse of the doctrine. However, the case of the sedentary fish is different. They are a special species; and, as Article 2(d) clearly explained, they draw their sustenance from the shelf region and keep close to the bed of the shelf region. In other words they form an important part of the resources to be found in the shelf region. . . .

158. U.N. Doc. A/CONF. 13/L. 53 (1958), 2 OFFICIAL RECORDS.

absolute. Freedom of the high seas had meant that users were free to use the high seas for different purposes without unreasonable interference with other users enjoying the same freedom. Each user limited the other.¹⁵⁹ As originally asserted by Grotius, the concept of freedom of the seas was premised on considering the high seas as a *mare liberum*, subject to occupation by no one, a concept intended to negate the concept of *mare clarum*, espoused by Seldon, that the seas were subject to the sovereignty of a particular state.¹⁶⁰ The Grotian concept developed into the premise of equal use, confining each individual user of the high seas to complete abstention as to all other users. But such an approach could not be adapted to the use of the sea as a source of wealth. The concept of *mare liberum* gave way to *res communitalis* with the establishment of means to facilitate the affirmative use of the sea. The rules of the sea are in a process of evolution and change. The same nation-state officials are alternatively in a process of reciprocal interaction, both as claimants and as external decision makers, passing upon the claims of others. In many instances these claims are honored by mutual tolerance rather than by explicit agreement, creating expectations that power will be restrained and exercised in uniform patterns. The overriding policy regarding the law of the sea has been the encouragement of use. Decision makers have developed a body of complementary prescriptions constituting the regime of the high seas. One set, "freedom of the seas," honors contractual claims to navigation, fishing, cable laying, and other similar uses. Another set, dealing with the territorial sea, the contiguous zone, jurisdiction, and the continental shelf, was formulated and invoked to honor the great variety of claims, both comprehensive and particular, which may interfere to a greater or lesser degree with navigation and fishing.¹⁶¹ The test applied by the decision makers is one of reasonableness. Such a test is analogous to the concept of due process in American constitutional law.¹⁶² Where the claims or actions of one user arbitrarily or unfairly interfere with that of another user, the result is a denial of due process, a violation of a sense of fairness.

In adopting the Convention on the Continental Shelf, the decision makers at the Geneva Conference formally decided that the claims of coastal states to utilize the resources of the sea-bed and subsoil were

159. MOUTON, *THE CONTINENTAL SHELF* 186 (1952).

160. Reppy, *The Grotian Doctrine of the Freedom of the Seas Reappraised*, 19 *FORDHAM L. REV.* 243 (1950).

161. McDOUGAL & ASSOC., *supra* note 138, at 773; in McDougal & Schlei, *The Hydrogen Bomb Tests in Perspective: Lawful Measures for Security*, 64 *YALE L.J.* 648, 658 (1955).

162. Kadish, *Methodology and Criteria in Due Process Adjudication—A Survey and Criticism*, 66 *YALE L.J.* 319 (1957) in ASS'N AM. L. SCHOOLS, *SELECTED ESSAYS ON CONSTITUTIONAL LAW* 544 (1963). But what is to be considered will depend upon subjective judgment encompassing systems of values. This was apparent in regard to the use of the sea for nuclear testing in comparing McDougal & Schlei, *supra* note 161, with Margolis, *The Hydrogen Bomb Experiments and International Law*, 64 *YALE L.J.* 629 (1959), and from another perspective, BIGELOW, *THE VOYAGE OF THE GOLDEN RULE* (1959) and REYNOLDS, *THE VOYAGE OF THE PHOENIX* (1961).

justifiable and met the standards of reasonableness. The world community has a vital interest in exploiting these resources, thus interference with navigation and fishing is justified. But the decision makers insisted that these infringements be reasonable, and, in articles 4 and 5, formulated standards of what is to be considered reasonable.

Though article 5 of the Convention uses the phrase "unjustifiable interference" as the standard limiting interference by the coastal state of the use of the superjacent waters for navigation, conservation, or fishing, the standard of "reasonable measures" is applied by article 4 to the laying or maintenance of pipelines and cables on the sea-bed. However, the standard of "unjustifiable interference" is the same as "reasonable" in article 1 of the Convention on the High Seas. The International Law Commission, in commenting on article 71, which corresponds to article 5 of the Convention on the Continental Shelf, asserted:

The progressive development of international law, which takes place against the background of established rules, must often result in the modification of these rules by reference to new interests or needs. The extent of that modification must be determined by the relative importance of the needs and interests involved. To lay down, therefore, that the exploration and exploitation of the continental shelf must never result in any interference whatsoever with navigation and fishing might result in many cases in rendering somewhat nominal both the sovereign rights of exploration and exploitation and the very purpose of the articles as adopted. The case is clearly one of assessment of the relative importance of the interests involved. Interference, even if substantial, with navigation and fishing, might, in some cases, be justified. On the other hand, interference even on an insignificant scale would be unjustified if unrelated to reasonably conceived requirements of exploration and exploitation of the continental shelf. While, in the first instance, the coastal state must be the judge of the reasonableness—or the justification—of the measures adopted, in case of dispute the matter must be settled on the basis of Article 73, which governs the settlement of all disputes regarding the interpretation or application of the articles.¹⁶³

Though the Conference did not adopt a method for settling disputes, the underlying principle expressed by the Commission remains applicable. The coastal state, by interfering with the use of the sea by others, determines the "reasonableness" or "justification" of the measures adopted. The decision makers of the international community, acting through international tribunals, or by toleration or protest, indicate acceptance or rejection of these measures.

Article 4 obliges the coastal state not to impede the laying or main-

163. *Supra* note 148.

taining of cables or pipelines. Though the draft articles of the International Law Commission did not refer to pipelines, they were mentioned in the commentary.¹⁶⁴ The Commissioners believed that reference to pipelines was unnecessary, as no problem existed in regard to them. But at the urging of the United Kingdom, the Conference decided to amend article 70 of the International Law Commission Draft, which became article 4 of the Convention, to include such a provision.¹⁶⁵ It is substantially identical with article 26 of the Convention on the High Seas, where articles 27 through 29 codify the obligations of states regarding this matter. A Venezuelan amendment would have provided explicitly for the coastal state's right to specify the route to be followed in the laying of cables and pipelines,¹⁶⁶ but it was rejected. However, the Convention may be construed to permit the coastal state such authority.¹⁶⁷

The right to undertake scientific research on the continental shelf is recognized in paragraphs 1 and 8 of article 5 of the Convention. Paragraph 1 provides that "the exploration of the continental shelf and the exploitation of its natural resources must not result . . . in any interference with fundamental oceanographic or other scientific research carried out with the intention of open publication." Paragraph 8, however, provides that the consent of the coastal state shall be obtained "in respect of any research concerning the continental shelf and undertaken there," but

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 (emphasis added).

These provisions stemmed from concern expressed by oceanographic and marine scientists that the granting of exclusive exploration and exploitation rights to the coastal state would deprive them of the right to undertake scientific expeditions.¹⁶⁸ A scientific expert, M. B. Schaeffer, explained to the Fourth Committee the types of fundamental research

164. *Id.*

165. Comment by Hudson, I Y.B. INT'L L. COMM'N 280, U.N. Doc. A/CONF. 4/42 (1951). The 1956 Draft provided in article 61, Paragraph 2, a provision as to the laying of pipelines and explained in the Commentary that Paragraph 2 was added, obliging the coastal state to permit the laying of pipelines and cables on the continental shelf but may make conditions as to the routes to be followed to prevent undue interference with the exploitation of its natural resources. International L. Comm'n, Reports, *supra* note 148.

166. U.N. Doc. A/CONF. 13/C.4/L.34 (1958), 6 OFFICIAL RECORDS 136.

167. McDUGAL & BURKE, *THE PUBLIC ORDER OF THE OCEANS* 705-06 (1962).

168. The International Council of Scientific Unions, at its General Assembly in Oslo in August 1955, passed a resolution expressing concern as to the effect of the ILC draft upon the undertaking of research which was transmitted to the Conference by UNESCO. U.N. Doc. A/CONF. 13/28 (1958).

which were undertaken, research which was intended to add to the sum of human knowledge about the world, regardless of application.

The provisions regarding fundamental research contrast with the treatment given navigation and fishing in that the article prohibits unjustifiable interference with the latter. Prior to the Convention all scientific research could, under international law, be pursued with complete freedom.¹⁶⁹ The need for the coastal state to extend consent has been questioned, and the suggestion made that article 5(8) be construed to require consent only for research involving physical contact with the sea-bed and subsoil of the continental shelf and not for research involving the waters above, even if the latter is directed ultimately to the sea-bed.¹⁷⁰ The terms "qualified institution" and "purely scientific research" should be given broad interpretation.¹⁷¹ The international community has an interest in promoting the maximum of such research.¹⁷²

Some difficulty may arise regarding the use of the word "normally." Abnormal situations would be where such research interferes with the exploitation or exploration of the sea-bed and subsoil or adversely affects national security. The coastal state would also be able to reject a project

169. McDUGAL & BURKE, *supra* note 167, at 722.

170. *Id.*

171.

Fundamental research is the wellspring of a science. Nevertheless, it is difficult to define, because it does not have clear-cut boundaries. And however it may be defined, it is often difficult to defend. It is not, as some people imagine, aimless puttering. I doubt that a good scientist indulges in such a whimsey except for relaxation. Fundamental research is generally aimed towards the discovery of natural laws, that is principles which underlie great processes. It is closely akin to fine art. It grows at its own pace, depends heavily on logic, respects intuition, is rarely fruitful when rushed or nagged. It is the kind of work that a man is driven to do by inner necessity, because he is passionately interested in the doing of it, without thought of an ultimate application.

The most highly developed sciences, chemistry and physics, are founded on systems of principles. . . . These principles give chemists and physicists the necessary tools for thinking ahead. . . .

Presumably, populations of living organisms in the sea also react predictably under given circumstances, but we have yet to resolve the multiple parts of the controlling circumstances. Of course, the materials that physicists and chemists work with are superbly related in their properties. Molecules respond to law with nice precision always in the same way, under given circumstances. Principles which underlie the behavior, the abundance, the very existence of wild plants and animals, particularly those that live out of the sign in the depths of the sea, are exceedingly elusive, much more difficult to discover than laws of matter and energy. The most obvious lack in marine research programs is the pursuit of principles.

WALFORD, *LIVING RESOURCES OF THE SEA* 9-10 (1958).

172. Vice President Humphrey has stated:

The sheer magnitude of understanding an area consisting of 71 per cent of our planet indicates that no one nation can undertake the task itself. Mapping the ocean floor and establishing a world weather watch, must be done internationally or not at all. Cooperation is not merely convenient here, it is indispensable.

Cooperative effort in research and development in the great ocean can be especially valuable to developing nations.

The population explosion is already threatening to exceed the world's food production and the problem is bound to get worse in the years ahead. . . .

[Reprinted in 112 Cong. Rec. 24726 (daily ed. Oct. 7, 1966)].

hazardous to offshore installations, or one which hinders navigation or the conservation of the living resources of the sea. Even though the coastal state may have greater flexibility than in regard to interference with navigation or fishing, it cannot act arbitrarily.¹⁷³

The mineral exploitation of inner space, particularly the drilling of oil wells, may endanger the living resources of the sea. Oil leakage and possible blow-outs may pollute the sea water and the resulting patches of oil will move with the current and the wind.¹⁷⁴ The problem arising from pollution has long existed as the result of leakage from ships; and, more recently, there has been concern regarding the dangers from radioactive wastes.¹⁷⁵ Pollution has an adverse effect on fish by ulcerating the gill membranes and causing death and also tends to have a toxic effect by inhibiting the absorption of oxygen. Oil pollution may also kill sea birds and destroy plankton which constitutes the food supply for fish. Living resources may also be threatened by the seismic explosions which are conducted for the exploration of the oil-bearing geological formations.¹⁷⁶ Less destructive means, however, have been developed for undertaking geological explorations.¹⁷⁷

Paragraph 1 of article 5 of the Convention on the Continental Shelf provides that "the exploration of the continental shelf and the exploration of its natural resources must not result in any unjustifiable interference with . . . fishing or the conservation of the living resources of the sea." Paragraphs 2 through 6 authorize the coastal state to construct installations on the continental shelf, to establish safety zones for the protection of these facilities and to facilitate navigation, while paragraph 7 obliges

173. McDUGAL & BURKE, *supra* note 167, at 705. In addition to serving government or commercial projects directed at facilitating the technologically controlled use of the sea, marine science constitutes a relatively new channel for man's intellectual curiosity and sense of beauty and adventure. Though cast in the role of handmaiden to technology, marine science will also serve as a warning system, flashing signals when abuses of sea are discovered. "As a relatively safe space for recovery of capsules, the sea also marks the termination of scientific investigations of outer space and may itself be studied from space." Johnston, *Law, Technology and the Sea*, 55 CALIF. L. REV. 449, 456 (1967). A significant result of oceanic research regarding the ocean floor was the finding on the basis of the deep ocean core samples magnetic field allow hard radiation from space to reach the ground and cause mutations in many living organisms. Chicago Sun Times, May 29, 1967, at 39.

174. MOUTON, *THE CONTINENTAL SHELF* 161 (1952).

175. REIFF, *THE UNITED STATES AND THE TREATY LAW OF THE SEA* 223 (1960). An International Convention for the Prevention of the Pollution of the Sea by Oil was adopted in London in 1954. 327 U.N.T.S. 3 (1959) and amended in 1962. IMCO 1961.1 and 1962.2, Misc. No. 23 (1962). A convention on the Liability of Operators of Nuclear Ships was signed at the Diplomatic Conference on Maritime Law at Brussels in 1961. Text in BRIT. INST. INT'L & COMP. L., *supra* note 144, at 196.

176. The methods of undertaking these explosions are discussed in BASCOM, *A HOLE IN THE BOTTOM OF THE SEA* 126-29 (1961), and THOMASSON, *PROBLEMS OF PETROLEUM DEVELOPMENT IN THE CONTINENTAL OFFSHORE*, (Geol. Survey Bull. No. 1067 (1958)).

177. Experience off the Gulf of Mexico Coast that even large charges have negligible effect on fish more than 200 feet distant from the explosion. Black powder charges have still less effect than dynamite and perhaps should be required in areas of fishery importance. Young, *Offshore Claims and Problems in the North Sea*, 59 AM. J. INT'L L. 508-19 (1965).

the coastal state to undertake in the safety zones "all appropriate measures for the protection of the living resources of the sea from harmful agents." Article 24 of the Convention on the High Seas states that "every state shall draw up regulations to prevent pollution of the seas by the discharge of oil by ships or pipelines or resulting from the exploitation and exploration of the sea-bed and its subsoil, taking account of existing treaty obligations on the subject."¹⁷⁸ Article 1, paragraph 2 of the Convention on Fishing and Conservation of the Living Resources of the High Seas asserts, "All states have the duty to adopt, or to cooperate with other states in adopting, such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas."¹⁷⁹ Coastal states have also entered into a number of regional conventions for the conservation of fisheries, and though these do not deal specifically with the problems relating to the exploitation of inner space, their general spirit and wording applies.

Though paragraph 7 of article 5 of the Convention on the Continental Shelf refers only to "protection . . . from harmful agents," seismic explosions are also encompassed. Paragraph 1 obliges the coastal state both as to "exploration" and "exploitation." The International Law Commission commentary on paragraph 1 of article 71—corresponding to article 5(1)—refers explicitly to seismic explosions.¹⁸⁰ The phrase "harmful agents" could be read to include seismic explosions. The general concern of the Conference with conservation, as expressed in a number of conventions, indicates an intent that protective measures are to be all-encompassing.

The obligation in article 5(7) for conservation measures in the safety zones shows that there is not an absolute right of fishing in those areas. The coastal state may, under paragraph 1, restrict fishing by the operation of the installations and devices to the extent that it is justifiable, necessary or reasonable. Fishing may not be arbitrarily restricted, but may be restricted where particular hazards would arise. In interfering with fishing, the coastal state might also consider the number of states whose nationals have fished in the area, the importance of the fishing activities to the economies of the states concerned, the productivity of the area both for fishing and mineral exploitation, and the type of fishing which could be undertaken concurrently with exploration and exploitation.¹⁸¹

The presence of offshore installations will inevitably interfere with navigation. The prescribing of regulations has involved reconciling the interests of shipping groups with the interests of mining and petroleum com-

178. U.N. Doc. A/CONF. 13/L.53. (1958).

179. U.N. Doc. A/CONF. 13/L.54. (1958).

180. *Supra* note 148.

181. McDUGAL & BURKE, *supra* note 167, at 721.

bines. The concern of diverse interest groups was reflected in the make-up of the American delegation to the Conference, consisting of over 40 members from the State, Defense, Interior and Treasury Departments, the Navy and Atomic Energy Commission, shipping lobbies, fishing and canning associations, and Congress.¹⁸²

Article 5(1) asserts that "the exploration of the continental shelf and the exploitation of its natural resources must not result in any unjustifiable interference with navigation," while paragraphs 2 through 6 codify the obligations of the coastal state. Paragraph 2 permits the coastal state to construct and maintain or operate on the continental shelf installations and other devices necessary for its exploration and exploitation, to establish safety zones around such installations and devices, and to take, in those zones, measures for their protection. Paragraph 2 provides that the safety zones may extend a distance of 500 meters around the installations and other devices, measured from each point of the outer edge. Paragraph 4 asserts that these installations do not possess the status of islands and their presence does not affect the delimitation of the territorial sea of the coastal state. Paragraph 5 requires that due notice be given of the construction of such installations, and permanent means for giving warning of their presence be maintained, while any installations which are abandoned must be entirely removed. Paragraph 6 prohibits the placing of installations or safety zones which would interfere with "recognized sea lanes essential to international navigation."

These provisions, reflecting article 71 of the International Law Commission Draft and its Commentary, formulate principles as to the duties of the coastal state while allowing for flexibility. To devise a detailed code would not have been feasible as to all contingencies. Proposals at the Conference for more detailed regulations were defeated. As a result of urgings from the oil interests and from Venezuela, a reference in article 5(6) to "narrow channels" was deleted by the Conference.¹⁸³ Apparently, a coastal state may authorize the erection of installations in straits, narrow channels, and sea lanes "essential for navigation," if there is no interference with the use of such areas for navigation. The Conference refused to adopt provisions which would have specifically forbidden navigation on any specified part of the high seas, such as were proposed by the Netherlands.¹⁸⁴ However, the coastal state is given the right to regulate navigation in the safety zones.

The Conference apparently favored navigation by prohibiting in-

182. 2 OFFICIAL RECORDS xxv-vi, and OFFICIAL RECORDS OF THE SECOND UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA, Official Records of Plenary Meetings and of Meetings of the Committee of the Whole, at xxiii-iv, A/CONF. 19/8. (1960).

183. Campbell, *International Law Developments Concerning National Claims To and In Offshore Areas*, 33 TUL. L. REV. 339 (1959).

184. A detailed Netherlands proposal was rejected. U.N. Doc. A/CONF. 13/C.4/L.22. (1958), 6 OFFICIAL RECORDS 132.

installations on established sea lanes. The wording of the Convention remains unclear as to problems of practical application. It is uncertain whether the "recognized sea lanes" are immutably fixed, as most mariners would prefer, or may be subject to relocation on due notice. The width of a sea lane involves problems of navigational safety and efficient exploitation. Also unclear are the precise kinds of warning devices suitable for installations, particularly when situated on the edge of a sea lane. The very requirement for such installations to carry warning devices may cause confusion, as a multiplicity of lights and sounds may be distracting and can obscure standard navigational buoys and beacons. This problem has arisen on the Gulf coast of the United States.¹⁸⁵

The Convention has been criticized for failing to provide more definite guidelines.¹⁸⁶ But conditions vary; and, with the progress of exploitation, new situations arise so that a convention intended for universal application needs to be flexible. Only general principles could be set forth. Content can only be provided through practical application.

D. Shelf Boundaries

With the increased exploitation of inner space, the problem of delimiting the common continental shelf between two or more states will become more pressing. Only two treaties have dealt with the problem, one involving the United Kingdom and Venezuela¹⁸⁷ and another, Bahrein and Saudi Arabia.¹⁸⁸ Generally, the Proclamations regarding the continental shelf assert that submarine boundaries are to be determined on an equitable basis, preferably by mutual agreement.¹⁸⁹ However, some of the Proclamations refer to more specific formulations. Peru permits the State Petroleum enterprise to exploit a submerged oil field "as far as the frontier with Ecuador."¹⁹⁰ The Republic of Korea asserts a claim up to the Rhee Line and attempts unilaterally to determine the angles at which that boundary approaches the western end of the Korean-Manchurian borderline.¹⁹¹

The Convention on the Continental Shelf, in article 6, adopts the

185. Young, *supra* note 177, at 519-20; Calvert, *Navigation and Offshore Oil*, WORLD PETROLEUM 44-46 (Nov. 1964). Offshore installations, which are generally temporary structures, do not have the status of artificial islands. *Ocean Drilling and Exploration Co. v. Berry Bros. Oilfield Serv.*, 377 F.2d 511 (5th Cir. 1967); *Offshore Co. v. Robinson*, 266 F.2d 769 (5th Cir. 1959); *Texas Co. v. Savoie*, 240 F.2d (5th Cir. 1957), *cert. denied*, 355 U.S. 840 (1957); *Sirmons v. Baxter Drilling, Inc.*, 239 F. Supp. 348 (W.D. La. 1965).

186. McDUGAL & BURKE, *supra* note 167, at 721; Young, *supra* note 177.

187. *Supra* note 65, at 35.

188. 8 INT'L & COMP. L.Q. 519 (1959).

189. Padwa, *Submarine Boundaries*, 9 INT'L & COMP. L.Q. 828 (1960). The discussion on delimitation of boundaries is based on this article.

190. *Supra* note 65, at 16.

191. U.S. NAVAL WAR COLLEGE, INT'L L. SER. & DOC. 476-79 (MacChesney ed. 1961). The Argentine claim was explicit in delimitating the boundary with regard to the Falkland Islands. I U.N. Leg. Series 3 (1951).

median line formula for delimiting the boundaries of the continental shelf. Where the same continental shelf is adjacent to the territories of two or more states whose coasts are opposite each other, the boundary is to be determined by agreement; and in absence of agreement, unless another boundary line is "justified by special circumstance," the boundary "is the median line, every point of which is equidistant from the nearest points of the base lines from which the breadth of the territorial sea of each state is measured." The same principle applies in paragraph 2 where the continental shelf is adjacent to the territories of two adjacent states.

The median line approach was recommended by a committee of experts as the best means for delimiting sea boundaries.¹⁹² Where the coast is straight, a line drawn according to this method will coincide with one drawn at right angles to the coast at the intersection of the land frontier and the coastline. If the coast is curved or irregular, the line takes the curvature into account, while avoiding the problems involved in determining the general direction of the coast. The median line has been applied for over a century and a half in treaties and by arbitration tribunals.¹⁹³ The United States Supreme Court used this method in delimiting the boundary on Lake Michigan between Wisconsin and Michigan.¹⁹⁴

The median line is a locus of points each equidistant from the nearest points or the base lines of adjacent or opposite states. Any point is precisely the same distance from the nearest points of the coastal states. Only one line is possible. It is not based on an equal division of the areas involved but on proximity, the distance from the nearest coasts. The turning points of the boundary line are related to fixed points on the land. Under article 6, the boundary is to be determined by agreement between the states involved; but if no agreement is possible, the median line is controlling, unless there are "special circumstances."

Though some delegations proposed that the phrase "special circumstances" be deleted from article 6, it was retained. One situation warranting "special circumstances" may arise in the Persian Gulf, where the median line might be measured, as urged by the Iranian delegate at the Conference, from the high watermark rather than from the low watermark.¹⁹⁵ Off the Iranian coast, large bodies of water carry sediment which is deposited near the coast forming extensive mud flats, making it impossible to identify the low water line. Another situation may arise in regard to islands situated on the continental shelf.

Some situations may lead to an unequal partitioning of the continental shelf but may not produce an inequitable result and, therefore,

192. U.N. Doc. A/CONF. 4/88. (1955). See also commentary to article 72, 2 Y.B. INT'L L. COMM'N 300 (1956).

193. Padwa, *supra* note 190.

194. *Wisconsin v. Michigan*, 297 U.S. 547 (1936).

195. U.N. Doc. A/CONF. 13/C.4/L.60 (1958), 6 OFFICIAL RECORDS 142.

not constitute a "special circumstance," as where a narrow peninsula or cape extends out to sea so as to benefit one state unduly in the setting of a median line.¹⁹⁶ Another source of uncertainty would be the presence of artificial harbor works. Though paragraph 3 of article 6 accounts for gradual shifting of coastal configurations by providing that delimitation be based on charts and geographical features of a particular date, a problem may arise where there is a sudden shift in the coastline.

A "special circumstance" may arise where a median line traverses a mineral deposit, such as an oil pool. Exploitation on any given spot will react upon other parts of the deposit. Account should be taken of the essential unity of the deposit. A basis for awarding a claim or for negotiation would be the application of the principle of prior use and investment. The state that had first begun to exploit the resource would assert a prior claim, an approach taken in the *Grisbadarna* arbitration¹⁹⁷ between Norway and Sweden involving the appropriation of rights to certain lobster banks. Where neither state has begun exploitation, the claim of the state which has first found it—if this can be determined—should be given preference, or priority might be given to the state where the greater part of the deposit is situated. Another approach may be to recognize the claim of the state that can most effectively exploit the deposit.

The determination of situations constituting "special circumstances" to justify deviation from the median line may only be on an *ad hoc* basis. No general criteria may be established. Under article 6, the delimitation of the continental shelf is to be determined by agreement between the states involved. Absent an agreement, a state may unilaterally assert the general rule that the boundary be the median line. The adjacent state, or states, may object and claim that a different boundary is justified by "special circumstances." The disputing state is obliged to act in good faith in asserting such a claim. Whether a given situation does indeed constitute "special circumstances" would depend upon the particular geographical location.

The North Sea, one of the world's most important sources of gas and perhaps oil, is surrounded by seven coastal states, five of which signed the Convention. Undersea boundaries will probably be determined pursuant to the principles of the Convention on the Continental Shelf. The United Kingdom has claimed boundaries on the basis of article 6(1) of the Convention in granting leases for exploitation.¹⁹⁸ Only the United Kingdom

196. Padwa, *supra* note 190.

197. SCOTT, *THE HAGUE COURT REPORTS* (1916); Mouton, *The Continental Shelf* 85 *RECUEIL DES COURS* 347 (1955).

198. Dam, *Oil and Gas Leasing and the North Sea*, 8 *J. OF L. & ECON.* 51 (1965), which presents a detailed discussion of the United Kingdom's policy of licensing blocks of plots underneath the North Sea to groups of companies. The five states which have signed the Convention are the United Kingdom, Denmark, The Netherlands, West Germany and France.

and Norway have formally agreed on their entire common boundary beneath the North Sea with the deep sea off the Norwegian coast being ignored in this demarcation.¹⁹⁹ West Germany has reached an agreement with The Netherlands on part of their joint boundary. A number of other agreements are in the process of being negotiated. Nations which have not entered into formal agreements are employing the median line as a boundary.²⁰⁰ Additional commercial finds of oil or gas in the North Sea should spur the progress of agreements.

In the Persian Gulf, only Iran has signed the Convention of the Continental Shelf with two reservations: the right to refuse to allow submarine cables or pipelines on its portion of the shelf and, in special circumstances, to measure the boundary to be determined in article 6 from the high watermark.²⁰¹ The significance of the high watermark reservation is that the shore of parts of the Persian Gulf coastline of other states slopes gradually. There is disagreement as to whether the traditional low watermark or the high watermark should determine the part of the shore from which measurement begins. By this reservation, Iran could claim more of the sea-bed and subsoil than the Convention would normally allow; thus the reservation is a possible source for future disputes.

A demarcation agreement exists between Saudi Arabia and Bahrein.²⁰² Though neither state is a party to the Convention, the agreement generally follows the principle of equidistance with the boundary delineated "on the basis of the middle line" between the mainland of Saudi Arabia and the Island of Bahrein between points which are indicated on a map attached to the agreement and, in some cases, specified by latitude and longitude. A departure from the principle of equidistance is the provision that a certain six-sided area, which would otherwise be partly within the area belonging to Bahrein, shall "be in the part falling to the Kingdom of Saudi Arabia," but that one half of all revenues arising from oil exploration in that area shall be granted to Bahrein.

A problem in the application of article 6 is the provision in article 7 that the Convention "shall not prejudice the right of the coastal state to exploit the subsoil by means of tunneling irrespective of the depths of water above the subsoil." Conceivably one state might engage in tunneling from the coastline, while a neighboring state exploits the subsoil resources by the erection of offshore installations. The state engaging in tunneling might bore beyond the median line, contending the Convention does not apply.²⁰³ However, this is a matter to be resolved by mutual agreement and should not involve too many difficulties.²⁰⁴

199. Dean, *Geneva Convention on the Continental Shelf*, 41 TUL. L. REV. 419, 427 (1967).

200. *Id.*

201. *Id.*

202. 7 INT'L COMP. L.Q. 519-21 (1958).

203. FRANKLIN, *INTERNATIONAL LAW STUDIES*, 1959-1960 64.

204. *Id.* See also Ely, *American Policy Options in the Development of Undersea Mineral*

E. *Settling Disputes*

The problem of delimiting the continental shelf focuses on the need for a mechanism to arbitrate disputes. A serious gap in this Convention, as well as in the others involving the law of the sea, is the absence of a provision for settling disputes. Article 73 of the International Law Commission Draft had provided that disputes "shall be submitted to the International Court of Justice at the request of any of the parties, unless they agree on another method of peaceful settlement." However, opposition to such a provision at the Conference by the Soviet bloc, some of the Latin American states, and the newly emerging Asian states forced its deletion. All proposals to provide for settlement through the International Court were rejected.²⁰⁵ An Optional Protocol was adopted to provide for the resolution of disputes. Though the conferring of compulsory jurisdiction upon the International Court of Justice, as provided in article 73 of the International Law Commission Draft, had been routinely adopted in many technical conventions,²⁰⁶ the delegates at the Geneva Conference apparently felt that the law of the sea involved so many political implications affecting vital national interests that they refused to take this approach. If the Conference had adopted article 73, the debates in the Fourth Committee involving the continental shelf indicate that it would have been more difficult to get the Convention accepted and ratified.

Both article 73 and the Optional Protocol fail to meet fully the need for settling disputes. The approach taken is the traditional (and obsolescent) application of the theory that only states are subjects of international law. No provision is made for individuals to seek redress before an international tribunal. Where his right to use of the sea is infringed upon, he must depend on the ability and willingness of the state of which he is a national to seek redress. Though he may appeal to the administrative agencies and judicial tribunals of the coastal state, he has no recourse after exhausting these available remedies unless the state to which he owes allegiance intervenes in his behalf.

V. FREEDOM OF THE SEAS—AN INDIVIDUAL RIGHT

The freedom of the seas is an individual right and should be recognized as such. Where an individual—as a fisherman, sailor, scientist or airplane pilot—is arbitrarily denied the right to use the seas or his freedom of using the seas is arbitrarily interfered with, his individual rights are

Resources, 2 INT'L LAW. 215-23 (1968); Christy, *Communications: A Social Scientist Writes on Economic Criteria for Rules Governing Exploitation of Deep Sea Minerals*, 2 INT'L LAW. 224-42 (1968); and Morris, *The North Sea Continental Shelf: Oil and Gas Legal Problems*, 2 INT'L LAW. 191-214 (1968).

205. Verzijl, *The United Nations Conference on the Law of the Sea*, 6 NEDERLANDS TIJDSCHRIFT VOOR INTERNATIONAL RECHT 1, 19 (1959).

206. Jessup, *United Nations Conference on the Law of the Sea*, 59 COLUM. L. REV. 234, 263 (1959).

infringed upon. He is entitled to have the right to seek recourse from an international tribunal.

A means for such recourse is suggested by the concept of Habeas Marinus, a variation of World Habeas Corpus, which would permit the use of an international Writ of Habeas Marinus for any individual who is arbitrarily detained and deprived of fundamental human rights.²⁰⁷ By invoking the Writ of Habeas Marinus, he could appeal, upon the exhaustion of available domestic remedies, to a regional, and ultimately a universal, international tribunal which would issue the Writ demanding his release. Applying these concepts to the freedom of the seas where an individual fishing 200 miles from a coastline is imprisoned or fined and his boat is seized, he could invoke the Writ as a remedy to protect his rights. If his boat is seized, he could invoke the related Writ of Habeas Proprietatem as a remedy for the taking of his property without compensation.²⁰⁸ Where an individual is denied the right to navigate or to send his cargo through an international waterway, such as the Suez Canal, he could invoke a modified form of Habeas Corpus with Habeas Marinus to seek determination before an international tribunal as to his right of passage. The Writ of Habeas Marinus could be developed as a means for compelling implementation of all regulations regarding the use of the sea, including conservation, the regulation of fisheries, the prevention of pollution, and the safety of and jurisdiction over ships.

Habeas Marinus would be particularly relevant in regard to the use of inner space. A large portion of this region is under the regime of the continental shelf, which confers exclusive rights upon the coastal state. But it is unclear as to whether the Convention would be applicable to such uses of the sea-bed as the erection of a dwelling. Would this constitute exploitation of a resource? Under the Convention, the coastal state probably could assert criminal and civil jurisdiction over individuals who utilize the continental shelf to exploit its sea-bed or subsoil resources; but it is doubtful that such jurisdiction could be asserted where the continental shelf is used for other purposes. A problem of this type has arisen with regard to pirate radio broadcasting on the North Sea, particularly off the coast of the Netherlands, where a tower has been constructed on the sea-bed outside of the territorial sea.²⁰⁹ The jurisdiction of an international tribunal could be asserted under Habeas Marinus to cover precisely such situations. Such a tribunal would assure that where individuals,

207. Kutner, *World Habeas Corpus, The Legal Ultimate for the Unity of Mankind*, 40 NOTRE DAME LAW. 570 (1965); Kutner, *World Habeas Corpus for International Man: A Credo for International Due Process of Law*, 36 U. DET. L.J. 236 (1959); Hon. Justice William J. Brennan, Jr., *International Due Process and the Law*, 108 CONG. REC. A6774 (Sept. 13, 1962).

208. Kutner, *Habeas Proprietatem: Due Process for International Investments: A Prior Consideration for Investments Abroad*, 40 U. DET. L.J. 617 (1963).

209. Young, *supra* note 177.

acting outside any municipal jurisdiction, make use of the sea, the law of the sea would be applicable to them.

The Writ of Habeas Marinus would also constitute a means by which individuals making use of the sea could have an international tribunal determine if the rights of inclusive users are unreasonably infringed upon. Fishermen could claim that the coastal state, in exploiting the sea-bed and subsoil, has improperly restricted or interfered with fishing rights or has not taken proper precautions to prevent the destruction of living resources by the introduction of harmful agents or by engaging in improper seismic explosions. Sailors could claim that the restrictions on navigation are arbitrary, while scientists would have recourse if a coastal state denied an application to conduct a research project on the continental shelf. These conflicting claims could be resolved by the international tribunal through the application of the standard of due process—whether the infringements upon inclusive rights or uses are reasonable. The international tribunal would balance the exclusive rights of the coastal state to the exploration and exploitation of the sea-bed and subsoil with the inclusive rights of the international community to the use of the superjacent waters and air space. The approach would be to maximize the benefits for all users.

Habeas Marinus would have a special role to play in the exploitation of the inner space beyond the continental shelf—on the sea-bed itself. Though a literal interpretation of article 1 of the Convention on the Continental Shelf could confer exclusive rights upon a coastal state to exploit inner space in mid-ocean, thousands of miles from its coast, such claims, however, as suggested earlier, would be unreasonable and were not contemplated by the spirit of the Convention. Conceivably, a situation may develop similar to that regarding outer space. Though states have traditionally claimed sovereign rights to the air space over their territories, these rights have not extended to the use of outer space, the region beyond the atmosphere. Similarly, while states assert exclusive rights to the sea-bed and subsoil of the continental shelf, these claims may not extend to the mid-ocean.²¹⁰

The deep sea miner (unlike the deep sea fisherman, who, at capture, acquires ownership of an object previously *res nullius*) has a capital investment not only in the recovery system but also in the deposit itself and thus desires some law which grants him an exclusive right to develop and

210. One writer has noticed that, though it was not the probable intent of the drafters of the Convention, Article 1 may be interpreted as meaning that the adjacent coastal nation "owns" the phosphoric nodules which are found on the continental slopes to depths exceeding 10,000 feet, and that the coastal state is entitled to extend the "legal" shelf beyond the "geological" shelf down the continental slope and out over the deep ocean floor indefinitely as far as a mining dredge can operate. This could cause serious problems in seas shared by several technological powers, such as the North Sea. MERO, *THE MINERAL RESOURCES OF THE SEA* 289 (1965).

mine a deposit in the exploration of which he has spent a substantial amount of money.²¹¹ A world oceanic authority can be projected for the coordination of all existing schemes of functional authority, operating under world community principles and procedures; but it would not seem a suitable level for the settlement of resource allocation disputes, which are primarily regional in character. In a regional scheme of mining authority, the noncoastal mining states, wishing to exploit resources in deep waters close to a continental shelf, could negotiate a compensation agreement with the adjacent licensing state instead of colliding with the Convention on the Continental Shelf and the Convention on the High Seas. The Convention would not justify monopolistic exploitation in remote high sea areas, and cooperative arrangements under a regional mining authority would not be feasible in such an area.²¹²

States may assert claims to inner space on the basis of the occupation and appropriation of unoccupied territories, theories originally propounded by some writers to defend early continental shelf claims.²¹³ Conflicting claims could be resolved by an international tribunal through the Writ of Habeas Marinus. Such claims should be resolved through international arrangements. A preferable approach would be to place these areas of inner space under the jurisdiction of an international body for benefit of the world community as a whole.²¹⁴ This body would regulate the exploration and exploitation of these regions, granting rights to individuals to stake out claims. Through Habeas Marinus, an international tribunal would resolve disputes as to individual rights. The tribunal would assert criminal and civil jurisdiction.

While World Habeas Corpus and Habeas Proprietatem envisage regional tribunals reflecting the culture and traditions of differing legal systems in the protection of human rights, the law of the sea is a subject of universal application requiring uniform application. Habeas Marinus could best be administered and adjudicated by a universal tribunal with facilities, so that any individual, regardless of where he may be situated, could invoke its jurisdiction.

The regulation of living resources of the sea, *i.e.*, the fisheries, is more complex. There are three possible arrangements for resource allocation:

211. *Id.*

212. Johnston, *supra* note 144, at 470.

213. The theories regarding continental shelf claims are to be found in MOUTON, *THE CONTINENTAL SHELF* 281 (1952); *Goddard, The Land Under the Sea*, 6 *IND. Y.B. OF INT'L AFFAIRS* 81 (1957); ANNINOS, *CONTINENTAL SHELF AND PUBLIC INTERNATIONAL LAW* (1953).

214. President Johnson appeared to favor this approach in a speech lauding the Geodetic Survey Ship *Oceanographer* in which he invited other nations to join in the scientific undertaking and asserted: "Under no circumstances, we believe, must we ever allow the prospects 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 sea and the ocean bottom are, and remain, the legacy of all human beings." [Printed in 112 *CONG. REC.* 15131-32 (daily ed. July 15, 1966).]

(1) extending the exclusive jurisdiction of the coastal state, (2) giving the United Nations exclusive jurisdiction over the resources of the high seas, and (3) continuing to operate under existing rules of international law and practice. The law of Habeas Marinus is peculiarly applicable under the latter two of these three approaches.²¹⁵

The extension of coastal state jurisdiction would be most agreeable to fishing interests and has the support of most coastal states where the interests of fisheries are predominant. But there is the difficulty of dissociating jurisdiction for fisheries from exclusive jurisdiction for other purposes, as such extensions encourage an extension of the territorial sea. Moreover, resources supporting major fisheries will not receive full protection in the harvestable stage if the ocean is divided into national lakes as the fishery resources migrate from one coastal area to another. International disputes would still arise, though less likely along the extensive coastlines of the United States and Canada. Furthermore, there is need for provision of adequate protein resources throughout the world. Fish resources need to be more fully developed, which they are unlikely to be when restricted to exclusive jurisdiction. A group of nations acting together may be more able to conserve these resource.

A broadly based movement exists to turn over all deep sea resources to the United Nations. A move in this direction was the Resources of the Sea Resolution of the General Assembly in 1966.²¹⁶ The belief exists that by developing and selling these resources, the United States could be more fully funded and thus more independent of the political whims of member states. As noted above, there is need for an authority to lease areas for deep ocean mining. In regard to fisheries, there is the urgent need for regulating high seas fisheries which are open to all. Entry into these fisheries should be limited in order to maximize net economic yield, and this limitation can be achieved only when such resources are under the exclusive jurisdiction of a managing authority, such as United Nations control.²¹⁷ But it is unclear if the member states at this stage want an independently financed United Nations. Conceivably, such an independent international body could decide to establish a means for tracking nuclear submarines, a policy which some powers may not desire.²¹⁸ However, if such international control were established, there would need to be an infrastructure of legislative, administrative, and judicial regulation. Rules would need to be established for each type of fish. Regarding judicial implementation, the law of Habeas Marinus would be especially applicable as providing a means for directly regulating the activities of the individual

215. Chapman, *Problems of the North Pacific and Atlantic Fisheries*, 113 CONG. REC. S10057 (daily ed. July 24, 1967).

216. *Id.*

217. CHRISTY & SCOTT, *THE COMMON WEALTH IN OCEAN FISHERIES* (1966).

218. Chapman, 113 CONG. REC. S10057 (daily ed. July 24, 1967).

fisherman and in providing the fisherman with judicial recourse to protect his interests.

The present approach of international regulation has not been successful. Freedom of fishing is based on the criterion of reasonableness. Article 1 of the Convention on Fishing and Conservation of the Living Resources of the High Seas asserts:²¹⁹

All States have the right for their nationals to engage in fishing on the high seas, subject (a) to their treaty obligations, (b) to the interests and rights of coastal States as provided for in this convention and (c) to the provisions contained in the following articles concerning conservation of the living resources of the high seas.

Living resources, outside the territorial sea and not a resource of the continental shelf, are the common property of all nations, coastal or non-coastal. Article 2 asserts:²²⁰

All States have the duty to adopt or to cooperate with other States, in adopting such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas.

The term "conservation of the living resources of the high seas" is defined by article 2 as meaning 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. This forms the framework under which the management of international fisheries is supposed to operate and is, conceptually, a pretty tight system. Essentially, it is a codification of the practice of nations, developed over a fifty-year period from the Fur Seal Convention in 1911. Other examples are the International Whaling Commission, the North East Atlantic Fisheries Commission, the North West Atlantic Fisheries Commission, and the North Pacific Fisheries Commission. The number of countries involved was small. The aim has been to prevent overfishing with division of yield. In the United Nations a fisheries administration exists in the Food and Agriculture Organization, which has not been effective, but which has been given more attention since 1960.

The technical problems of conservation are becoming more international in character. Management authorities on a regional and subregional basis are likely to occur.²²¹ Such regulation, to be effective, must operate directly upon the individual. *Habeas Marinus* is the means for facilitating such operation.

Habeas Marinus would reflect the tendency for the technological

219. U.N. Doc. A/CONF. 13/L.54. (1958).

220. *Id.*

221. Johnston, *supra* note 144, at 472.

order to prevail over the territorial order in the control of the sea. For almost forty years, the old "status zones" of the sea and the resulting "status law" have seemed much too rigid to serve as a proper legal framework for new and expanding uses of the sea.²²²

VI. CONCLUSION

Scientific and technological progress has permitted the exploration and exploitation of an expanding area of inner space. These developments have led to the adoption of the Convention on the Continental Shelf, which now regulates the greater portion of inner space that is currently being exploited. Though not all states have ratified the Convention, it is an expression of general principles of international law applicable in such areas as the North Sea.²²³ But the Convention merely lays down general principles, and for it to have meaningful application, there must be recourse to an international tribunal. Because the rights and duties regarding the freedom of the sea apply directly to individuals as users, such recourse must be directly available to them as subjects of international law. Though in some instances such recourse could be provided through the proposals for World Habeas Corpus and Habeas Proprietatem, the development of Habeas Marinus would provide a more inclusive tool. As access to the deep sea-bed becomes more attainable, the spectre of claims in a "no man's land" looms closer. Habeas Marinus as part of an overall arrangement for international control may offer an approach to a solution. Habeas Marinus could also fill in gaps regarding jurisdiction over acts committed on the high seas, such as pirate broadcasting. Some doubt exists as to a state's authority to assert jurisdiction over an installation fixed to the continental shelf outside territorial waters which engages in pirate broadcasting.²²⁴

New technology which can better the life of man can be fully implemented if the law of Habeas Marinus is adopted to regulate it. The rule of law of the sea must evolve in a manner which will anticipate these developments for the maximum benefit of the world community. Such law, premised on notions of due process or reasonableness, must acknowledge the individual as a subject of international law by permitting him to assert his rights to the freedom of the seas.

222. *Id.*

223. Hunnings, *Pirate Broadcasting in European Waters*, 14 INT'L & COMP. L.Q. 111 (1965).

224. *Id.* See also Griffin, *The Emerging Law of Ocean Space*, 4 INT'L LAW. 548 (1967).