The Management Function of Ocean Boundaries

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Advances in ocean technology, growing requirements for marine resources, and an increasing number of ocean users, have created the need for a functional and managerial approach to the exploitation of offshore resources and the use of ocean space. The boundaries which man has set in the ocean have generally inhibited such a development because they carry with them an idea of separation, or divisiveness, which has been transported from land boundary concepts. This Article concerns the nature of maritime boundaries and their changing function in the ordering of human activities in the marine environment.

INTRODUCTION

> [A]s soon as one starts to conceptualize human phenomena in a spatial framework, one finds and sets boundaries, since there is a logical and psychological necessity to break down the immense unbounded chaos of reality into a number of definite categories that are separated and distinguished by boundaries.[1]

The world ocean is a clearly identifiable system. A system is de-

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1. Strassoldo, *The Study of Boundaries: A Systems-Oriented, Multi-Disciplinary, Bibliographical Essay*, 2 JERUSALEM J. INT'L REL. 81 (1977).

fined as a "regularly interacting or interdependent group of items forming a unified whole."[2] The world ocean is a complex system comprised not only of the natural marine processes and resources, but also of the various human uses and governing authorities. A distinct interrelationship exists between the natural components of the ocean system—the physical, geological, chemical and biological subsystems which link the seabed, water column, surface waters, and, in polar regions, the ice cover. The physical components contain various resources and accommodate different activities. Some uses such as transportation, are in themselves potentially hazardous to the marine environment; other uses, such as the fishery, depend on long-term environmental quality and are subject to negative impact from vessel traffic and seabed exploration. Moreover, distinct interrelationships exist between uses as well—interrelationships raising such questions as navigational safety in sea lanes near areas of the continental shelf used for petroleum exploration, and the effects of industrial, military and residential waste dump sites or nearby commercial and recreational fishing areas. In this sense, the ocean can be described as an "open system" in which the component physical parts and some uses are fluid and mobile in nature, and where oceanographic phenomena cross many man-made boundaries. Linear division of ocean space, therefore, is operationally impossible.

Nevertheless, the concept of ocean boundaries, by which coastal states define their areas of exclusive or semi-exclusive jurisdiction, has been linear and spatial in nature. Early coastal-state maritime jurisdiction was geographically narrow and asserted mainly for control of surface uses. Beyond the coastal areas, where the ocean is common property in the greater expanse of high seas, the early uses of the ocean—fishing and maritime transportation—developed unimpeded by boundaries or regulations. These circumstances occasioned relatively few offshore boundary disputes.

After World War II, however, a realization that land-based energy resources were finite, and increasing doubt as to the capacity of the land to sustain a growing population, motivated new interest in the potential of the ocean. This was accompanied by technological advances which gave coastal states and maritime nations an unprecedented capability to explore and exploit. A new era of ocean use had begun; in particular, the last two decades have witnessed an expansion in the traditional uses of the ocean with the growth of new activities in marine areas never before utilized. Additionally, as the competition for ocean resources has intensified, the growing number of developing nations, along with the industrial nations, seek to extend their maritime jurisdiction.

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2. D. CLELLAND & W. KING, MANAGEMENT: A SYSTEMS APPROACH 31 (1972).

The interrelationships between these events were not accounted for in the separate conventions resulting from the United Nations Conference on the Law of the Sea held at Geneva in 1958 (UNCLOS I).[3] A response to this situation was the demand in 1967 by Ambassador Pardo of Malta, on behalf of the developing nations, for the ocean to be declared the "common heritage of mankind.[4] Partly as a result of this idea, the Third United Nations Conference on the Law of the Sea (UNCLOS III) was convened in 1974.[5] The aim was to achieve what the earlier conference had not achieved—an equitable allocation of ocean space, resources, and management authority among the world community. Due in part to acquisitive and nationalistic attitudes, however, the provisions of the current treaty[6] are a much modified version of the management approach proposed in 1967. There is no mystery to this similarity, since nation-states, based on the concept of sovereignty and territorial boundaries, are unwilling or unable to implement cooperative ocean management on a global or regional basis.[7]

In this new era of ocean use, however, the primary national motivation to extend offshore jurisdiction is based on the value of resources rather than on requirements of national security and defense. Negotiated boundary delimitations already have begun to reflect this economic interest in international relations through the use of dual boundaries and common resource development zones. The movement

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3. The conventions resulting from the First United Nations Conference on the Law of the Sea [hereinafter cited as UNCLOS I] were: Convention on the Continental Shelf, *done* Apr. 29, 1958, 15 U.S.T. 471, T.I.A.S. No. 5578, 499 U.N.T.S. 311 [hereinafter cited as Continental Shelf Convention]; Convention on the Territorial Sea and the Contiguous Zone, *done* Apr. 29, 1958, 15 U.S.T. 1606, T.I.A.S. No. 5639, 516 U.N.T.S. 205 [hereinafter cited as Territorial Sea Convention]; Convention on the High Seas, *done* Apr. 29, 1958, 13 U.S.T. 2312, T.I.A.S. No. 5200, 450 U.N.T.S. 82 [hereinafter cited as High Seas Convention]; and Convention on Fishing and Conservation of the Living Resources of the High Seas, *done* Apr. 29, 1958, 17 U.S.T. 138, T.I.A.S. No. 5969, 559 U.N.T.S. 285 [hereinafter cited as Fishing and Conservation Convention].

4. Pardo proposed that the United Nations General Assembly declare both the seabed and the ocean floor and its resources as the "common heritage of mankind," Pardo also proposed that the Assembly take the necessary steps to embody this basic principle in an internationally binding document. U.N. Doc. A/6695(1967).

5. The resulting treaty was the United Nations Convention on the Law of the Sea, *done* Dec. 10, 1982, U.N. Doc. A/CONF.62/122, *reprinted in* 21 I.L.M. 1261 (1982) [hereinafter cited as LOS Convention].

6. *Id.*

7. At first impression, the value of a boundary might appear to lie in its definitiveness. A more complete appreciation, however, might be summed up in the foreword to S. BOGGS, INTERNATIONAL BOUNDARIES (1940): "The chief defect of any boundary is its definitiveness, a quality that is indispensable in the modern world with almost every square mile of land occupied or desirable for production or site."

toward 200 nautical mile resource or economic zones, and the extension of territorial seas to twelve nautical miles, will give rise to territorial or resource conflicts between most of the world's coastal nations.[8] It is, therefore, not surprising that the issues relating to maritime boundary delimitation were among the most difficult encountered at UNCLOS III.

The rules or principles for delimiting maritime boundaries contained in the 1958 Geneva Conventions and in the third party adjudications since that date have not been changed by the current United Nations Convention on the Law of the Sea (LOS Convention) provisions.[9] What the provisions do change, however, is the international juridical framework for asserting national jurisdiction by creating a sufficiently broad multifunctional economic zone within which coastal states can control ocean activities. Because of the diversity of these activities and the complexity of the interrelationships among them, territorial claims and linear concepts of boundaries cannot meet the managerial requirements which accompany the expanded areas of coastal-state jurisdiction. The LOS Convention provisions for a 200-mile functional jurisdiction for limited purposes require that the delimitation, demarcation, and administration of maritime boundaries be viewed in new dimensions in order to arrive at methods and criteria for adequately defining limits in ocean space which will accommodate and prioritize human activities within the unified ocean system.

This Article will discuss the nature of spatial and functional zones in the ocean as they relate to the purpose of coastal-state and international jurisdictions. The Article presents a view of ocean boundaries which, under the new international order imposed upon ocean use and control, might overcome the problem of incongruity between political boundaries and the physical realities of the ocean system.

Categories and Functions of Ocean Boundaries

The first conception of a boundary is likely to be that of a line drawn with some exactitude on a map, or a physical demarcation on the surface of the land. In fact, most international land boundaries are represented in such manner and act as the visible limit of a state's sovereign jurisdiction.[10] Though conceptually acting as a ver-

8. Smith, *A Geographical Primer to Maritime Boundary-Making*, 12 Ocean Dev. & Int'l L.J. 1, 2 (1982). The author calculates that under the 200 mile regime every coastal state will be faced with an area of potential overlap with at least one neighboring state.

9. LOS Convention, *supra* note 5, arts. 15, 26, para. 1, & 83, para. 1.

10. Mankind in his different social groupings always has demanded some form of separation from other groups—although the primitive idea of a boundary was that of a zone rather than a line, and the term *frontier*, meaning *in front of*, was given to the unclaimed and unsettled zones separating areas of inhabited territory. N. Pounds, Po-

tical plane, land boundaries are linear in nature; they generally can be demarcated easily on the ground to show clear territorial and jurisdictional limits. Land boundaries, however, normally raise the issue of territoriality between two parties only where historical title and the division between race, religion or nationality have established the line of separation.

Maritime boundary-making raises issues additional to those characteristic of boundary-making on land. The nature of maritime boundaries is necessarily zonal in several dimensions. More importantly, the International Court of Justice (ICJ) indicated in the 1951 *Anglo-Norwegian Fisheries* case, maritime boundaries have an international character:

> The delineation of sea areas has always an international aspect; it cannot be dependent merely upon the will of the coastal state as expressed in its municipal law. Although it is true that the act of delimitation is necessarily a unilateral act, because only the coastal state is competent to undertake it, the validity of the delimitation with regard to other states depends upon international law.[11]

For delimitation purposes, the creation of a zone offshore involves a consideration of three factors: (1) the basis from which to measure the seaward limits; (2) the seaward limit; and (3) the lateral limit between opposite or adjacent states. The outward edge of the seaward limit of the zone creates a boundary with the international community, unless as in a narrow body of the sea, delimitation between opposite states does not leave an area of high seas. Another zonal dimension of a maritime boundary exists because the surface and water column in the ocean can have a different legal status than the seabed and subsoil. For example, an offshore lateral boundary between two states in the territorial sea would cut vertically through the surface, water column, seabed, subsoil and airspace, while the same boundary on the continental shelf would cut through only the seabed and subsoil. On land, international boundaries delimit territorial sovereignty for all purposes; in the ocean, boundaries must also determine the limited sovereign rights corresponding to the legal status of the maritime zone as well.[12]

LITICAL GEOGRAPHY 7 (1963); Kristoff, *The Nature of Frontiers and Boundaries*, 49 ANNALS A. AM. GEOG. 269-82 (1959). *See generally* Hall, *The International Frontier*, 42 AM. J. INT'L L. 42 (1948).

11. Fisheries (U.K. v. Nor.), 1951 I.C.J. 116, 132 [hereinafter cited as *Anglo-Norwegian Fisheries*].

12. Regarding the demarcation of maritime boundaries, however, with the exception of a shoreline base, neither seaward limits nor lateral boundaries can be demarcated in a practical manner—even though technology makes possible a linear demarcation of

Prior to UNCLOS III, the zones which international law recognized as falling within coastal state jurisdiction were internal waters, territorial seas, contiguous zones and the continental shelf.[13] The limits to the zones, however, never were clearly established, and were the subject of varying state practices. UNCLOS III, as well as recent state practice, has added a new type of ocean zone—either multifunctional, such as the proposed exclusive economic zone (EEZ), or unifunctional, such as an exclusive fishing zone. A review of maritime boundary-making, therefore, involves a consideration of the following: (1) the baseline for measuring seaward limits; (2) the limits of internal waters; (3) the seaward limits of the territorial sea, contiguous zone, continental shelf, and the various functional zones; and (4) the lateral boundaries between opposite and adjacent states.

Though the development of maritime boundary-making has resolved many of the associated technical problems, there are many issues left to be resolved of a political, legal, and conceptual nature.[14] A large body of jurisprudence regarding maritime boundaries has not yet developed nor have political geographers treated the matter of offshore boundaries at the theoretical level at which they have accorded land boundaries. Nonetheless, before considering the nature or function of ocean boundaries, it is important to look at both the existing legal frame of reference and the current matters of practice.

The current legal frame of reference is found in state practice prior to 1945, the Truman Proclamation on the Continental Shelf of 1945,[15] the 1958 Geneva Conventions on the Law of the Sea,[16] and the subsequent rulings of both the ICJ and the Court of Arbitration.[17] Much understanding can also be gained from a review of the deliberations of the International Law Commission (ILC) in the 1950s, and from the commentaries and proposals by various states leading up to the drafting of the 1958 Conventions.[18] The development of a theory of boundary-making also is influenced by practice arising out of negotiated agreements between states subsequent to

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limits through buoys and range marks on shore, as well as bottom anchored or implanted electronic and acoustic devices.

13. *See generally supra* note 3.

14. *See generally* Hodgson & Cooper, *The Technical Delimitation of a Modern Equidistant Boundary*, 3 OCEAN DEV. & INT'L L.J. 361 (1975-76).

15. Proclamation No. 2667, 3 C.F.R. 67 (1945), *reprinted in* 59 Stat. 884 (1945).

16. *See supra* note 3.

17. *See infra* notes 200-05 and accompanying text.

18. The ILC was established by the United Nations to study, debate, and promote the development and codification of international law. Its members were elected by the General Assembly. Refer, for examples, to Summary Records of the 39th Meeting, [1950] 1 Y.B. INT'L L. COMM'N, U.N. Doc. A/CN.4/SER.A/1950; *see also* Rhee, *Sea Boundary Delimitation Between States Before World War II*, 76 AM. J. INT'L L. 555-88 (1982) (an excellent review of the debate prior to 1945).

the Conventions, and by the trend toward claiming unifunctional or multifunctional resource zones, a practice now reflected in the exclusive economic zone (EEZ) provisions of the LOS Convention.[19]

A complete study of boundaries from a theoretical viewpoint should consider the types of maritime boundaries and their functions, the methods by which they are delimited, and the process of delimitation. For purposes of this Article, however, discussion will center on type and function. It is suggested that boundaries in the ocean are of two main categories—spatial[20] or functional[21]—in the sense that they define spatial or functional areas or zones recognized in international law. The criteria for each of these categories is found in the legal framework referred to immediately above and which will be discussed further in this Article. A third boundary category, although a sub-category of functional boundaries, exists which is sufficiently distinctive at this point to be mentioned separately. These can be termed resource administration boundaries.[22] These boundaries are established for purposes of joint management of resources by two or more states in transboundary regions. The criteria for these boundaries do not yet have a clear validity in international law as they are normally the subject of bilateral relations rather than multilateral deliberation.

Spatial Zones

The Concept

As nation-states first began competing for the use of the ocean, location and space were the significant factors in boundary determination. Competition took on extreme proportions when the great sea powers of the fifteenth and sixteenth centuries claimed whole oceans, and it remained extreme when the first maritime boundaries were drawn about the shallow coastal belts on the basis of contiguity. Nations had to know where their limits of sovereignty lay. Within the first spatially located and bounded area of the ocean—the territorial sea—within "cannon-shot" range, a coastal nation could control fishing activities, defend its shores, and organize its ports and customs systems.[23]

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19. LOS Convention, *supra* note 5, arts. 55-75.
20. *See infra* text accompanying notes 23-85.
21. *See infra* text accompanying notes 86-199.
22. *See infra* text accompanying notes 172-99.
23. Out of the religious and political strife culminating in the Reformation was born the legal and political concept of territorial sovereignty, which became central to

Spatial boundaries are those which define or set apart certain physical areas of the globe along political lines; in international law, spatial boundaries are lines of demarcation between different legal systems.[24] It has been suggested that there is a psychological need in man to draw sharp boundaries.[25] Historically, the pattern of state acquisition of territory has been to proclaim sovereign control for all purposes over artificially determined spatial entities. This was the basis for the theory of land boundary delimitation, and it has been described as "tribunalistic in form, and sectional in its effect, bringing out the divisiveness of the human race."[26] Thus, when men ventured to claim specific areas of the ocean, the theory that coastal waters were a continuation of the adjoining state and therefore subject to its sovereignty supported their acquisitions.[27]

The attitudes towards maritime boundary-making and the current legal frame of reference were crystallized at a time when man's focus on the ocean as territory was limited to the nearby coastal waters. This area of the ocean was subject to very few, but very definitive, claims, such as security, transportation, and fishing.[28] The functions of a maritime boundary at that point were relatively simple—the initial attitude towards maritime boundary concepts derived in large part from land-based practice. This idea of the dominance of the land over the adjacent ocean areas has always governed man's perspective of the ocean. As stated in the *Anglo-Norwegian Fisheries* case, "[i]t is the land which confers upon the coastal state a right to the waters off its coast."[29]

Because states are territorial organizations, the interactions are es-

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the nationalist movement. For a concise review of this period in the seventeenth century, see J. BRIERLY, THE LAW OF NATIONS 1-40 (6th ed. 1963). The concept of sovereignty was considered by the arbitrator in Island of Palmas (U.S. v. Neth.) 2 R. Int'l Arb. Awards 829, 838 (Perm. Ct. Arb. 1928), *reprinted in* 22 AM. J. INT'L L. 867, 875 (1928): "Sovereignty in the relations between States signifies independence. Independence in regard to a portion of the globe is the right to exercise therein, to the exclusion of any other State, the functions of a State."

24. *See* Spykman, *Frontiers, Security and International Organizations*, 32 GEOGRAPHICAL REV. 436 (1942). Attaining stability and finality in relations between states is one of the primary objects of international boundary-making. For a discussion of this principle of boundary delimitation, see Concerning the Temple of Preah Vihear (Cambodia v. Thailand), 1962 I.C.J. 4, 34 (Judgment of June 15); *see also* S. SHARMA, INTERNATIONAL BOUNDARY DISPUTES AND INTERNATIONAL LAW (1976).

25. Strassoldo, *supra* note 1, at 85.

26. *See* J. GOTTMAN, THE SIGNIFICANCE OF TERRITORY (1973).

27. The principle of the freedom of the seas had been confirmed by the beginning of the nineteenth century following the debate between the famous publicists, Hugo Grotius and John Seldon. Although the Grotius argument prevailed, the idea was conceived that the sea, along with the land, was susceptible to private ownership. Moreover, the concept of a maritime belt around the coast also emerged from the debate. Notably, the term "territorial sea" was coined by an Italian lawyer, Alberico Gentili in 1605. *See* Fenn, *Origins of the Theory of Territorial Waters*, 20 AM. J. INT'L L. 465, 478 (1926).

28. C.J. COLOMBOS, INTERNATIONAL LAW OF THE SEA 147-68 (6th ed. 1972).

29. *Anglo-Norwegian Fisheries*, 1951 I.C.J. at 133.

sentially between each coastal state and its opposite or adjacent neighbor, and, with respect to seaward limits, between each coastal state and the international community. Boundaries to delimit spatial zones are artifically imposed to circumscribe a physical area, and are, by definition, mutually exclusive and political in character. In the ocean, spatial limits of state sovereignty are marked by the low-water line or by baselines defining the extent of internal waters and the beginning of territorial seas, and by the outer limit and the lateral boundaries of the territorial sea. Boundary functions in the territorial sea can be termed omnifunctional because, subject to the international rule of innocent passage, state sovereignty is supreme within this area. The territorial sea and internal waters are the only true spatial ocean areas defined by boundaries since they are the only part of ocean space which is totally dominated, both physically and politically. One must observe the distinction between zones and boundaries, as an obvious spatial component to boundaries which delimit functional zones exists as well. As these do not define space on the basis of a claim to absolute sovereignty, however, the criteria for functional boundary-making must be examined separately. This Article will examine boundaries which delineate the various recognized spatial and functional ocean zones by looking at the purpose each serves in the scheme of coastal-state offshore jurisdiction.

Law and State Practice

Baseline for seaward limits

As states began to lay claim to the territorial seas off their coasts, both the breadth and the point on the coast from which the sea was to be measured were in doubt and subject to different state practices. Methods of locating a baseline varied among states and included, among others, the high or low water mark, the limits of navigable depths, and the depth to which coastal batteries could be erected.[30] Eventually, state practice settled on a method whereby the low water line following the sinuousities of the coast deliniated the territorial sea. This practice was accepted prior to 1951 except where an indentation, such as a bay, called for a straight baseline across its mouth.[31]

Norway deviated from this basic formula by traditionally applying straight baselines to rugged parts of its southern coast. In the 1951

30. H. LAUTERPACHT, OPPENHEIM'S INTERNATIONAL LAW 443-44 (7th ed. 1948).
31. *See* C.J. COLOMBOS, *supra* note 28, at 113.

Anglo-Norwegian Fisheries case,[32] the ICJ approved such practice in certain circumstances. In that case, Norway had legislated a series of straight baselines along its coast which was heavily indented and fringed by numerous islands. The lines did not follow the coast but instead linked points on the mainland promotories or on islands some distance out to sea. The waters landward of the lines were claimed as internal waters. The ICJ upheld the validity of these lines both on historic grounds and also as consistent, under the circumstances, with international law.[33] By 1951, therefore, it could be argued that international law had recognized that a territorial sea and any contiguous zone seaward, if such were claimed, could be measured either from the low water mark, from acceptable straight baselines drawn across the mouth of a bay, or from straight baselines as drawn in the unique circumstances described in the *Anglo-Norwegian Fisheries* case.

In 1956 the International Law Commission (ILC) submitted a report to the General Assembly of the United Nations which was to form the background and framework for the 1958 and 1960 Conferences on the Law of the Sea.[34] In it the ILC recommended that the low water line should be the baseline, except where circumstances existed as contemplated by the reasoning in the *Anglo-Norwegian Fisheries* case.[35] The 1958 Convention on the Territorial Sea and the Contiguous Zone (Territorial Sea Convention)[36] did achieve some certainty with regard to baselines by, in effect, codifying the principles stated in the *Anglo-Norwegian Fisheries* case—principles which have not been changed by the LOS Convention.[37]

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32. *Anglo-Norwegian Fisheries*, 1951 I.C.J. 116.

33. The judgment found:

(1) if geographically a fringe of islands forms a whole with the mainland, it may be treated as part of the mainland coast for purposes of delimiting territorial waters;

(2) the governing principle is that the belt of territorial sea must follow the 'general direction of the coast';

(3) the baselines to be drawn in such a case (i) must not 'depart appreciably from the general direction of the coast'; and (ii) they must be 'sufficiently closely linked to the land domain to be subject to the regime of internal waters.'

J. BRIERLY, *supra* note 23, at 138.

34. UNCLOS I failed to achieve agreement on a number of points—in particular, the breadth of the territorial sea and the validity of fisheries zones. A second United Nations Conference on the Law of the Sea (UNCLOS II) was convened in 1960 to deal with those gaps, but it did not meet with success.

35. *See supra* notes 33-34 and accompanying text.

36. *See* Territorial Sea Convention, *supra* note 3, arts. 3-13.

37. LOS Convention, *supra* note 5, art. 7.

Internal waters

Coastal-state sovereignty over certain enclosed areas of the sea, such as harbors and bays, has always been accepted. Until the 1958 Geneva Conference, the question of what could constitute a bay was not settled in international law apart from the question of *historic bays*.[38]

The issue regarding the status of bays—other than historic bays—has centered on the permissible length of the line drawn to enclose the bay. The most practical length accepted was six miles, because it was twice the generally recognized three-mile width of the territorial sea. Some states, however, supported a ten-mile baseline, and others proposed any length as long as the line was drawn from headland to headland.[39] Waters within the line drawn to enclose a bay are internal waters; the territorial sea is measured from these lines rather than from the coastline of the bay.

The 1958 Territorial Sea Convention[40] established a maximum width of twenty-four miles for straight baselines enclosing internal waters other than historic bays. In a legal sense these waters are as much a part of the territory of a state as is its land area—no right of innocent passage exists for shipping. The Territorial Sea Convention also recognized as internal waters those areas within baselines drawn along a coast heavily indented and fringed with islands.[41] In such waters, unless they met all criteria of the 1951 *Anglo-Norwegian Fisheries* case, the right of innocent passage does prevail.[42] These provisions also have not been altered by the LOS Convention.[43]

Territorial sea

Once states had acknowledged the idea of a territorial sea about the coast, they had to address themselves to the matter of its breadth. Territorial sea limits were varied over history and based on several theories: the line-of-sight doctrine, the cannon-shot rule, and the marine league doctrine.[44] Although earlier writers had consid-

38. The distinction for historic bays was that the state's claim to sovereignty was based on prescriptive grounds, where it could show evidence of long and consistent dominion over the bay which had been accepted by the majority of nations.

39. P. JESSUP, THE LAW OF TERRITORIAL WATERS AND MARITIME JURISDICTION 355-442 (1927).

40. *See* Territorial Sea Convention, *supra* note 3, art. 7, para. 5.

41. *Id.* art. 5, para. 2.

42. *Id.* art. 5, para. 1.

43. LOS Convention, *supra* note 5, arts. 7 & 8.

44. *See generally* S. SWARZTRAUBER, THE THREE MILE LIMIT OF THE TERRITO-

ered the cannon-shot rule, it was Van Bynkershack, a Dutch jurist who wrote that "the control of the land over the sea extends as far as a cannon will carry for that is as far as we seem to have both command and possession."[45] The line-of-sight doctrine—that jurisdiction extended to all points within sight of the coast—developed during the same period but never received the wide acceptance accorded the cannon-shot rule. Both of these theories were factors in the main reason for claiming territorial seas, namely state security.

The marine league doctrine is attributable to the Danes and Norwegians who began declaring that their territorial seas was six, then four, leagues off their coasts for security and protection of their fishery. In the eighteenth century, conflict over these claims with Great Britain, France and Sweden finally resulted in a reduction of the claim to one marine league. By the nineteenth century many states, including Great Britain, had adopted the marine league as the breadth of the territorial sea—an area equivalent to three nautical miles.[46]

In 1794 the United States became the first country to adopt a three mile limit in its domestic laws. Admiralty courts of the early nineteenth century in Great Britain, France, and the United States, based their decisions on this three-mile limit, which later became recognized by international treaty.[47]

During the nineteenth century, Great Britain, as a primary sea power, adopted the relatively narrow three-mile limit as consistent with her freedom of navigation on the high seas. The three-mile limit was also established in British colonies throughout the world. Despite various deviation claims, the three-mile territorial sea generally was accepted by states until the early 1960s. It was never codified, although it was recorded by the 1930 Hague Conference as common state practice.[48] The ILC suggested a twelve-mile upper limit in its 1956 report but did not specify any specific limit between three and twelve miles.[49] The 1958 Territorial Sea Convention[50] failed to establish a fixed breadth for the territorial sea. The LOS Convention also does not establish a specific breadth, although it does stipulate a *maximum* seaward limit of twelve nautical miles measured from

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RIAL SEAS (1972).

45. C. VAN BYNKERSHOEK, DE DOMINO MARIS 42-43 (2d rev. ed. 1744).

46. *See* S. SWARZTRAUBER, *supra* note 44, at 44-50.

47. *Id.* at 59-61. The treaty between Great Britain and the United States concerned fishing rights on the east coast of Newfoundland and Nova Scotia. *See* Convention Respecting Fisheries, Boundary, and the Restoration of Slaves, Oct. 20, 1818, 8 Stat. 248, T.S. No. 112.

48. *See* C.J. COLOMBOS, *supra* note 28, at 103-06.

49. A. SHALOWITZ, SHORE AND SEA BOUNDARIES 207-08 (1962).

50. *See* Territorial Sea Convention, *supra* note 3, art. 3.

valid baselines.[51]

As use of the oceans increased, so too did the need to locate and define territorial limits spatially between coastal states, and between individual coastal states and the international community.

Delimitation between nations

Adjacent states are those sharing a common land boundary such as Canada and the United States. Opposite states are those separated by ocean waters such as France and the United Kingdom. As national claims expanded, the international community saw the need for an accepted doctrine regarding maritime boundary delimitation, not only with respect to the seaward limits of different zones, but between two or more states whose claims overlapped or abutted. Lateral boundaries between states serve to define offshore areas along political lines and are, therefore, spatial in effect whether the zones being defined are spatial or functional in nature.

As early as 1949, the ILC was given a mandate to consider questions relating to the Law of the Sea. In 1953 it commenced a study of certain draft articles it had prepared relating to the legal regime of the seas; one study being an inquiry into lateral boundaries between states in the territorial sea.[52] There was little historical precedent in the field. Nevertheless, a committee of experts agreed that the most satisfactory and equitable method of boundary delimitation was to draw the boundary between adjacent states using the equidistance method; for opposite states, they recommended using a median line which embodies the equidistance method.[53] It is of interest to note that the ILC considered, but rejected as general rules of law, the following techniques: drawing a line at right angles to the coast at a point where the land boundary reached the sea; continuing the land boundary; and drawing a line perpendicular to the general di-

51. LOS Convention, *supra* note 5, art. 3. Evolution of the concept of a territorial sea has led to international recognition that the area including the seabed and subsoil is as much under the sovereignty of the coastal state as is the land. The territorial sea concept was a development of international law; thus, it is limited in its territorial aspect only by international law principles such as the right of innocent passage for shipping. With that exception, the law and state practice respecting the territorial sea reflect the usual characteristics of sovereignty—the coastal state can do anything in the territorial sea that it can do on land.

52. Consideration of the Commission's draft report covering the work of its eighth session, [1956] 1 Y.B. INT'L L. COMM'N 288, 381 U.N. Doc A/CN.4/L.68/Add.3.

53. A median line is defined as "a line every point of which is equidistant from the nearest points on the baseline from which the territorial seas of each of the two states is measured." *See* Territorial Sea Convention, *supra* note 3, art. 12.

rection of the coast.[54]

The 1958 Conventions did, however, provide guidelines for delimitation of lateral boundaries. The Territorial Sea Convention provided that the delimitation of boundaries in these zones between opposite and adjacent states was to be by a median line, except in the territorial sea where historic title or other special circumstances necessitated a variation of this rule.[55]

With regard to lateral delimitation of the continental shelf, the ILC considered the recommendations made regarding the territorial sea, but indicated an awareness that the greater breadth of the shelf, using equidistance, could lead to potential inequities since errors would be magnified. Its first proposals, then, for continental shelf delimitation were that settlement be by negotiation, or, failing agreement, by compulsory arbitration. Its final proposal was to employ the same principle for continental shelf delimitation as was employed for the territorial sea—the equidistance method.[56] Eventually, the formula in article 6 of the 1958 Convention on the Continental Shelf (Continental Shelf Convention) for delimiting the boundaries between opposite states on the same continental shelf stated that delimitation should be done by agreement. Failing agreement, article 6 stated that the boundary should be the median line.[57] For adjacent states on the continental shelf when there is no agreement, the equidistance principle is to apply. In all situations, however, the prescribed method of delimitation is subject to the existence of special circumstances—a term not further defined by the Conventions. Thus, for marine boundaries between states, the Conventions confirmed the state practice of equidistance subject to historic title, added the new element of "special circumstances," but did not satisfactorily define the seaward limits.

The new LOS Convention, opened for signature in December 1982, does not provide a clear formula for seaward limits and does not alter the principles for lateral delimitation. The outer limit is now measured seaward 200 nautical miles; however, if the shelf is wider, the outer line can extend up to 350 nautical miles or 100 nautical miles from the 2500-meter isobath.[58] It may extend further

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54. Report of the International Law Commission to the General Assembly, 11 U.N. GAOR Supp. (No. 9), U.N. Doc. A/3159 (1956), *reprinted in* [1956] 2 Y.B. INT'L L. COMM'N 253, U.N. Doc. A/CN.4/SER.A/1956/Add.1; *see also* U.S. DEP'T OF STATE, PUB. NO. 7825, 4 DIGEST OF INTERNATIONAL LAW 294-333 (M. Whiteman ed. 1965) [hereinafter cited as 4 Whiteman].

55. *See* Territorial Sea Convention, *supra* note 3, arts. 12 & 24. This Convention confirmed the state practice of equidistance subject to historic title, while additionally considering "special circumstances."

56. 4 Whiteman, *supra* note 54, at 904-06.

57. Continental Shelf Convention, *supra* note 3, art. 6.

58. LOS Convention, *supra* note 5, art. 5.

to submarine elevations which are natural components of the continental margin.[59]

With regard to delimitation of the continental shelf between opposite or adjacent coasts, the LOS Convention maintains the primary thrust of article 6 of the Continental Shelf Convention and the resulting adjudications stating that delimitation "shall be effected by agreement on the basis of international law . . . in order to achieve an equitable solution."[60] Thus, the LOS Convention maintains the continuum which is apparent in international maritime boundary delimitation through custom, convention, and adjudication.

The matter of delimitation between opposite and adjacent states has been the subject of international third party adjudication in recent years. In the 1969 *North Sea Continental Shelf* cases,[61] the ICJ considered maritime boundary delimitation in a dispute over lateral boundaries on the continental shelf between the adjacent states of Germany, Denmark and the Netherlands. The court was asked only to state the principles by which delimitation was to take place; it was not asked to prescribe the actual boundary. The court decided that the equidistance principle was not an emerging rule of customary international law which had been codified in the Continental Shelf Convention,[62] nor had it become so subsequently. Instead, the court emphasized the Truman Proclamation[63] concept of the continental shelf—that it was a "natural prolongation" of the adjacent land territory—and in apportioning claims over the continental shelf, it determined that each state must receive that portion of the shelf which is the most natural extension of its territory, even if it was closer to another state.[64] The court stated that delimitation should be effected by "agreement" in accordance with "equitable principles" taking into account all "relevant circumstances" and leaving as much as possible to each party all those parts of the continental shelf that constitute a natural prolongation of its land territory into and under the sea without encroaching on the natural prolongation of the land territory of another.[65]

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59. *Id.* art. 76.
60. *Id.* art. 83, para. 1.
61. North Sea Continental Shelf (W. Ger. v. Den.; W. Ger. v. Neth.), 1969 I.C.J. 3 (Judgment of Feb. 20).
62. *See* Continental Shelf Convention, *supra* note 3, art. 6.
63. *See* Proclamation No. 2667, *supra* note 15, at 68.
64. *North Sea Continental Shelf*, 1969 I.C.J. at 53, para. 101.
65. *Id.* at 47. The court added that during such negotiations the following factors should be considered:

What came out of this case was simply a set of guidelines to be followed in negotiating offshore boundaries; no substantive rules were laid down. In essence, delimitation was to be by agreement according to equitable principles. The court stated further that when there is no agreement and the areas claimed overlap, the areas are to be divided equally or placed under joint jurisdiction.[66]

The second important delimitation decision arose out of the inability of France and the United Kingdom to negotiate their continental shelf boundaries. The differences between this case and the 1969 case was that England and France, both parties to the Geneva Continental Shelf Convention, were bound by article 6. Furthermore, this was an arbitration case in which the parties asked the tribunal to actually draw the boundary.

The arbitration court rendered its decision in 1977.[67] The issue in the case involved the applicability of the equidistance principle prescribed by article 6 of the Continental Shelf Convention when islands are present within the area. Interpreting article 6, the court stated that the rule was really a combined "equidistance-special circumstances" rule, and not an equidistance rule with an onus on one party to show special circumstances.[68] The court said the purpose of the rule was to ensure that delimitation would be equitable, rather than to impose an inflexible application of equidistance. The court held that the presence of the islands was a special circumstance and decided the case on a variation of the strict median line by drawing an "equitable equidistance" line.[69]

Two further third-party adjudications were decided at about the same time, but neither developed nor clarified the principles arising out of the 1958 Conventions and subsequent boundary cases. In 1976 an interim decision was made by the ICJ in the *Aegean Sea Conti-*

(i) general configuration of the coast;
(ii) presence of special or unusual features;
(iii) physical structure and natural resources of the shelf area;
(iv) unity of deposits;
(v) a reasonable degree of proportionality of the respective coastlines; and
(vi) the effect, actual or prospective, of any other delimitation between adjacent states in the same region.

Id. at 50-54.

66. For an analysis of the judgment, see Grisel, *The Lateral Boundaries of the Continental Shelf and the Judgment of the International Court of Justice in the North Sea Continental Shelf Cases*, 64 AM. J. INT'L L. 562 (1970).

67. Concerning the Delimitation of the Continental Shelf (U.K. v. Fr.), 18 R. Int'l Arb. Awards 3 (1977).

68. *Id.* para. 68.

69. For an analysis of the Anglo-French Arbitration Decision, see McRae, *Delimitation of the Continental Shelf Between the United Kingdom and France: The Channel Arbitration*, 1977 CAN. Y.B. INT'L L. 173, and Colson, *The United Kingdom-France Continental Shelf Arbitration*, 72 AM. J. INT'L L. 95 (1978).

nental Shelf case[70] between Greece and Turkey. However, it did not provide helpful discussion nor consensus on maritime delimitation principles. The parties' arguments involved preliminary matters of interim protection and court jurisdiction. In its decision, the ICJ concluded that it did not have jurisdiction to resolve the matter.[71] In 1977, an arbitration court rendered an award in the *Beagle Channel* case[72] involving the delimitation of the Beagle Channel between Chile and Argentina. The agreement to go to arbitration provided that the case was to be decided "in accordance with principles of international law."[73] The case concerned the effect of islands in determining a boundary. Nevertheless, it dealt mainly with the interpretation of an 1881 Treaty of Delimitation, and thus has been characterized as dealing with title to territory rather than location of a boundary.[74]

Recently, the ICJ handed down two more maritime boundary adjudications—the *Tunisia/Libya Continental Shelf* case[75] and the *Gulf of Maine* case.[76] In the *Tunisia/Libya Continental Shelf* case, the court was asked both to determine the rules and principles of international law applicable to delimitation of the disputed continental shelf region, and to take into account not only equitable principles and relevant circumstances but also the "new accepted trends in the Third Conference on the Law of the Sea."[77] The parties were to settle the boundary based on the court's finding as to the applicable rules and principles to be applied. The court was reluctant to apply new trends which were not crystallized by customary law; thus, its decision, taking into account all relevant circumstances, did not substantially alter the normal rule of delimitation in accordance with equitable principles. Because the court did not further refine the concept of equitable principles into any strict rule of law, it clearly reaf-

70. Aegean Sea Continental Shelf (Greece v. Turk.), 1976 I.C.J. 3 (Interim Protection Order of Sept. 11).

71. *Id.* at 15.

72. Beagle Channel (Chile v. Argen.), Decision of the Court of Arbitration of Feb. 30, 1977, *reprinted in* 17 I.L.M. 634 (1978).

73. Agreement for Arbitration Concerning the Region of the Beagle Channel, July 22, 1971, Argentina-Chile, *reprinted in* 10 I.L.M. 1182 (1971).

74. *See* Shaw, *The Beagle Channel Arbitration Award*, 6 INT'L REL. 415 (1978).

75. Concerning the Continental Shelf (Tunisia v. Libyan Arab Jamahiriya), 1982 I.C.J. 18 (Judgment of Feb. 24), *reprinted in* 21 I.L.M. 225 (1982) [hereinafter cited as *Tunisia/Libya Continental Shelf*].

76. Concerning Delimitation of the Maritime Boundary in the Gulf of Maine Area (Can. v. U.S.), 1984 I.C.J. 246 (Judgment of Oct. 12), *reprinted in* 23 I.L.M. 1197 (1984) [hereinafter cited as *Gulf of Maine*].

77. Compromise, Libya-Tunisia, Dec. 1, 1978.

firmed the fundamental norm first stated in the 1969 *North Sea Continental Shelf* cases.[78] It did, however, highlight a number of circumstances and principles relevant to maritime delimitation.

Most significantly, the court emphasized that in the absence of agreement between the parties, its duty was to apply equitable principles as part of international law, and not to make a decision *ex aequo et bono* in order to effect an equitable sharing of the area resources.[79] Economic considerations therefore, were not taken into account. The court also indicated that it would give considerable weight to the parties' prior conduct when the conduct demonstrated that a consensus regarding location of the boundary had existed for a long period of time.[80] Finally, the court indicated it would give weight to the maxim "the land dominates the sea"[81] when delimitation corresponds to the general geographic relationship between the coasts and submerged areas as the basis for the coastal-state interests.[82]

In the most recent decision, involving the Gulf of Maine, the parties asked a special chamber of the ICJ to delimit a single maritime boundary between their continental shelf and fisheries zones.[83] The special chamber applied both the criteria of physical and political geography and the criteria of proportionality of coastline length, by attempting to divide the disputed area equally. As the parties requested, the court actually drew the boundary line rather than only giving an indication of the applicable rules.[84] The parties, as agreed, have accepted this line as binding.[85]

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78. *See supra* notes 61-66.

79. *Tunisia/Libya Continental Shelf*, 1982 I.C.J. at 60, para. 71.

80. *Id.* at 70-71, para. 95.

81. *Id.* at 61, para. 73 (quoting *North Sea Continental Shelf*, 1969 I.C.J. at 51, para. 96).

82. *See Tunisia/Libya Continental Shelf*, 1982 I.C.J. at 61, para. 74; *see also* Feldman, *The Tunisia-Libya Continental Shelf Case: Geographic Justice or Judicial Compromise*, 77 AM. J. INT'L L. 219 (1983).

83. Article 2 of the Special Agreement Between Canada and the United States dated March 29, 1979, asked the chamber to decide in accordance with the applicable principles and rules of international law the following question:

> What is the course of the single maritime boundary that divides the continental shelf and fisheries zones of Canada and the United States of America from a point in latitude 44°11'12" N, longitude 67°16'46" W to a point to be determined by the Chamber within an area bounded by straight lines connecting the following sets of geographic coordinates: latitude 40° N, longitude 67° W; latitude 40° N, longitude 65° W; latitude 42° N, longitude 65° W?

See Gulf of Maine, 1984 I.C.J. at 253. This was the first case before the court dealing with the question of a single maritime boundary to divide between nations both a continental shelf and a water column in a 200 nautical mile economic zone. It was also the first delimination judgment since the LOS Convention was opened for signature.

84. *Id.* at 345, para. 243.

85. As in previous cases, the court did not clear up the field of international maritime boundary delimitation by defining a substantive rule of law for future disputes. The designated boundary will add some certainty to the relations between Canada and the

Functional Zones

The Concept

The recognition of global interdependence based on economic, political, and environmental needs is a reality which is highlighted with respect to ocean uses in the 1980s and is the background to recent developments establishing functional jurisdiction in the marine environment. A distinction must be made between functional jurisdiction and functionalism as a political theory. Functionalism is an approach to organizing human society which emphasizes the satisfaction of its common needs and cuts across arbitrary territorial lines of jurisdiction to achieve it. It is a cooperative approach to management which focuses on needs and purposes rather than on political status. By definition, functionalism views the nation-state doctrine based on territorial sovereignty as inappropriate for the resolution of international conflicts over global issues and, therefore, inadequate for the fulfillment of individual needs.[86] Both concepts are central to the discussion of functional offshore jurisdiction and the nature of the boundaries which delineate such zones.

Unlike sovereign territorial jurisdiction, functional jurisdiction is not absolute. Instead, it provides control for a limited purpose or purposes, and can be unifunctional or multifunctional in nature. The exclusive element held by the coastal state includes only the activities and purposes for which the jurisdiction is established and recognized. By contrast, territorial jurisdiction covers all resources and all activities. In a functional zone, other nations may carry out activities in the same area which are different from those specific activities for which the functional jurisdiction is claimed. For example, in a 200-mile exclusive fishing zone off a coastal state, other nations will have the high seas right of navigation beyond the territorial waters but within the fishing zone boundaries. Thus, by definition, zones which have a functional jurisdiction in the ocean will only exist outside the territorial limits of a coastal state.

The structure and scope of a functional zone—such as a fisheries

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United States; however, the parties still must agree on arrangements which will accommodate their mutual and their exclusive interests in managing the important ocean area, and in managing the resources which are now divided by a judicially drawn line on a map. *See generally* Christie, *Georges Bank—Common Ground or Continued Battle Ground?*, 23 SAN DIEGO L. REV. 491 1986.

86. *See generally* E. HAAS, BEYOND THE NATION STATE— FUNCTIONALISM AND INTERNATIONAL ORGANIZATION (1968); *see also* FUNCTIONALISM: THEORY AND PRACTICE IN INTERNATIONAL RELATIONS (A. Groom & P. Taylor eds. 1975).

zone—is determined by its needs. If the goal is optimum fisheries management, the zone will ideally be determined by consideration of the location and movement of different stocks, breeding and spawning areas. For a pollution control zone, the controlling body will require authority over all hazardous marine uses in an area where interactions might occur—authority extensive enough to permit effective offshore control. It is the functional needs based on the demands of the society which, when articulated, should "contain directions regarding the scope, level, and structure of the organization needed to address them."[87]

A functional approach to jurisdiction in the oceans, therefore, will demand that boundaries drawn to allocate specific jurisdictions take into account not only location but also scientific and ecological realities. Boundaries drawn on a functional basis anticipate purposes and consequences; spatial boundaries, by definition, do not.[88]

While a state must know the territorial extent of its sovereignty, nations today are less interested in the ocean for security than they are for its economic opportunities. Competition between coastal states is resource-oriented rather than area-oriented. New opportunities in ocean resource development have promoted the concept of a functional division of ocean space. How is a functional division different from a spatial division? A functional boundary, although applied to physical reality encompassing space, is really an abstract or analytical entity. But a functional zone also has a necessary spatial element. In moving towards the establishment of a functional ocean boundary, it is initially necessary to overlook the spatial dimension to arrive at a "first approximation"[89] of the logical functional zone. Functional zones are located by the activities sought to be managed; as the activities involved and the managerial requirements are de-

87. FUNCTIONALISM: THEORY AND PRACTICE IN INTERNATIONAL RELATIONS, *supra* note 86, at 16.

88. The management and conservation of fish stocks serves as an example of this distinction. With few exceptions, the seaward limits of the narrow territorial seas have not realistically coincided with fishery needs—most fish stocks come and go over the 3 to 12 mile territorial boundary limit, a point at which the coastal state has no jurisdiction to act in the best interests of the fishery. An expansion of coastal state jurisdiction to 200 miles is geared more to the managerial requirements of fishery zones; therefore, the seaward extension is a functional one. Note, however, that the conservation and management rationale for a 200 mile zone is not itself entirely scientifically valid—because stocks still exist which straddle that limit, the desired functional result may not be obtained. This is so because the selection of the functional zones of jurisdiction in the ocean is also a political exercise. This underscores the earlier statement—that the theory of functionalism is linked with the notion of functional jurisdiction—because an international arrangement may be required for correlation with activities outside the nationally designated functional ocean zone in order to achieve optimum management of the ocean resource involved.

89. Jones, *Boundary Concepts in the Setting of Place and Time*, 49 ANNALS A. AM. GEOG. 255 (1959).

fined and articulated, the spatial definition may, for operational purposes, be established. Clearly, an interdependence exists between the spatial and functional aspects of the marine environment when carving out zones in the ocean for long-term management purposes.

Boggs stated that "nature abhors fixed boundary lines"[90] and it is true that natural and ecological forces fight against the type of formal boundaries Boggs had in mind. Systems such as the ocean have their own natural boundaries where the spatial extent is determined by functional activities and oceanographic processes. The spatial and functional concept of a zone interact in a system such as the ocean; thus, ocean boundaries must recognize the spatial effect of the natural system under investigation. These features require a new attitude toward maritime boundary-making. The ocean areas now recognized and based on a functional concept are the following: the contiguous zone, the continental shelf, fishing zones, pollution control zones, and resource administration zones.[91] Emerging as a result of UNCLOS III is the concept of a multifunctional EEZ.[92] Should the treaty come into force, the "Area,"[93] the deep seabed beyond national jurisdictions, also will be a functional zone.

As will be seen, ocean boundaries delimiting an area of functional jurisdiction are not modern concepts. The functional quality of such boundaries, however, is modified by an operational element based on the coastal state's desire to acquire territory. In this way, they do not conform to the theory of functionalism; but they can be properly designated as functional because they are distinct from strictly political or spatial boundaries which simply define limits of national territorial sovereignty.

In its pure form, functionalism is a global scheme of political integration. With regard to ocean boundaries, only the Area as defined in the LOS Convention would be such a functional zone. In view of the realities of international politics, such a grand scale of a global management for ocean uses and resources cannot be truly considered. Nations, however, can adopt a functional approach to ocean uses within the limits of their own national jurisdiction, and where

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90. Boggs, *Delimitation of the Territorial Sea*, 24 AM. J. INT'L L. 546 (1930). The author was Chief Geographer at the United States Department of State and is well known for his many works on international boundaries on both land and sea. *See also* S. BOGGS, INTERNATIONAL BOUNDARIES—A STUDY OF BOUNDARY FUNCTIONS AND PROBLEMS (1940).

91. *See infra* text accompanying notes 95, 106, 122, 143 & 174.

92. LOS Convention, *supra* note 5, arts. 55-75.

93. *Id.* arts. 136-49.

ocean management needs call for it, on a bilateral or multilateral regional basis, and consistent with a functionalist approach. The success of regional arrangements is a factor in the future process of boundary delimitation and ocean management. These processes will have to be worked out under the emerging regime of the Law of the Sea on a regional and subregional level. Functionalism is an approach which can consider local, national, regional and global needs. It is now the basis for establishing resource administration zones and is a theme which should be integrated with the criteria for establishing offshore boundaries beyond the territorial sea.[94] It is also a central theme in the theory of ocean management.

Law and State Practice

Contiguous zone

The theory of free ocean use outside the territorial sea became subject to certain recognized exceptions in a belt of water adjacent to, and extending seaward from, the territorial sea. Initially during a time of war, a coastal state would stop and search vessels nearing its coast. This activity grew into state enforcement of various other specific functions; thus, a special jurisdiction became accepted. The contiguous zone was the first recognized zone of functional jurisdiction in the sea. It was invoked "to honor many various, occasional and particular exercises of authority by coastal states beyond the territorial sea."[95]

The term contiguous zone was not used until the Hague Convention of 1930. The concept, however, goes back to the middle of the eighteenth century when it was introduced by Great Britain which had passed a series of Hovering Acts between 1736 and 1876.[96] These Acts authorized the interception of smugglers and seizure of contraband on the high seas near the coast but outside the territorial sea. Great Britain's exercise of this jurisdiction involved various distances—from two marine leagues to 100 marine leagues depending on the seriousness of the smuggling problem at the time. The Customs Consolidation Act of 1876[97] restricted customs jurisdiction to British vessels within three leagues of the coast. In the meantime,

94. The idea and operation of resource administration zones will be developed later in this Article. *See infra* notes 174-200 and accompanying text.

95. M. McDOUGAL & W. BURKE, THE PUBLIC ORDER OF THE OCEAN 75 (1962). The authors further expand on this functional feature of the contiguous zone: "The real function of the contiguous zone concept has been to serve as a safety valve from the rigidities of the territorial sea, permitting the satisfaction of particular reasonable demands through exercise of limited authority which does not endanger the whole gamut of community interests." *Id.* at 76.

96. *See* S. SWARZTRAUBER, *supra* note 44, at 70-71.

97. 39 & 40 Vict., ch. 36.

however, similar laws extending customs jurisdiction beyond the territorial sea were enacted by other countries desiring to follow the British lead.[98]

In 1779, the United States followed the British example and provided for the right to board and search any vessel bound for the United States and found within twelve miles of the coast.[99] In 1922, Congress broadened the scope of the Tariff Act to apply not just to customs and revenue but also to breaches of other United States laws within the zone.[100] It was mutually understood, however, that where these laws were being imposed outside the territorial sea, the waters in the zone were still considered high seas under international law. Consequently, jurisdiction by the United States over vessels from other nations on the high seas was not countenanced unless it was acceded to by the other nations. Thus, in the absence of international law, convention, or specific treaty, successful enforcement depended on the lack of objection from other states. Regular imposition of such jurisdiction in a zone beyond the territorial sea developed without international opposition to such a degree that in 1927, Jessup wrote regarding these zones: "There seems, however, to be sufficient evidence of acquiescence in reasonable claims to warrant the assertion that a customary rule of international law has grown up under which such acts may be held legal if they meet the test of reasonableness."[101]

Because of the continuing uncertainty over the breadth of the territorial sea, the contiguous zone was traditionally measured from the shoreline or baseline. At the 1930 Hague Codification Conference, the Preparatory Committee recognized that past state practice generally had adopted a twelve mile contiguous zone.[102] The ILC also adopted that twelve mile breadth in its recommendation to the United Nations in 1956. In 1958 the contiguous zone was codified in article 24 of the Territorial Sea Convention.[103]

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98. Spain declared a six mile zone in 1760; France declared a 12-mile zone in 1794; Portugal claimed six miles in 1911; and Norway claimed 10 miles in 1921. *See generally* P. JESSUP, *supra* note 39, at 19-42.

99. *See id.* at 80.

100. *Id.* at 213-14.

101. *Id.* at 95.

102. *See* C.J. COLOMBOS, *supra* note 28, at 103-05.

103. *See* Territorial Sea Convention, *supra* note 3, art. 24. In a zone of the high seas contiguous to its territorial sea, the coastal state may exercise the control necessary to:

(a) Prevent infringement of its customs, fiscal, immigration or sanitary regulations within its territory or territorial seas;

The LOS Convention provides that the contiguous zone has a maximum breadth of twenty-four nautical miles from the baseline from which the territorial sea is measured.[104] The contiguous zone, along with the continental shelf, fisheries conservation, and pollution zones, are all examples of functional zones in which a coastal state can exercise a specific authority while not precluding other traditional uses.

Continental shelf

Claims to the seabed and subsoil off the coast began with the claim to the territorial sea. By definition, sovereignty had always applied to the concept of territorial sea. Once approved by the international community, the concept of territorialism came to include the seabed and subsoil. Until this century, the ocean bed beneath the high seas was considered incapable of occupation by any state. Thus ocean bed had the same legal status as the high seas. Only in exceptional circumstances based on historical claim have limited areas of the seabed beyond the territorial sea been accepted as capable of occupation and entitled to recognition. An example is the pearl fisheries off the coasts of Ceylon and the Persian Gulf.[105] In one instance, an express international agreement was concluded regulating the use of the seabed beyond territorial jurisdiction, but no question of sovereignty was involved in this case.[106]

The subsoil of the seabed beyond territorial seas, however, has been considered different from the ocean bed. It has been seen as capable of occupation so long as the use poses no obstruction to navigation. A normal circumstance for instance, would be the case of mines tunnelled out from shore.[107] It has also been the practice of many coastal states to claim sedentary fisheries which lie on the seabed itself—justified either on the grounds that such fisheries were appurtenances of the coastal state or on the the grounds of prescription.[108]

Historically, the first formal measure to claim minerals beyond the territorial sea was the Anglo-Venezuelan Treaty of 1942 relating to

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(b) Punish infringement of the above regulations committed within its territory or territorial seas.

The contiguous zone may not extend beyond 12 miles from the baseline from which the breadth of the territorial sea is measured.

104. LOS Convention, *supra* note 5, art. 33.

105. *See* C.J. COLOMBOS, *supra* note 28, at 68.

106. *Id.* In 1923 Britain and France signed an agreement providing for the regulation of oyster fisheries.

107. An example of this is found in the Cornwall Submarine Mines Act, 1858, 21 & 22 Vict., ch. 109. For a review of similar legislation enacted in Canada, see G. LAFOREST, NATURAL RESOURCES AND PUBLIC PROPERTY UNDER THE CANADIAN CONSTITUTION 101-04 (1969).

108. G. LAFOREST, *supra* note 107, at 104.

the seabed beyond the territorial sea between Trinidad and Venezuela in the Gulf of Paria.[109] International law doctrine regarding the continental shelf is also of relatively recent vintage. Though the term "continental shelf" was geological in its origin, it subsequently became a legal term. The legal doctrine concerning the continental shelf which initiated a change in international law was the Truman Proclamation of 1945.[110] The Truman Proclamation was precipitated by technical developments which made it feasible to drill for hydrocarbons on the continental shelf beyond territorial limits. Anxious about its oil reserves, the United States declared that "the Government of the United States regards the natural resources of the subsoil and seabed of the continental shelf beneath the high seas but contiguous to the coast of the United States as appertaining to the United States, subject to its jurisdiction and control."[111] While the proclamation did not define continental shelf, an accompanying press release indicated that it consisted of the seabed out to one-hundred fathom depth.[112] The basic rationale was that the continental shelf was a natural extension of the land mass. Nonetheless, the United States claim was not to effect the high seas character of the superjacent waters.

The unilateral move by the United States, rather than being subjected to censure by the international community, began a chain reaction of similar claims around the world. Some nations went even further and claimed full territorial sovereignty to the edge of the continental shelf or to 200 miles regardless of the depth of water.[113] By the early 1950s, it was generally accepted in international law that a coastal state had the right to explore and exploit the resources of the continental shelf. The continental shelf was generally defined as that part of the ocean floor lying seaward of the territorial seas, as far as the abyssal depths. Nevertheless, state practice remained varied and confused until UNCLOS I.[114]

The Continental Shelf Convention[115] provided a legal/geological definition of the nature and extent of the shelf, the features of the coastal-state jurisdiction, and guidelines for lateral boundary delimi-

109. Treaty Relating to the Submarine Areas of the Gulf of Paria, Feb. 26, 1942, United Kingdom-Venzuela, 205 L.N.T.S. 122.
110. *See* Proclamation No. 2667, *supra* note 15, at 67-68.
111. *Id.*
112. 13 DEP'T ST. BULL. 484 (1945).
113. *See* C.J. COLOMBOS, *supra* note 28, at 70-82.
114. *See supra* note 3.
115. *See* Continental Shelf Convention, *supra* note 3, art. 1.

tation between states. The seaward extent of the continental shelf, however, remains unclear in both a scientific and legal sense. Article 1 describes the continental shelf as referring

> to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 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 . . . .[116]

Sovereign rights are granted exclusively to the coastal state for the purpose of exploring and exploiting natural resources,[117] subject to the right of other states to lay submarine cables or pipelines.[118] Because there is no interference with navigation or fishing, the superjacent waters retain their status as high seas.[119] The Continental Shelf Convention also codifies the traditional right to tunnel from the land, under the subsoil.[120]

The functional feature of the continental shelf as an ocean zone is its exploitability, which serves the purpose of bringing valuable mineral resources under coastal-state control. Yet it does not give a coastal state exclusive or absolute authority for all purposes and does not in itself effect the high seas character of the surface and water column above.

Fishing zone

Initially, claims by coastal states to exclusive fishing zones were linked to the measurement of the territorial sea, as nations claimed an extension of their sovereignty in order to protect and secure the fisheries to themselves. These claims were initiated by the Scandinavian countries where fishing was the primary reason for both the territorial sea and the contiguous zone claims.[121] These claims, although for the purpose of fishery protection, were initially territorial in nature. Thus, one reason the three-mile limit for the territorial sea failed is because that width was illogical for fishery management and conservation.

The nonterritorial claim to fishery zones was first contemplated by the Proclamation with Respect to Coastal Fisheries in Certain Areas of the High Seas,[122] which accompanied the Truman Proclamation

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116. *Id.*
117. *Id.* art. 2.
118. *Id.* art. 4.
119. *Id.* art. 3.
120. *Id.* art. 7.
121. *See* S. SWARZTRAUBER, *supra* note 44, at 44-66. In 1958 Denmark reserved to its subjects a fisheries zone two leagues off the coast; in 1636 Norway reserved a four to six league zone; and in 1935 Norway delineated its territorial sea by straight baselines measuring four miles in breadth.
122. Proclamation No. 2668, 3 C.F.R. 68 (1945), *reprinted in* 59 Stat. 885 (1945), *and in* 1 S. ODA, THE INTERNATIONAL LAW OF THE OCEAN DEVELOPMENT: BASIC DOCUMENTS 342 (1972).

on the Continental Shelf. The United States took the position that it was proper to declare fishing zones in certain areas outside the territorial sea, and it conceded the right of other nations to do so. The United States government explained that it was not claiming exclusive fishery rights but was making possible certain conservation measures.[123]

Between 1947 and 1955, five Latin American countries went beyond the scope of the Truman Proclamation with regard to fisheries and declared a 200-mile limit for exclusive fishing rights. These countries justified their claim on the basis of science. They argued that the complex ecological system averaging 200 miles in width off their coast should be considered one fishery both for purposes of conservation and in compensation for having a narrow continental shelf.[124] In 1952, Chile, Ecuador and Peru signed agreements creating zones of fisheries jurisdiction. They reserved a twelve-mile exclusive zone for their nationals and a 200-mile multilateral fisheries zone in which all three countries claimed jurisdiction.[125] There was strong opposition, especially from the United States, to their claim and the theory on which it was based. As a result, the period from 1952 to 1969 saw many confrontations.[126]

The Latin American countries were not the only nations to claim exclusive fisheries rights on the high seas. Many developing nations made such claims after World War II in an effort to protect their fishing grounds from the fleets of the industrialized nations. Conflict over fisheries jurisdiction was taking place off the coasts of the European countries as well, as the Grotian doctrine of inexhaustible ocean resources was being recognized as unsound.[127]

The problem of conservation on the high seas was considered in 1955 at the International Technical Conference for the Conservation of Living Resources of the High Seas held in Rome.[128] Until that time, conservation measures had been achieved in certain areas by multilateral fishery conventions. Although, the Rome Conference concluded that multilateral fishery conventions were still the best ap-

123. 4 Whiteman, *supra* note 54, at 959-62.
124. D. O'CONNELL, THE INTERNATIONAL LAW OF THE SEA 553-58 (1982).
125. *See* S. SWARZTRAUBER, *supra* note 44, at 182-83.
126. For a description of this period, see D. JOHNSTON, THE INTERNATIONAL LAW OF FISHERIES 333-41 (1965).
127. *See, e.g., Anglo-Norwegian Fisheries*, 1951 I.C.J. 116.
128. Report of the International Technical Conference on the Conservation of the Living Resources of the Sea, U.N. Doc. A/CONF.10/6 (1955).

proach, it drew international attention to the problem.[129]

The first attempt to codify principles of conservation and management of the living resource outside the territorial sea occurred at the 1958 Geneva Convention on Fishing and Conservation of the Living Resources of the High Seas (Fishing and Conservation Convention).[130] The Convention provided for freedom of fishery on the high seas subject to treaty obligations and the rights of coastal states, and failing agreement, the right to adopt nondiscriminatory, unilateral measures for conservation. Following the lead of the 1958 Convention, Iceland declared a twelve-mile fishing limit which was functional, not territorial.[131] Following resolutions made at the 1960 Convention, Norway and Denmark also adopted twelve-mile fishery zones.[132] In 1966 the United States enacted legislation establishing an exclusive fishing zone of twelve miles[133]—the breadth of these zones being measured from the baselines for the territorial sea.[134]

In 1964 Canada established a fishery zone of twelve miles under the Territorial Sea and Fishing Zones Act.[135] The Act also provided for the legislating of straight baselines. In 1970 the Act was amended to extend the territorial sea to twelve miles and provide for fishery zones on both the east and west coasts.[136]

By the late 1960s, the concept of jurisdictional zones for conservation and management of fisheries contiguous to the territorial sea had become an accepted practice in international law. In 1968 of the fifty-nine nations with claims to fishery zones extending beyond territorial limits, thirty-seven settled on a twelve-mile zone.[137] The trend, however, had already commenced for even wider fishery zones. By the same year, eight Latin American states had claimed a 200-mile limit for fisheries jurisdiction.[138]

When UNCLOS III began in 1974, the concept of a 200-mile zone for fishery jurisdiction was becoming acceptable to most participants. Canada declared a 200-mile exclusive fishery zone on January 1, 1977,[139] and the United States enacted legislation for such a

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129. 4 Whiteman, *supra* note 54, at 967.
130. *See* Fishing and Conservation Convention, *supra* note 3.
131. 4 Whiteman, *supra* note 54, at 34.
132. *Id.* at 34.
133. Act of Oct. 14, 1966, Pub. L. No. 89-658, 80 Stat. 908.
134. *Id.*
135. Ch. 22, 1964-1965 Can. Stat.
136. Ch. 68, 1969-1970 Can. Stat.
137. D. Johnston & E. Gold, Extended Jurisdiction: The Impact of UNCLOS III on Coastal State Practice 20 (Oct. 15, 1979) (unpublished manuscript available from the Dalhousie Ocean Studies Programme, Dalhousie University, Halifax, Canada).
138. These countries were Argentina, Chile, Costa Rica, Ecuador, El Salvador, Nicaragua, Panama, and Peru.
139. CAN. CONSOL. REGS. chs. 1547-1549 (1978).

zone which became effective on March 1, 1977.[140] Today, although there are variations in the degree of exclusivity claimed, the 200-mile zone for fisheries has become widely accepted as state practice.[141]

Pollution Control Zone

Marine pollution has several sources: runoff or atmosphere pollution; ship-generated pollution from discharge and accidents; dumping or disposal of wastes at sea; and exploration and exploitation of the sea from offshore oil drilling. The causes of marine pollution have been categorized as accidental, operational or planned waste disposal.[142] The process of change within the international community which leads to unilateral state action to control marine pollution is important. This change encompasses a series of multilateral conventions spurred on by several major maritime shipping disasters—the sinking of oil tankers *Torrey Canyon* in 1967, the *Argo Merchant* in 1976, and the *Amoco Cadiz* in 1978.[143]

The first formal international action taken was at the 1954 International Convention for the Prevention of Pollution of the Seas by Oil.[144] It prohibited ships from discharging oil in certain areas of the sea, usually within fifty miles of a coast. It did not provide, however, for any external enforcement by a coastal state because of treaty provisions giving exclusive control over the ship to the flag state. The only available protection for a coastal state was deemed to be action in self-defense. The Law of the Sea, as reflected in the existing conventions, left control over shipping in the flag state. The coastal state could not act in a managerial capacity to prevent pollution, and could only act in self-defense after a disaster.

The 1958 Convention on the High Seas (High Seas Convention)[145] contemplated state action to prevent pollution but did not specify a jurisdictional zone for such purpose. Article 24 simply provided that every state should draw up regulations to prevent oil pollution of the

140. Fishery Conservation and Management Act of 1976, Pub. L. No. 94-265, 90 Stat. 331.

141. As of 1979, 79 states had made claims to a 200-mile zone covering jurisdiction over fisheries. *See* D. Johnston & E. Gold, *supra* note 137, at 29.

142. For a useful treatise on marine pollution, see G. TIMAGENIS, INTERNATIONAL CONTROL OF MARINE POLLUTION (1980).

143. *See, e.g.*, Dubais, *Some Legal Aspects of the Amoco Cadiz Incident*, 1979 LLOYDS MAR. & COM. L.Q. 292.

144. Convention for the Prevention of Pollution of the Seas by Oil, *opened for signature* May 12, 1954, 12 U.S.T. 2989, T.I.A.S. No. 4900, 327 U.N.T.S. 3.

145. *See* High Seas Convention, *supra* note 3.

sea from ships, pipelines, exploration and exploitation, and prevent pollution from radioactive waste.[146]

Between 1958 and the 1972 Stockholm Conference on the Human Environment, several other global conventions were adopted.[147] These conventions dealt only with the question of liability for oil pollution from shipping and did not establish a jurisdictional regime for coastal states. Also, a number of treaties were adopted involving radioactive pollution, but they did not necessarily have an environmental focus.[148] In 1972 the United Nations Conference on the Human Environment was held which greatly influenced marine antipollution activities over the next few years.[149] From 1972 until the present, global treaties have become more comprehensive with enlarged objectives and concerns for pollutants other than oil.[150] A number of regional agreements have also been signed since the Stockholm conference.[151]

The first offshore zone declared specifically for controlling pollution was set forth in the Canadian Arctic Waters Pollution Prevention Act[152] which prohibited the deposit of waste into Arctic waters. The zone was 100 nautical miles in width measured from the Arctic coast. The purpose of the Act was clarified by the Secretary of State for External Affairs: "The Arctic Wastes Bill represents a constructive and functional approach to environmental preservation. It asserts only the limited jurisdiction required to achieve a special and vital purpose. It separated a limited pollution control jurisdiction from the total bundle of jurisdictions which together constitute sovereignty."[153]

In an exchange of diplomatic notes with the United States, Canada justified the move under international law by stating that a

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146. *Id.* art. 24. Regulations were to be made only pursuant to existing international treaties.

147. *See* G. TIMAGENIS, *supra* note 142, at 4-9 (listing antipollution regulations).

148. *Id.* at 7-8.

149. The Conference produced a declaration of principles for the preservation and enhancement of the human environment. It also produced an action plan with over 100 recommendations for international environmental planning. *See* Declaration of the United Nations Conference on the Human Environment and Action Plan for the Human Environment, *adopted* June 16, 1972, Report of the United Nations Conference on the Human Environment, U.N. Doc. A/CONF.48/14 (1972), *reprinted in* 11 I.L.M. 1416 (1972).

150. *See* G. TIMAGENIS, *supra* note 142, at 9-12 (listing antipollution activities).

151. For an excellent review of regional developments in the protection and conservation of the marine environment, see Johnston & Enomoto, *Regional Approaches to the Protection and Conservation of the Marine Environment*, in THE ENVIRONMENTAL LAW OF THE SEA 285 (D.M. Johnston ed. 1981). This volume, published by IUCN, represents a tremendous effort on the part of knowledgeable contributors and is an excellent reference to both the pre-Stockholm and post-Stockholm developments in the international community.

152. CAN. REV. STAT. 1st Supp. ch. 2 (1970).

153. PARL. DEB. H.C. (5th Ser.) (April 16, 1970).

threat to a state's environment constituted a threat to its security. The Act, therefore, was a lawful extension of a limited jurisdiction to meet a particular danger.[154] Amendments to the Territorial Sea and Fishing Zones Act[155] also established fisheries closing lines, and further amendments to the Canada Shipping Act[156] in 1971 extended to those zones jurisdiction for controlling marine pollution. The Ocean Dumping Control Act,[157] allowing jurisdiction over dumping at sea, also applied to the fishing zone within the closing lines. These provisions now pertain to the existing 200-mile fishing zone.

Another unilateral claim to a maritime pollution control zone was made by the United States in the Clean Water Act of 1977,[158] where jurisdiction to prohibit vessel discharge was extended not only to the territorial sea and contiguous zone, but also to activities on the continental shelf and within the 200 mile fishery management zone established in 1977.[159]

Prior to these enactments, the pollution control legislation by coastal states related only to areas within the territorial sea although a coastal state's right to intervene when an incident occurred within its territorial jurisdiction was unquestioned. The Canadian Arctic Waters legislation, in particular, is significant because it creates a functional enforcement zone beyond national territorial jurisdiction for the specific purpose of controlling marine pollution. The "Arctic exception clause" contained in article 234 of the LOS Convention would appear to legitimize the Canadian initiative in international law and support this trend in state practice.[160] When the LOS Convention comes into force, the EEZ will be the coastal-state functional zone for pollution control. Regulation of ship-generated pollution, however, will still not be absolute in the coastal state outside of the territorial sea.[161]

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154. The notes are reprinted in J. SCHNEIDER, WORLD PUBLIC ORDER OF THE ENVIRONMENT 85 (1979).
155. Ch. 68, 1969-1970 Can. Stat., *amended by* CAN. REV. STAT. 1st Supp. ch. 45 (1970).
156. CAN. REV. STAT. ch. S-9 (1970), *amended by* ch. 27, 1970-1972 Can. Stat. 543.
157. Ocean Dumping Control Act, ch. 55, 1974-1976 Can. Stat. 1195.
158. Pub. L. No. 95-217, 91 Stat. 1566.
159. *Id.* § 59, 91 Stat. at 1593-96.
160. LOS Convention, *supra* note 5, art. 234.
161. *Id.* art. 211.

The nature and extent of many of the 200-mile claims now existing in state practice is uncertain. For example, of the seventy-nine claims to 200-mile jurisdiction which existed in 1979, twenty-three were designated as unifunctional fishing zones, forty-two were designated as multifunctional exclusive economic zones, and fourteen were claimed as territorial seas.[162] The new LOS Convention reflects the trend to national functional jurisdiction and, if it comes into force, will provide some uniformity to the extended jurisdiction claims.

The functional zone created by the LOS Convention which will have immediate and practical ramifications is the EEZ.[163] The EEZ is to extend 200 nautical miles from shore, within which the coastal state will have jurisdiction for various purposes over the seabed, subsoil and superjacent waters.[164] Other states will continue to enjoy the traditional rights of freedom of navigation and overflight, and the laying of submarine cables and pipelines. Also, land-locked and otherwise geographically disadvantaged states will have the right to share in the exploitation of surpluses of the living resources of the zone.

The debate over the nature of the superjacent waters of the EEZ has focused on whether the waters are high seas in which the states have residual rights, or whether the zone is sui generis so that rights of other states must be spelled out. The consensus has generally been that the EEZ is sui generis in spite of its high seas features.[165]

The functional nature of the zone becomes clear when its hybrid aspects are considered. It is territorial in nature because rights are contingent on propinquity of the coastal state. But it is functional in nature because the coastal state not only has an *opportunity* to manage more activities in a wider, functional zone, but also has a *responsibility* to manage properly and share the surplus of living resources. In addition, it is functional in extent because it is a multipurpose zone which goes beyond territorial jurisdiction in order to achieve

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162. Hodgson & Smith, *Boundary Issues Created by Extended National Jurisdiction*, 69 GEOGRAPHICAL REV. 426 (1979).

163. LOS Convention, *supra* note 5, arts. 55-75.

164. *Id.* arts. 56-57. The coastal state will have jurisdiction for:

(a) exploring and exploiting, and conserving and managing both living and nonliving natural resources;

(b) otherwise exploring and exploiting the economic potential of the zone such as for energy production from water, currents and wind;

(c) establishing and using artificial islands, installations and structures;

(d) marine scientific research;

(e) protection and preservation of the marine environment.

165. For an in depth discussion of features of the EEZ, see W. EXTRAVOUR, THE EXCLUSIVE ECONOMIC ZONE (1978).

the specific but limited purposes for which it is established.

A feature of the multifunctional EEZ, which differs from the earlier and existing unifunctional zones, is that it establishes not only the rights of the coastal state, but also those of the international community in the zone.[166] This feature brings the nature of the EEZ closer to the classical definition of functionalism than any previous maritime zone. The emerging regime in its positive sense is a compromise with the realities of ocean development as we approach the twenty-first century, for it now provides the opportunity for coastal states to actually *manage* ocean uses on a systematic basis. The LOS Convention provides the same guidelines for lateral delimitation of the EEZ between opposite or adjacent states as for the continental shelf: "By agreement on the basis of international law . . . in order to achieve an equitable solution."[167]

The Area is a new creation of UNCLOS III. It consists of the deep seabed and subsoil beyond the limits of national jurisdiction, continental shelf and the EEZ. The establishment of an international authority has been proposed to manage the exploitation of resources in the Area for the benefit of the world community. This deep seabed regime would be the only functional zone under a *global* jurisdiction, and, in that sense, the only functional zone presently contemplated which would not contain an element of territoriality.[168] UNCLOS III also passed a resolution to establish a Preparatory Commission[169] to expedite the formation of the International Sea-Bed Authority[170] and the International Tribunal for the Law of the Sea[171] as mechanisms for management of the Area and for the resolution of disputes.

Resource Administration Zone

Boundaries in the ocean which delimit the territorial sovereignty of coastal states often do not coincide with the location of marine

166. LOS Convention, *supra* note 5, art. 58. The expression *ex aequo et bono* means to make a decision on the justice of the case even though it conflicts with legal norms. To confer such mandate on the tribunal requires agreement by both parties, and, in effect, would allow the tribunal to abrogate or modify existing rights. Typically, this arrangement exists when no third party interests are at stake.

167. *Id.* art. 74.

168. *Id.* arts. 136-49.

169. LOS Convention, *supra* note 5, Annex 1, Establishment of the Preparatory Commission for the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea.

170. LOS Convention, *supra* note 5, arts. 156-85.

171. *Id.* arts. 186-91.

resources. The issue does not arise with regard to solid mineral resources which straddle an international boundary. They can be apportioned according to the boundary line and removed without the requirement for joint planning and agreement. With regard to fish stocks and petroleum deposits, however, their respective migratory and fluid natures raise a unique problem. Fish stocks may move back and forth over the boundary while the fluid nature of a petroleum deposit permits its removal from any direction without regard to a fixed boundary location. Other common activities in a boundary region, such as marine transportation and offshore and coastal activities leading to marine pollution, raise the same issues. Nonetheless, offshore resource utilization clearly highlights the essential problem in locating ocean boundaries. As one commentator has stated: "The latter [boundary disputes] centers on areas of dispute concerning the location of the boundary, whereas the former [resource utilization] is concerned with a common resource whose mobility often remains unaffected by the boundary itself, but whose utilization by the states concerned is strictly determined by the boundary."[172]

Resource administration zones are established to provide a specific functional jurisdiction over a specific problem. Working examples of these exist throughout various regions of the world ocean although they do not yet have a defined status in international law and are normally binational or regional in character. Such zones, unless entirely within one nation's jurisdiction, cannot be claimed unilaterally. Rather, they require a functional, cooperative relationship between the parties involved. This type of zone can be useful at the regional or binational level, and, in the case of a federal state, at the national or internal level as well. The boundaries defining such a zone are established not to coincide with territorial, political, or sovereign boundary limits. Rather, they are established in spite of, or in absence of, such defined limits. They are established on the basis of the nature and location of a particular resource, so that the resource may be developed and administered for the benefit of the parties involved—bypassing the problems of territorial boundary settlements or permitting an equitable division of the transboundary resource by agreement. Internationally, the use of resource administration boundaries are important when dealing with mobile resources, such as fish stocks, or with fluid resources, such as an oil or gas deposit underlying two or more state jurisdictions. Nationally, they generally have been used to expedite development of offshore resources where, due to the historical and constitutional background, the proprietary rights of the resources between the central and individual units of a

172. Minghi, *Boundary Studies in Political Geography*, 53 ANNALS A. AM. GEOG. 140-60 (1963) (author's brackets).

federal state are unclear.[173]

Usually, where ownership of natural resources is involved, states find it difficult to resolve boundary disputes, thereby delaying exploitation of the resources and delaying effective management and conservation measures. One way for neighboring coastal states to proceed with resource utilization, whether or not the boundary is settled, is to arrange a division or a joint development effort which will not effect subsequent territorial settlements. The concept was first used in international fisheries management, and has been employed more recently to achieve joint development of offshore transboundary petroleum deposits.

High seas fisheries management

While the 200-mile exclusive fishing zones described above are really functional zones of national jurisdiction, the setting of boundaries or creation of zones to delimit certain bilateral or multilateral regional fishing activities has been done for years at the international level. Fisheries conventions became popular when national limits of jurisdiction were narrow and coastal states did not possess the same exclusive or preferential rights regarding off-shore fishing as they now have. High seas fisheries were regulated by treaty among interested states without violating the principle of the freedom of the seas.

An early arrangement regulating a high seas fishery between Canada and the United States occurred under the Pacific Halibut Treaty.[174] This Treaty provided for the appointment of an International Pacific Halibut Commission which was to investigate and recommend certain regulations within the resource administration area known as "convention waters." These were defined by article 1(2) as "territorial waters and high seas off the western coasts of Canada and the United States of America, including southern as well as

173. The province of Nova Scotia negotiated an agreement with the Canadian government in 1982 for management and revenue sharing of offshore oil and gas development. For details of this agreement see Doucet, *Canada-Nova Scotia Offshore Agreement: One Year Later*, 22 ALTA. L. REV. 132 (1984). More recently, an agreement on resource management and revenue sharing also was negotiated with Newfoundland, following litigation in the Supreme Court of Canada between the province of Newfoundland and the Canadian government over continental shelf jurisdiction resulting in a judgment favoring the federal authority. *See* Reference Regarding the Seabed and Subsoil of the Continental Shelf Offshore Newfoundland, 5 D.L.R. 385 (4th ed. 1984).

174. Treaty on Preservation of North Pacific Halibut Fishery, Mar. 2, 1953, United States-Canada, 5 U.S.T. 5, T.I.A.S. No. 2900.

western coasts of Alaska."[175] The Commission was empowered to divide the convention waters into areas, to limit the catch from such areas, and to determine the nature of equipment to be used.[176] This, then, was an example of a very roughly designated resource administration zone. It did not involve any claims to sovereignty; it simply was an agreement among the users of a resource to administer that resource within a particular ocean area including both the high seas and territorial waters of the participating states. Thus, it was a functional division of ocean space on a regional basis.

Canada entered into another bilateral fisheries convention with the United States through the Sockeye Salmon Fisheries Convention.[177] The Convention created the International Pacific Salmon Commission which was given authority to limit or prohibit the taking of sockeye salmon in any waters designated in the Convention. These waters were defined in very specific geographical terms by article I and became a functional resource administration zone for the stated purposes.[178] On January 28, 1985, a new Canada/United States Pacific Salmon Treaty[179] was signed, effectively terminating the former treaty. The new bilateral agreement provides for salmon management in waters of the Northwest United States, British Columbia, and Southeast Alaska.[180] The treaty establishes a new Pacific Salmon Commission and three advisory panels, one each for the Fraser River Area, the Southern coastal area, and the Northern coastal area. The Southern and Northern Panels have responsibility in their respective areas over certain coastal rivers where salmon originate. The Fraser Panel has responsibility for salmon management in a geographically defined area of territorial seas and high seas off the coasts of Canada and the United States.[181]

Canada also became party to a multilateral convention with the United States and Japan under the Northern Pacific Fisheries Convention.[182] This Convention introduced the abstention principle: if the fishery had been subject to an extensive conservation program by one or more of the other parties, then any of the contracting parties could be requested to abstain from participating in the fishery in the designated area. In this instance, the zone or convention area was defined as "all waters other than territorial waters of the North Pa-

175. *Id.* art. 1, para. 2.
176. *Id.* art. 3, para. 2.
177. Convention on the Fraser River System Sockeye Fisheries, May 30, 1930, United States-Canada, 50 Stat. 1355, T.S. No. 918.
178. *Id.* art. 1.
179. Treaty Concerning Pacific Salmon, Jan. 28, 1985, United States-Canada.
180. *Id.*
181. *Id.*, Annex 2, art. 1.
182. Northern Pacific Fisheries Convention, May 9, 1952, 4 U.S.T. 380, T.I.A.S. No. 3786.

cific Ocean which for the purposes hereby shall include the adjacent seas."[183]

In 1950 the International Convention for the Northwest Atlantic Fisheries (ICNAF)[184] came into effect between Canada, the United States, and nine other nations with an historic interest in fishing the waters of the northwest Atlantic Ocean.[185] This agreement pioneered a technique whereby the convention area was divided along lines of latitude and longitude into five sub-areas. These sub-areas were frequented by more or less distinct stocks of demersal fish and each sub-area was to be studied by a panel made up of the nations exploiting it. The panel then proposed regulatory measures for review by the commission created by the treaty. If accepted by the commission and the member governments of the panel, the regulations became binding on the contracting governments whose nationals fished the area. The commission also specified closed areas and seasons for certain species. The area to which the Convention applied was called the "convention area" and was specifically defined by lines of latitude and longitude. The Convention applied to the area outside the territorial waters beginning at a point on the Rhode Island coast, then south and east into the Atlantic, and north between Labrador, Baffin Island, and Greenland.[186] As a result of the extensions by Canada and the United States in 1977 of their fishing zones to 200 miles, ICNAF was renegotiated and the Northwest Atlantic Fisheries Organization (NAFO) established.

The Canadian use of functional zones for international fisheries management is an example of international fishery agreements which effectively define areas of the ocean along functional lines for purely administrative purposes relating to fisheries management, when specified regulatory and conservation provisions are applied.

Transboundary Petroleum Development

Joint resource administration boundaries also have been used in cases of a single petroleum structure or field, whether onshore or offshore, which underlies the territory of two or more states.[187] Con-

183. *Id.* art. 1.

184. Convention for the Northwest Atlantic Fisheries, Feb. 8, 1949, 1 U.S.T. 477, T.I.A.S. No. 2089, 157 U.N.T.S. (entered into force by the United States on July 3, 1950).

185. The number of signatories later increased to 16.

186. 1979 Can. T.S. No. 11.

187. *See* Onorato, *Apportionment of an International Common Petroleum Deposit*, 17 INT'L & COMP. L.Q. 85 (1968); Valencia, *Taming Troubled Waters: Joint De-*

tinental shelf technology and extended coastal-state jurisdiction have made this potential source of international dispute a very real problem in some parts of the world ocean. Because of petroleum's fluid nature, the deposit may be tapped from anywhere on its perimeter, raising the possibility of one party depleting the reserve or, at least, the possibility of an inequitable allocation between parties.

In the 1950 Report of the ILC, the Rapporteur stated that the primary concern in the case of a potential common petroleum deposit should be the preservation of the unity of the deposit.[188] In 1954 an internationally recognized commentator indicated the danger in dividing an oil pool among different countries. "Two concessionaries should not tap the same pool, or in a descriptive parable, never two straws in one glass."[189]

The Continental Shelf Convention[190] did not cover this type of situation with respect to boundary delimitation, although some consider it a "special circumstance" under article 6 allowing deviation from the prescribed equidistance line in the absence of an agreement.[191]

This matter was considered in the *North Sea Continental Shelf* cases:

> [I]t frequently occurs that the same deposit lies on both sides of the line dividing a continental shelf between two states, and since it is possible to exploit such a deposit from either side, a problem immediately arises on account of the risk of prejudicial or wasteful exploitation by one or other of the States concerned.[192]

In further referring to unity of deposits, the ICJ conceded that readily ascertainable natural resources could be one factor taken into account by the parties to achieve an equitable solution.[193] The ICJ also noted that if preserving the unity of the deposit is a matter of concern, the parties themselves must provide for this by a voluntary agreement.[194]

Exploitation of petroleum is one area from which to draw a wealth of precedent in the domestic petroleum laws of various countries. Most states now provide for cooperative or unitized exploitation of

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velopment of Oil and Mineral Resources In Overlapping Claim Areas, 23 SAN DIEGO L. REV. 661 (1986).

188. Summary Records of the 66th Meeting, [1950] 1 Y.B. INT'L L. COMM'N 207-12, U.N. Doc.A/CN.4/Ser.A/1950.

189. Mouton, *The Continental Shelf*, in RECUEIL DES COURS 421 (1954).

190. *See* Continental Shelf Convention, *supra* note 3.

191. *Id.* art. 6.

192. *North Sea Continental Shelf*, 1969 I.C.J. at 51, para. 97.

193. *Id.* at 51, para. 97.

194. *Id.* Presently, international law sets no constraints on parties engaged in a boundary dispute from dealing with a common resource situation by agreement. Of course, agreement must be the basis for such arrangement: it must be by joint and cooperative action that resource administration boundaries are established and effectively employed.

shared or common petroleum deposits;[195] the old common-law "rule of capture," or "prior expropriation," is no longer the applicable principle. In dealing with common petroleum deposits offshore, international state practice has borrowed from the private law practice of cooperative management. Arrangements have also been made to agree on resource sharing in the context of continental shelf delimitation and general maritime boundary agreements.

One international scholar, in a thorough examination of transboundary petroleum deposits, has suggested that state practice reflects four types of cooperative agreements.[196] When the political boundary has been settled prior to an offshore resource administration agreement, the basis for agreement amounts to a sharing formula—the geographical distribution of the resource being a significant factor in developing the formula. When, however, a boundary issue has not been resolved and claims to the resource overlap, the basis for agreement will likely be an equal division of benefits and costs.

Resource administration agreements have been included in approximately thirty-eight international agreements between coastal states, most of which are bilateral.[197] While several of these agree-

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195. Unitization is defined as
> The bringing together by some legal method of separately owned interests in oil and gas . . . so that an overall program of development and production operations may be carried on in this area on behalf of, and for the benefit of the owners of such interests by single or co-ordinated management.

Kelly, *Unitization in the Oil and Gas Industry*, 4 CAN. B.J. 81 (1961).

196. Lagoni, *Oil and Gas Deposits Across National Frontiers*, 73 AM. J. INT'L L. 215, 222-29 (1979). The four types of cooperative agreements include:
> (i) *geological cooperation*, where each party works a share proportionate to the amount of reserves in its territory at the time the agreement is concluded, all in accordance with the calculations of a joint commission. This assumes a settled, or interim boundary arrangement prior to the resource agreement.
> (ii) *joint operations*, where, in the absence of a boundary settlement, the parties agree on a preliminary boundary and apply their own jurisdictions on their side. Each party is entitled to an equal share which is arrived at by contractual arrangement between concessionaries on both sides.
> (iii) *unitized exploitation*, where, similar to many domestic arrangements, a single operator manages the deposit on behalf of all parties in a joint development zone in which concesessionaries from both sides enter into operating agreements and benefits and expenses are regularly shared. This arrangement can be utilized with or without a settled boundary.
> (iv) *condominium arrangement*, where the parties establish a common zone on the seabed wherein each maintains equal sovereign rights over the whole zone and a joint commission oversees development.

197. T. MCDORMAN, K. BEAUCHAMP & D. JOHNSTON, MARITIME BOUNDARY DELIMITATION: AN ANNOTATED BIBLIOGRAPHY 157-95 (1983). These agreements have taken place in most regions of the ocean: the North Sea and Northwest Atlantic (12);

ments create a common zone wherein both parties claim sovereignty over natural resources and establish a joint or condominium arrangement for development of common mineral deposits, the great majority are simply "agreements to agree" on the prospect of transboundary petroleum discoveries. It has been suggested that in such cases each side will have to demonstrate to the other that the field underlies its territory, requiring considerable exploration and commercial discoveries on both sides. If no agreement is reached, the rule of capture will apply.[198] Thus, in most of the existing offshore agreements the effect of the political or spatial boundaries hinder efficient management of the resource. In other contested offshore regions, when no boundary settlement has been concluded, resource claims likely will continue to act as an impediment to such settlements.

While there is yet no clearly established international law on the subject of such joint management schemes, analogies to both domestic laws, which require cooperative production of common deposits, and international law, with fisheries management and sharing of international water courses are persuasive. It has been suggested that state practice, as reflected in the common deposit resource administration arrangements noted above, may support the emergence of a customary rule of international law that would require states to cooperate in exploration and exploitation of common deposits of petroleum.[199]

New Approaches to Ocean Boundary-Making

A Matter of Process

Delimitation of maritime boundaries involves either a process of negotiation or adjudication by a third party. Delimitation, therefore, involves mutual agreement between two sovereign powers to the diplomatic process of treaty-making, or to the submission of the matter to a third-party settlement procedure such as a boundary commission with either judicial, arbitral or advisory powers.[200]

Arbitration and judicial settlement, though similar in form, differ significantly. An arbitrator, or arbitral tribunal, is chosen by the parties. An arbitrator is not bound, as is his judicial counterpart, by the

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the Persian Gulf and Red Sea (9); the Indian Ocean (5); the Mediterranean Sea (4); the North Pacific (1); the Central Pacific (3); the South Pacific (3); South America (1); and North America (1).

198. Morris, *The North Sea Continental Shelf—Oil and Gas Legal Problems*, 2 Int'l Law. 191, 213 (1967).

199. *See* Lagoni, *supra* note 196, at 243.

200. A very good discussion of the international boundary delimitation process is provided by A. Cukwurah, The Settlement of Boundary Disputes in International Law (1967).

tradition of legal precedent on a given subject of litigation such as maritime boundary delimitation. Rather, arbitration enables the parties to select persons who will decide the case based not so much on their legal knowledge, but on some other skill which may be more pertinent to the case. While an arbitrator normally cannot disregard the law any more than a judge, he may be permitted a wider basis than just the law from which to make a decision. In arriving at his decision, an arbitrator may consider what is equitable in the circumstances rather than what is strictly legal; he is more suited to make a decision *ex aequo et bono* than a judicial body.

Nonetheless, an arbitrator has only such power as the parties have conferred in the document by which the dispute is referred. The arbitration functions end when the case for which appointment was made has been decided. And unless the parties have agreed otherwise, an arbitral award is final.

Selection of the judicial forum to resolve an international boundary dispute will bring the parties before the ICJ, governed by the United Nations Charter[201] and the Statute and Rules of the International Court of Justice.[202] As a formal court, it is expected to base its decisions upon the law. The court, in adjudicating matters, is bound to apply: (1) international conventions; (2) international custom as evidence of a general practice accepted as law; (3) the general principles of law recognized by civilized nations; and (4) judicial decisions and writings of publicists as a subsidiary means for determining law.[203] The statute and rules of court now permit the formation of a special chamber of three or more judges for dealing with a particular case.[204] These provisions allow the parties to suggest ICJ judges to hear the case. It is not yet clear, however, whether the court will always accede to the parties' wishes in the composition of such a chamber. Nonetheless, precedent for using a special chamber was established in the case between Canada and the United States regarding the delimitation question in the Gulf of Maine.[205]

Both the judicial and arbitral procedures are attempts to settle

201. U.N. CHARTER art. 92, *reprinted in* 59 Stat. 1033 (1945).

202. U.N. CHARTER, Statute of the International Court of Justice, art. 1, *reprinted* in 59 Stat. 1055 (1945); *see also* DOCUMENTS ON THE INTERNATIONAL COURT OF JUSTICE (S. Rosanne ed. 1979).

203. J. BRIERLY, *supra* note 23, at 353.

204. *See* U.N. CHARTER, *supra* note 201, art. 26, para. 2 to art. 29, & art. 31, para. 4; *see also id.* arts. 17-18.

205. For a discussion and analysis of the new procedure, see McRae, *Adjudication of the Maritime Boundary in the Gulf of Maine*, 1979 CAN Y.B. INT'L L. 292; Christie, *supra* note 85.

disputes by recourse to impartial and objective norms, thereby hopefully achieving equity if the dispute is too political to be settled by direct negotiation. Positive and negative factors exist with respect to each of the adjudication procedures.[206]

Extended maritime jurisdiction now calls for delimination of ocean areas never before in issue. Extended jurisdiction also may involve consideration of new ocean uses in the waters superjacent to the continental shelf, fishing being the most important activity at this time. For years, the ICJ has considered and established through its decisions a basis for lawmaking with regard to delimitation of the continental shelf. In approaching the new delimitation issues, it might be assumed that the court will apply the principles to all areas which the parties ask to be delimited, not just where a conventional single maritime seabed boundary is requested. Thus, the question is whether these delimitation principles apply equally to water column boundaries or to dual seabed and water column boundaries.[207]

The LOS Convention will also have an impact on the dispute settlement procedures available in boundary delimitation matters. Part XV of the current treaty deals specifically with the procedures which, if brought into force, will be binding between state parties and available in maritime disputes.[208] The treaty reiterates the states' obligation under article 33 of the United Nations Charter to settle disputes by peaceful means. If settlement does not succeed, state parties to the treaty will be subject to the specified procedures.[209]

Whether arbitral or judicial, adjudication as a means of settling boundary issues between sovereign states is, in a sense, an extension of the negotiation process through use of a specific tool or decision-making machinery. Both negotiation and adjudication are part of the "necessary process of adjustment"[210] that states must make in such matters, although it is negotiation which can best reflect the compro-

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206. The judicial process has been said to provide the following: (1) continuity and uniformity of case law; (2) greater legal certainty; (3) continued development of international law; (4) independence of the judges; (5) immediate availability; and (6) final and binding settlements. 1 ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW 120-33 (R. Bernhardt ed. 1981).

The arbitral process is said to provide: (1) a better arena for decisions *ex aequo et bono*; (2) better nonbinding or compromise agreements where concessions on one hand can be offset by concessions on the other; and (3) better suitability to consider new legal issues. *Id.* at 142-46.

207. An ad hoc tribunal might consider itself less constrained by the history of continental shelf delimitation and habit of thought, and more receptive to new arguments based on the functional needs of the zone or zones sought to be delimited.

208. LOS Convention, *supra* note 5, arts. 279-320.

209. *Id.* arts. 279-99.

210. The process of boundary-making is analyzed in Munkman, *Ajudication and Adjustment—International Judicial Decision and the Settlement of Territorial and Boundary Disputes*, 1972-1973 BRIT. Y.B. INT'L L. 1.

mise leading to the best result—the best result being a boundary that both parties can live with, and therefore administer, without the having to designate a clear winner or loser.[211] The objective is, after all, certainty and stability in the maritime community and international relations.

Trends in State Practice

State practice in negotiating maritime boundary delimitation is a matter of recent development and only now is a sufficient record beginning to form from which certain trends may be perceived. Where the parties place a high value on the economic and cultural significance of the marine resources, historical uses, and overall socioeconomic implications of a boundary settlement, a negotiating process will produce more acceptable results for the parties. For example, two fairly recent ocean boundary disputes have been negotiated without rigorous application of the criteria established in continental shelf adjudications. A settlement between Australia and Papua-New Guinea was negotiated directly,[212] while another between Norway and Iceland followed recommendations of a conciliation commission.[213] Both settlements introduce some novel features to the exercise of settling international ocean boundaries and it seems both will succeed in reconciling political aspirations with the realities of the unified and interdependent ocean system off their shores.

The delimitation agreement between Australia and Papua-New Guinea was signed in 1978. It resolved a complex situation in a manner in which the judicial or arbitral processes could not, because the essential ingredient, international cooperation, was available. The treaty dealt in a separate fashion with the different components of the dispute, that is, sovereignty, fisheries, navigation, the effect of islands, and the lifestyle and livelihood of local inhabitants.[214] In doing so, it employed various features which do not usually accompany a maritime boundary settlement: separate boundary lines for seabed and fisheries jurisdiction; creation of a protected zone; and a formula

211. *See generally id.* at 1-11.

212. Treaty Between the Independant State of Papua-New Guinea and Australia Concerning Sovereignty and Maritime Boundaries in the Area between the Two Countries including the area known as Torres Strait, and Related Matters, Dec. 18, 1978, *reprinted in* 18 I.L.M. 291 (1979) [hereinafter cited as the Torres Strait Treaty].

213. Agreement on the Continental Shelf Between Iceland and Jan Mayen, Oct. 22, 1981, *reprinted in* 21 I.L.M. 1222 (1982).

214. *See* Torres Strait Treaty, *supra* note 212.

for sharing the commercial fishery harvest.[215]

Regarding the jurisdictional question, the treaty provides a precedent for treating seabed and water column separately for delineation purposes. The fisheries jurisdiction line is nearly identical with the seabed line—except in Central Torres Strait where it diverges in recognition of the fishery's significance to the inhabitants of the Australian Islands.[216] The protected zone was established to comprise of the land, sea, airspace, seabed, and subsoil in a defined area.[217] It was established mainly to protect traditional ways of life and livelihood as well as to protect the marine environment.[218] The jurisdictional lines were also drawn through the protected area since both governments saw a need for certainty. Therefore, rather than creating a common zone, management and administration remain in the purview of the respective governments within their respective jurisdictions. To ensure effective management, however, a Joint Advisory Council was established, composed of representatives from Australia and Papua-New Guinea, other regional governments, and traditional inhabitants.[219] The Council, however, has advisory powers only. To anticipate uses of the ocean not directly related to seabed or fisheries jurisdiction, such as pollution protection, energy production, artificial islands, and other EEZ rights for the protected zone, the parties have written in a "residual jurisdiction" clause.[220]

Another recent example of a cooperative approach to maritime boundary delimitation is seen in the delimitation agreement relating to seabed and fishery jurisdiction between Iceland and the island of

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215. Commenting on the arbitral process and analyzing its results, a former member of the Australian negotiating team has noted that

> The rigid and single-focus approach of the initial round of negotiations, where attention was given primarily to drawing a single maritime boundary, did not lead to productive solutions. It was only after the adoption of an imaginative, broadly focused approach that a solution acceptable to all the parties concerned—not just governments but the people themselves—was achieved. The Treaty represents an agreed solution that was reached without the assistance of any third party . . . . [B]oth sides appreciated that no tribunal or court would be able to provide a comprehensive solution that dealt satisfactorily with the whole complex of issues involved.

Burmester, *The Torres Strait Treaty: Ocean Boundary Delimitation by Agreement*, 76 AM. J. INT'L L. 321, 328 (1982).

216. *See id.* at 337.

217. Torres Strait Treaty, *supra* note 212, art. 10(a).

218. Burmester, *supra* note 215, at 330.

219. Torres Strait Treaty, *supra* note 212, art. 19.

220. *See* Burmester, *supra* note 215, at 330-40 (extensive description of the protected zone and jurisdictional arrangements). The arrangements made in this case, while consistent with the LOS Convention provisions, are clearly a precedent only where international relations permit the highest level of cooperation. Maritime boundary delimitation consists of much more than settling on a line which will show on a map. The broad basis for negotiating the Torres Strait boundary introduced many variables, but eventually, the line or lines drawn encompassed the various interests in what seems to be an equitable solution.

Jan Mayen. Jan Mayen is part of the territory of Norway and is located 290 nautical miles northeast of Iceland in the Norwegian Sea.[221] In that dispute, the parties followed the recommendations of a conciliation commission regarding the continental shelf boundary, cooperative seabed and fishery arrangement.[222] The resolution involved a pair of agreements. The first agreement, signed in May 1980, established the boundary between the economic zones of Jan Mayen and Iceland, a process for fishery management, and a conciliation commission to recommend a continental shelf boundary.[223] The commission's recommendations, while required to be unanimous, were not binding on the parties.[224] By the terms of the 1980 agreement, the commission, in preparing recommendations, was to take into account economic interests, geographical and geological factors, and other special circumstances.[225] The second agreement, signed in 1981, followed the recommendations.[226] It provides a continental shelf boundary which is the same as the economic zone boundary because the basis of such a division in conjunction with cooperative seabed arrangements would constitute an equitable solution.[227]

Both the Torres Strait and Jan Mayen solutions provide some lessons and experience in the important area of international dispute resolution of ocean boundaries. These recent examples are valuable

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221. Agreement on the Continental Shelf Between Iceland and Jan Mayen, Oct. 22, 1981, *reprinted in* 21 I.L.M. 1222 (1982).

222. A thorough examination of this agreement, and the background and process involved, is provided in Churchill, *Maritime Delimitation in the Jan Mayen Area*, 9 MARINE POL'Y 17 (1985).

223. Agreement Concerning Fishery and Continental Shelf Questions, May 28, 1980, Iceland-Norway, overenskomster medfremmede stater 912 (1980). The rationale behind the conciliation process is :

> The reason for choosing a conciliation commission to resolve the continental shelf boundary problem appears to have been to transfer from the two governments to an independent body the burden of finding a practical solution to a very delicate political problem and to permit the two governments to apply the solution proposed by this body without suffering too serious political repercussions.

Id. n. 14. The commission was composed of Ambassador Jens Evensen from Norway, Ambassador Hans Andersen from Iceland, and Ambassador Elliot Richardson, a neutral chairman, from the United States.

224. *Id.*

225. *Id.* art. 9.

226. *See* Report and Recommendations to the Governments of Iceland and Norway of the Conciliation Commission on the Continental Shelf Area between Iceland and Jan Mayen, 1981, *reprinted in* 20 I.L.M. 797 (1981).

227. *See* Churchill, *supra* note 222, at 21. For an analysis of the seabed arrangements, see *id.* at 23-25. For an analysis of the cooperative fishery arrangements, see *id.* at 22-23.

for the perspective they give to both the process and the substantive issues. Of particular significance are the comments on the relationship of economic zone and continental shelf boundaries, cooperative resource management, the relationship of socioeconomic interests to maritime boundary delimitation, and the application of international law to delimitation of dual maritime zones.[228]

CONCLUSION

Maritime boundaries and boundary-making are currently viewed in terms of territory and fixed lines rather than in terms of systems and managerial needs. The present view exists because maritime boundaries have their origin in the land-based international boundary concept, which carries with it the idea of divisiveness or separation. This sense permeates the methods and process of boundary-making and is ultimately reflected in the nature and function of the boundaries. As a result, politics in boundary-making dominates over ecological, technological, and administrative needs. The division of ocean space according to political ideas of boundary-making does not always relate to logical ocean management purposes. As one scholar has stated: "In the field of resource authority the functional irrelevance of territorial limits is especially marked. The logic of science and technology wages unremitting war on arbitrary manmade limits separating a zone of exclusive and comprehensive state authority from the rest of the ocean."[229]

The last decade has seen express recognition of unifunctional ocean zones for separate control or management purposes. Thus, it is now acceptable to assert jurisdiction on a basis other than territoriality. The multifunctional EEZ, emerging in custom and recently codified in the new LOS Convention, is the culmination of this development in international law. It has grown under pressure of the technological advances which highlight the interdependencies of the world community in the ocean. The acquisitive instinct of nations has been directed during this period toward developing a limited form of authority which will permit these nations to extend their jurisdiction to enclose a wider ocean area, and will satisfy the demands of coastal states which look to the ocean primarily for its economic value. The movement to enclose ocean space provides, paradoxically, both an opportunity for good ocean management and a threat to the equitable allocation of access rights and management authority. For example, while the struggle conceptually and practically to develop

228. Jan Mayen still has an unresolved maritime boundary with Greenland, as it lies about 250 nautical miles east of Greenland. This dispute is discussed also in Churchill, *supra* note 222, at 31.

229. Johnston, *Law, Technology and the Sea*, 55 CALIF. L. REV. 449, 469 (1967).

the concept of functional jurisdiction has tempered the territorial imperative, it has not removed it as a significant factor in the settlement of maritime boundary disputes. Thus, essential to a positive outcome of the enclosure movement is the development of a new attitude of cooperation and a capability for coordination. This theme runs throughout the recent LOS Convention which will govern relationships between states, and will also be important in intrastate boundary-making.

These developments will require a new perception of maritime boundaries. Perhaps a single maritime boundary between neighboring states will not be the best answer in all cases. In some circumstances, despite the administrative convenience of a single boundary, reasons for more than one maritime boundary between states may exist, each delimited on different principles to meet different management needs. Coastal states may have to think in terms of several boundaries delimiting their reaches of territorial and functional jurisdiction with neighboring states, as well as with the international community. Linear boundary concepts may have to be replaced by three dimensional zonal concepts. Functional, extraterritorial zones may be created not for one state, but for regions, and may be based primarily on economic or administrative criteria. The criteria for delimiting such boundaries will be complex, as coastal-state jurisdiction encroaches farther into the high seas and as more diverse uses are made of the enclosed offshore areas. The attempt to reconcile coastal-state political aspirations with an orderly division and effective management of the larger ocean areas will demand innovative bilateral and multilateral arrangements to account for the multifunctional basis of the EEZ and its dual nature, composed of seabed, water column, and surface waters.

That boundaries should be delimited by agreement in accordance with equitable principles is the current overriding principle or norm for maritime boundary delimitation. The best boundaries in terms of acceptability to the parties will continue to be those which are products of the diplomatic process rather than those resolved by third-party settlement procedures. When third-party procedure is necessary to resolve conflicts, it is likely that decisions will be based on the recognized criteria in continental shelf delimitations—even when the dispute involves the economic zone and living resources, or a dual economic zone and seabed area. Certainly, the recent ICJ decisions indicate that the legal tradition of judicial certainty, and the political requirement for stability and finality in the boundary delimitation

process, will mean that division of functional zones will also be based on already established rules for division of territorial or spatial zones.[230] The extended jurisdictions will see delimitation of ocean boundaries become increasingly complex exercises. Either forum in which the disputes are brought will have to expand the existing framework for analysis.[231]

One way to expand the existing framework would be to view ocean boundaries as conceptually unique from land boundaries, and to have this view mark the whole process of boundary-making, from allocation to delimitation, demarcation, and administration. The existing rules for maritime boundary delimitation were developed initially to accommodate the political aspirations of industrialized maritime powers. Thus, the criteria which relate almost exclusively to division of the seabed of the continental shelf are concerned more with territorial acquisition than with resource management. Rights to ocean space allocated on that criterion focus on boundary location in the offshore. Planning and management activity within such a spatial framework becomes inhibited or constrained from dealing with functional realities of the ocean system. If the goal under the emerging international legal order is in fact to achieve rational management of ocean space and resources, the significance of a maritime boundary should lie in its *function* rather than in its *location.*

The primary objective of international land boundaries has been to separate territory and legal systems which together constitute the closed system of the sovereign state. The ocean, unlike a sovereign state, is an open system and it is necessary to define ocean jurisdic-

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230. *See, e.g.*, Fisheries Jurisdiction (U.K. v. Ice.), 1974 I.C.J. 1 (Judgment of July 25).

This dispute over the extension by Iceland of its fishery jurisdiction to 50 miles presented the court with an opportunity to discuss the concept of an economic zone and the socioeconomic implications of fishery conservation. Nevertheless, the analysis was not provided; the court simply stated that for such a zone the parties should negotiate in order to achieve an equitable solution.

In a more recent continental shelf case, the ICJ clearly refused to apply socioeconomic factors in order to effect an equitable sharing of resources between Tunisia and Libya. Nonetheless, as this was a continental shelf delimitation only, the application of the equitable principles established in earlier cases was correct. *Tunisia/Libya Continental Shelf*, 1982 I.C.J. at 60, para. 71; *id.* at 77, para. 107.

Even in the most recent ICJ decision, where the economic zone and fisheries were of primary significance, the court did not integrate the old criteria with concerns specific to delimitation of a functional economic zone to arrive at newly stated principles or theory for delimiting these as opposed to territorial or political spatial zones. In *Gulf of Maine*, the court indicated simply that the equity concept will prevail in delimiting economic zones. The court stressed the need for convenience in administering dual boundaries for the economic zone and seabed. It also relied heavily on the traditional geographic criteria for division. *Gulf of Maine*, 1984 I.C.J. at 84-85, paras. 192-95.

231. A proposal for an expanded and uniform method of analysis employable in boundary disputes is suggested in Charney, *Ocean Boundaries Between Nations: A Theory for Progress*, 78 AM. J. INT'L L. 582 (1984).

tion with new concepts of boundaries and boundary-making in mind. An inherent variability exists in the ocean system which must be recognized, since uses, interests, conflicts, and managerial needs occur in different combination and varying intensity within and between the different physical and juridical zones. An ocean management system by definition cannot be bound by absolute parameters such as static boundaries. These absolutes do not permit the adjustments to the management structure which are necessary for it to conform to the needs presented by the physical, social, and technological subsystems which make up the total ocean system. The closed-system concept of land boundaries cannot logically be imposed on the open-system of the ocean, as only by coincidence could such imposition account for objective management needs in division of ocean space.

The areas of the ocean made accessible by modern technology and subjected to increased use are, by definition, *frontiers*. It is in these areas historically that closed systems meet and confront each other.[232] The concept of a frontier has always been zonal, giving it a dynamic quality, and therefore, its boundaries can be territorial, functional or simply symbolic.[233] By contrast, the linear concept of boundary is static in nature, it must be territorial, and it must be fixed and rigid. The linear concept fits the nature of a closed system as it emphasizes "competition, separation, closure and intolerance."[234] An open system, on the other hand, emphasizes cooperation. Open sytems will not be immutable, but they will have to be logical. Conceptually, to the extent necessary for achievement of the management function, a cooperative effort will effect the elimination of the existing spatial boundary or boundary claim.

Short of a new global order, however, it appears that an equitable and acceptable division of ocean space in a given ocean region will involve operation of all three categories of maritime boundaries discussed in this Article: spatial, functional, and administrative. Recognition of these three categories will serve both political and management needs. The spatial boundary will recognize the political division, and may play a role in the formula for revenue or resource sharing in a boundary region. The functional boundary will recognize coastal-state jurisdictional limits as well as the rights of maritime neighbors and the international community. The joint resource

232. *See* Kristoff, *supra* note 10.
233. *See* Strassoldo, *supra* note 1, at 87.
234. *Id.* at 86.

administration boundary will exist at different levels, either wholly within one national jurisdiction, or in a transboundary ocean region involving two or more national jurisdictions. It can achieve the division necessary for effective ocean management. Also, it will vary according to local management needs—such as the nature and location of resources, the geographical location of the parties, and the institutional and organizational structure selected for operation. The three categories of maritime boundaries in fact compose a functional approach to the division of ocean space according to management needs. A functional division requires more than drawing additional lines in the offshore; most important, it involves an attitudinal as well as an institutional factor. Such an approach might result in something called *marine* boundary-making, connoting a three-dimensional concept, contrasted with *maritime* boundary-making which traditionally has connoted a one-dimensional concept relating to control and use of the surface, periphery or seabed individually. The latter is linear and static, while the former is zonal and dynamic in quality. In a sense, such criteria for boundaries in the ocean would bring to a full circle the development of international boundary-making, which on land, began with the concept of frontiers and zonal divisions.

New ocean technology, resource needs, and economic requirements will continue to accelerate ocean development. The challenge is to keep pace with these changes by developing a modern operational theory of ocean boundary delimitation in the legal, political and administrative fields. The function of ocean boundaries has changed, reflecting, as historically has been the case with international land boundaries, a logical adjustment in the relationship between boundaries and national aspirations. Coastal states will continue to look to the ocean for resources, energy and livelihood. Boundary-making and ocean management are essentially connected. Thus, the primary function of ocean boundaries can now be described as one of management.