THE EXCLUSIVE ECONOMIC ZONE*

This is the third of three articles dealing with aspects of the 1982 Convention On The Law Of The Sea. This article discusses the evolution of the concept of the Exclusive Economic Zone, its basic principles and legal status. The article also discusses the conservation, management and exploitation of the fishing resources in the EEZ. The negotiating process leading to the adoption of the provisions in the convention relating to the EEZ is also discussed.

IN the previous article, we learnt that under the 1982 Convention,[1] every coastal State is entitled to claim a territorial sea and a contiguous zone and that their maximum permissible breadths are twelve and twenty-four nautical miles respectively. Under Part V of the Convention, every coastal State is entitled to claim an exclusive economic zone. It is an area of the sea beyond and adjacent to the territorial sea.[2] The maximum permissible breadth of the exclusive economic zone is 200 nautical miles from the baselines from which the breadth of the territorial sea is measured or 188 miles from the outer limit of a twelve mile territorial sea.[3] If the coastal State has claimed a twelve mile contiguous zone, it will overlap with the exclusive economic zone.

I. THE GENESIS OF THE EXCLUSIVE ECONOMIC ZONE

The exclusive economic zone is the result of two recent developments in the relations between coastal States and distant-water fishing States. The first development took place in the relationship between developed coastal States and distant-water fishing States; the second, between developing coastal States and distant-water fishing States.

A. *Developed Coastal States and Distant- Water Fishing States*

Following the failure of the Second UN Conference on the Law of the Sea in 1960 to agree on the limit of the exclusive fishing rights of coastal States, a number of developed coastal States resorted to national legislation to establish a nine-mile exclusive fishing zone beyond their three-mile territorial sea.[4] The first country to take this

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1 The Convention was adopted on 30 April 1982. The text is contained in U.N. Doc. A/CONF. 62/122, 7 October 1982, and is reprinted in 21 I.L.M. 1245 (1982).

2 *Ibid.,* Article 55.

3 *Ibid.,* Article 57.

4 For a brief description of the Second Conference, see the first article in this series, (1987) 29 Mal. L.R. 1 at pp. 13–14.

step was Iceland. The British and the French protested against Iceland's action. The dispute between Iceland and the United Kingdom led to the famous Cod War when units of the British navy were sent to protect British trawlers against attempts by Iceland to enforce its legislation beyond the three-mile limit. The British had *to* withdraw its naval escort when the crisis in the bilateral relationship between Britain and Iceland threatened the unity of NATO. The crisis was eventually resolved by an agreement between the two Governments.[5] The United Kingdom agreed to respect Iceland's new fishing limit in return for Iceland's agreement to phase out the British trawlers over a period of three years. It was also agreed that any dispute concerning the extension of fishing limits could be submitted to the International Court of Justice.

In 1962, the Faroe Islands, which belong to Denmark, followed Iceland's example and established a twelve-mile exclusive economic zone. In 1964, Ireland[6] and Canada[7] also established such zones. There was, however, an important difference between the Canadian and Irish legislation. The Canadian laws recognised the traditional fishing rights of eight distant-water fishing States and sought to accommodate them through bilateral negotiations. The Irish legislation did not do so. Nor did it contain a phasing out provision. New Zealand[8] in 1965, Australia[9] and Spain[10] in 1967, enacted national legislation extending their exclusive fishing zones to twelve miles. The legislation of all three countries contained provisions for phasing out the traditional rights of distant-water fishing States over a specified period of time.

B. United States

Until 1966, the United States had refused to recognize any national fishery legislation purporting to have effect beyond three miles. It will be recalled that at the Second UN Conference in 1960, the United States had led the opposition to a proposal which would have empowered coastal States to establish exclusive fishing zones up to twelve miles. In one of its recurrent U-turns, the United States enacted national legislation in 1966 to establish a nine-mile fishing zone adjacent to its three-mile territorial sea.[11] Within the fishing zone, the United States claimed the right to exercise the same exclusive rights in respect of fisheries as it has in its territorial sea, subject only to the

[5] Exchange of Notes Constituting an Agreement Settling the Fisheries Dispute between the Government of Iceland and the Government of the United Kingdom of Great Britain and Northern Ireland, 11 March 1961, 397 U.N.T.S. 275.

[6] Maritime Jurisdiction (Amendment) Act, 1964 (No. 3 of 1964), reprinted in United Nations Legislative Series, *National Legislation and Treaties Relating to the Territorial Sea, the Contiguous Zone, the Continental Shelf, the High Seas and to Fishing and Conservation of Living Resources of the Sea* (1970), UN Doc. ST/LEG/ SER.B/15, at p. 641.

[7] Territorial Sea and Fishing Zones Act, 1964, Statutes of Canada, Ch. 22, reprinted in UN Legislative Series, *Ibid.,* at p. 52.

[8] Territorial Sea and Fishing Act 1965 (No. 11 of 1965), reprinted in UN Legislative Series, *supra,* note 6, at p. 653.

[9] Fisheries Act 1952–1967 (No. 116 of 1967), reprinted in UN Legislative Series, *supra,* note 6, at p. 571.

[10] Act No. 20 of 1967, reprinted in UN Legislative Series, *supra,* note 6, at p. 668.

[11] Contiguous Fishing Zone Act, 1966, Public Law 89–658, reprinted in UN Legislative Series, *supra,* note 6, at pp. 701–702.

continuation of traditional fishing by foreign States recognized by her. The reason for the schizophrenic behaviour of the United States is that her national interests are divided. On the one hand, she has coastal communities in Alaska and the New England States which are dependent on fisheries off their coasts and which resented the competition of foreign fishing fleets. On the other hand, as we shall see later in this article, the United States also possesses fishing fleets which fish at great distances from her own shores, especially for tuna.

C. The Fisheries Jurisdiction Case

In 1972, Iceland announced its intention to extend its fishery jurisdiction from twelve to fifty miles. The United Kingdom and the Federal Republic of Germany requested the International Court of Justice to declare that there was no foundation in international law for Iceland's claim to extend its fishery jurisdiction to fifty miles. In its judgment, the Court[12] stated that the concept of an exclusive fishing zone of up to twelve miles had become part of customary international law since the Second UN Conference of 1960. Beyond twelve miles, the Court held that coastal States could claim preferential fishing rights. However, "A coastal State entitled to preferential rights is not free, unilaterally and according to its own uncontrolled discretion, to determine the extent of those rights. The characterisation of the coastal State's rights as preferential implies a certain priority but cannot imply the extinction of current rights of other States, particularly of a State which, like the applicant, has for many years been engaged in fishing in the waters in question, such fishing activity being important to the economy of the country concerned. The coastal State has to take into account and pay regard to other states, particularly when they have established an economic dependence on the same fishing grounds."[13]

The Court declared that Iceland's unilateral action constituted an infringement of the principle in the Convention on the High Seas which requires that all States, including coastal States, in exercising their freedom of fishing, pay reasonable regard to the interests of other States. The Court said that the appropriate method for resolving the dispute between Iceland and the United Kingdom was by negotiations between them, on the basis that Iceland had preferential rights in the fishing and the United Kingdom had an historic interest. The negotiations should aim to bring about an equitable apportionment of the fishery resources.

Ten of the judges of the Court subscribed to the majority opinion. Five of these ten judges, however, appended a separate opinion.[14] In their separate opinion, they said that they did not regard the judgment as declaring that the extension of Iceland's jurisdiction was without foundation in international law. They said that the judgment was based on the special facts and circumstances of that case and not on the British argument that a customary rule of international law existed which prohibited the extension by States of their exclusive fisheries

[12] *The Fisheries Jurisdiction Case,* I.C.J. Rep. 1974, p. 266.

[13] *Ibid.,* at p. 27.

[14] *Ibid.,* at p. 45.

jurisdiction beyond twelve miles. They were of the view that no firm rule could be deduced from State practice as being sufficiently general and uniform to be accepted as a rule of customary law fixing the maximum extent of the coastal State's jurisdiction with regard to fisheries.

D. Developing Coastal States and Distant- Water Fishing States

The progressive extension of exclusive fisheries jurisdiction by developed coastal States, in response to competition by distant-water fishing States, was matched by similar action on the part of developing coastal States. Developing coastal States were, with very few exceptions, too poor and too under-developed, technologically, to have fishing fleets capable of competing with the modern fishing fleets of Japan, the Soviet Union and the United States. The developing coastal States felt that the doctrine of freedom of fishing in the high seas, coupled with a three-mile territorial sea, was designed to serve the interests of the rich and the powerful because it enabled countries such as Japan, the Soviet Union and the United States to fish close to their shores whilst they lacked the capacity to fish off the coasts of those or other developed coastal States. The movement to remould the international law of fisheries was led by the Pacific-coast Latin-American countries which felt threatened by the tuna fleets of the United States.

The first blow was struck by Chile on the 23rd of June 1947.[15] The President of Chile issued a Declaration claiming national sovereignty over the continental shelf and over the seas adjacent to its coasts up to a limit of 200 miles from the coasts and islands. The Declaration contained a proviso that the declaration of sovereignty recognized the legitimate rights of other States on a reciprocal basis and it would not affect the rights of free navigation on the high seas. Two months later, on the 1st of August 1947, Peru issued a similar decree.[16]

E. Santiago Declaration (1952)

Representatives of Chile, Ecuador and Peru met in Santiago, Chile, from the 11th to the 19th of August, 1952 to discuss the maritime resources of the South Pacific. At the end of their conference, they issued a declaration which has come to be known as the Santiago Declaration of 1952.[17] In it, the Governments of Chile, Ecuador and Peru "proclaim as a principle of their international maritime policy that each of them possesses sole sovereignty and jurisdiction over the sea adjacent to the coast of its own country and extending not less than 200 nautical miles from the said coast." The declaration states that it "shall not be construed as disregarding the necessary restrictions on the exercise of sovereignty and jurisdiction imposed by international

[15] United Nations Legislative Series, *Laws and Regulations on the Regime of the Territorial Sea* (1957), UN Doc. ST/LEG/SER.B/6, at p. 4.

[16] Supreme Decree of I August 1947, reprinted in *Laws and Regulations on the Regime of the High Seas,* UN Doc. ST/LEG/SEF.R/1 (1951), pp. 16–18 and in UN Legislative Series, UN Doc. ST/LEG/SER.B/6, *ibid.,* pp. 38–39.

[17] S. Oda, *The International law of the Ocean Development, Basic Documents* (1972), pp. 345; S.H. Lay, R. Churchill and M. Nordquist, *New Directions in the Law of the Sea,* Vol. 1(1973), p. 231.

law to permit the innocent and inoffensive passage of vessels of all nations through the zone aforesaid."[18]

The Santiago Declaration fixed 200 nautical miles as the limit of the sovereignty and jurisdiction of Chile, Ecuador and Peru over the seas adjacent to their coasts. Does the figure of 200 nautical miles coincide with the limit of any natural phenomenon? It does not coincide with the widths of the continental shelves of the three countries. They have relatively narrow continental shelves which vary in width from eight to eighty nautical miles. According to D.P. O'Connell, Peru has tried to justify the figure of 200 nautical miles on the ground that it is the approximate width of the Peruvian Current.[19] The Peruvian estimation of the width of the current has been contradicted by the subsequent investigations of oceanographers. Cuchlaine A.M. King, for example, stated that, "The current extends to about 900 km from shore... ."[20] What is the connection, any, way, between the width of the Peru Current and Peru's claim to exclusive fishing right?

The Peru Current, also known as the Humboldt Current, is an ocean current which flows north from the tip of Chile along the coasts of Chile and Peru. This ocean current carries cool, nutrient-rich sub-Antartic water. The major nutrients in sea water are: phosphorus, nitrogen, silicon, copper and iron. The presence of these nutrients and the availability of sun light will enable phytoplankton to grow. What are phytoplankton? They are microscopic plants, each consisting of a single cell. However difficult it may be to believe, it is, nevertheless, true that "these finely scattered and microscopic plants... really form a vegetation which has sufficient bulk to support all the teeming animal life of the sea: the dense populations of planktonic crustaceans, the vast shoals of fish and all the invertebrate animals on the seabed."[21]

Zooplankton are little animals which feed on phytoplankton. What are these little animals? They include miniature jelly fish, arrow worms, many kinds of protozoa, segmented worms and molluscs.[22] Fish larvae and juvenile fish, as well as some species of fish such as the herring, feed on the zooplankton. In turn, other fish feed on the herring and juvenile fish. This is the food web of the oceans.

I have already referred to the fact that the Humboldt Current brings cool, nutrient-rich water from the Antartic. In addition, the prevailing winds in the area carry the surface water away from the coast thereby resulting in water being drawn to the surface from depths of generally less than 100 metres. This upwelling along the Chilean and Peruvian coasts brings nutrient rich water to the surface and is the additional cause of an enormous growth of phytoplankton and zooplankton on which a huge school of anchoveta and other pelagic fish as well as their predators depend. The importance of the Humboldt Current to fisheries can be seen by the fact that by 1964 Peru had become the world's number one fishing nation. In the peak

[18] Oda, *ibid.,* at 346; Lay, *ibid.,* at 232.

[19] D.P. O'Connell, *The International Law ofthe Sea* (1982), Vol. 1, p. 555.

[20] C.A.M. King, *Introduction to Physical and Biological Oceanograpby* (1975), p. 95.

[21] A. Hardy, *The Open Sea: Its Natural History, Part I: The World of Plankton* (1971), p. 37.

[22] *Ibid.,* at p. 68.

year, 1970, Peru accounted for 12 million metric tonnes of catch or over one-fifth of the world catch.[23]

Although Peru had said that, "the limit of 200 miles does not pretend to be a universal rule, but is valid only for those countries whose realities and responsibilities makes its acceptance possible and necessary",[24] similar claims were made by other Latin-American States whose situations were quite different from those of Peru. Regional solidarity, a heightened mood of economic nationalism in the Third World and the feeling that the old legal order was unjust and obsolete encouraged this trend.

F. The Montevideo Declaration on the Law of the Sea (1970)

From the 4th to the 8th of May, 1970, a meeting on the law of the sea was convened in Montevideo by the Government of Uruguay. The meeting was attended by Argentina, Brazil, Chile, Ecuador, El Salvador, Nicaragua, Panama, Peru and Uruguay. The meeting adopted a Declaration of Principles on the Law of the Sea which states, *inter alia,* "the right of coastal States to avail themselves of the natural resources of the sea adjacent to their coasts and of the soil and subsoil thereof" and "the right to establish the limits of their maritime sovereignty and jurisdiction in accordance with their geographical and geological characteristics and with the factors governing the existence of marine resources and the need for their rational utilisation".[25]

G. Declaration of the Latin American States on the Law of the Sea (1970)

Three months after the meeting in Montevideo, another meeting was held in Lima, Peru and attended by twenty Latin-American states: Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay and Venezuela. The Declaration, *inter alia,* recognises the "inherent right of the coastal State to explore, conserve and exploit the natural resources of the sea adjacent to its coasts and the soil and subsoil thereof, likewise of the Continental Shelf and its subsoil", and upholds the "right of the coastal State to establish the limits of its maritime sovereignty or jurisdiction in accordance with reasonable criteria, having regard to its geographical, geological and biological characteristics, and the need to make rational use of its resources".[26]

H. Declaration of Santo Domingo (1972)

The Special Conference of the Caribbean Countries on Problems of the Sea met at Santo Domingo, the Dominican Republic, from the 6th

[23] S. Holt, "Marine Fisheries", in E.M. Borgese & N. Ginsburg (Editors), *Ocean Yearbook,* Vol. 1 (1978), at p. 40.

[24] *Ministerio de Relaciones Exteriors del Peru, Soberania Maritima: Fundamentos de la Posicion Peruana* (1970), p. 16, as noted in O'Connell, *supra,* note 19, at p. 557.

[25] Oda, *supra,* note 17, at pp. 347–348; Lay, Churchill and Nordquist, *supra,* note 17, at pp. 235–236.

[26] Oda, *ibid.,* at pp. 349–350; Lay, Churchill and Nordquist, *ibid.,* at pp. 237–239.

to the 9th of June 1972. The meeting was attended by the following thirteen States: Barbados, Colombia, Costa Rica, Dominican Republic, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Trinidad and Tobago and Venezuela. El Salvador and Guyana attended as observers. The aim of the meeting was to harmonise the views of the participating States on fundamental questions of the law of the sea. The fifteen participating States were, however, unable to agree and a vote had to be taken on the Declaration of Santo Domingo. The ten States which voted for the Declaration were: Colombia, Costa Rica, Dominican Republic, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Trinidad and Tobago, and Venezuela. The remaining five States, Barbados, El Salvador, Guyana, Jamaica and Panama abstained.

The Declaration states, *inter alia,* that the "coastal State has sovereign rights over the renewable and non-renewable natural resources, which are found in the waters, in the seabed and in the subsoil of an area adjacent to the territorial sea called the patrimonial sea" and the "whole of the area of both the territorial sea and the patrimonial sea, taking into account geographic circumstances, should not exceed a maximum of 200 nautical miles".[27] The Declaration of Santo Domingo was significant for two reasons. First, it gave a name "patrimonial sea" to the zone in which the coastal State would have sovereign rights to the renewable and non-renewable resources of the water column, the seabed and its subsoil. Secondly, it fixed 200 nautical miles as the maximum permissible breadth of the territorial sea and patrimonial sea. It will be recalled that neither the Montevideo Declaration nor the Lima Declaration had mentioned any limit although it seemed to have been assumed that 200 nautical miles would not be regarded as an unreasonable limit.

I. *The Asian-African Legal Consultative Committee*

Representatives of four Latin-American States, Argentina, Brazil, Ecuador and Peru attended the meeting of the Asian-African Legal Consultative Committee (AALCC) held in Colombo, Sri Lanka, in January, 1971. They tried to persuade the Asian and African States of the validity of the 200-mile claims of the Latin-American States. The initial reaction of the Afro-Asians was sceptical. Most of them regarded the Latin-American claims as being excessive and unlikely to win international acceptance.

However, at the next meeting of Asian-African Legal Consultative Committee, held in Lagos, Nigeria, in January, 1972, Kenya put forward a working paper entitled, "The Exclusive Economic Zone Concept".[28] The paper observed that attempts by developing countries to extend their territorial seas up to a distance of 200 miles, in order to compensate for their technologically disadvantaged position, had given rise to concern among the major maritime powers that such extensions would have a prejudicial effect on the freedoms of navigation and overflight within such zones. Kenya was, therefore, putting forward the concept of the exclusive economic zone as a

[27] S. Oda, *The International Law of Ocean Development, Basic Documents, Vol. II* (1975), at pp. 32-34; Lay, Churchill and Nordquist, *supra,* note 17, at p. 247.

[28] Asian-African Legal Consultative Committee, Report of the Thirteenth Session Held at Lagos from 18 to 25 January, 1972, pp. 369–374.

compromise to the competing claims. The concept would embody a relatively narrow territorial sea of twelve miles together with exclusive coastal State jurisdiction for economic purposes in a zone extending to 200 miles from the territorial sea boundaries.

J. *African States Regional Seminar on the Law of the Sea (1972)*

In June, 1972, an African regional seminar on the law of the sea was held in Yaounde, Cameroon. The meeting, in effect, endorsed the proposal submitted five months earlier by Kenya to the AALCC. The report of the meeting contained the following propositions:

> "The Territorial Sea should not extend beyond a limit of 12 nautical miles.
> The African States have equally the right to establish beyond the territorial sea an Economic Zone over which they will have an exclusive jurisdiction for the purpose of control, regulation and national exploitation of the living resources of the sea and their reservation for the primary benefit of their peoples and their respective economies, and for the purposes of the prevention and control of pollution.
> The establishment of the zone shall be without prejudice to the following freedoms: freedom of navigation, freedom of overflight, freedom to lay submarine cables and pipelines."[29]

K. Draft Articles on the Exclusive Economic Zone

On the 7th of August, 1972, the delegation of Kenya submitted draft articles on the concept of the exclusive economic zone to the UN Sea-Bed Committee.[30] The draft articles would entitle every coastal State to claim an exclusive economic zone beyond a territorial sea of twelve miles. The maximum permissible breadth of the exclusive economic zone would be 200 miles, measured from the baselines for determining the territorial sea. The coastal State shall have exclusive jurisdiction to the living and non-living resources of the water column, the seabed and subsoil thereof. The establishment of such a zone shall be without prejudice to the exercise of the freedom of navigation, the freedom of overflight and the freedom to lay submarine cables and pipelines as recognized by international law.

These, then were the chief signposts on the road towards the evolution of the exclusive economic zone. To ward off the pressure of distant-water fishing fleets, a number of developed coastal States had claimed exclusive fishing right in a nine mile zone seaward of their territorial sea of three miles. One of the developed coastal States, Iceland, had purported to extend her exclusive fishing zone from twelve (measured from the territorial sea baselines) to 50 miles. Chile, Ecuador and Peru, faced with increasing pressure from American tuna fleets, extended their maritime zones to 200 miles. The figure of 200

[29] Report of the Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor Beyond the Limits of National Jurisdiction, UN Gen.Ass.Off.Rec., 17th Sess. (1972), Supp. No. 21, pp. 73–74 (UN Doc. A/8721); reprinted in Lay, Churchill and Nordquist, *supra,* note 17, at pp. 250–251.

[30] Submitted as UN Doc. A/AC.138/SC.II/L.10, Report of the Sea-Bed Committee, *ibid.,* pp. 180–182; also reprinted in Oda, *supra,* note 17, at p. 252.

miles was picked because Peru thought it was the width of the Humboldt Current. Although the geographical and biological situations of other Latin-American States were significantly different from those of Chile and Peru, their example was widely copied in Latin-America. The Declaration of Santo Domingo acknowledged a distinction between the territorial sea and a wider zone within which coastal States would have sovereign rights only to the resources and called the latter the patrimonial sea. Kenya crystallised the idea by calling the zone, the exclusive economic zone, and drawing a clear distinction between the territorial sea and the exclusive economic zone. According to the Kenyan proposal, a coastal State would enjoy exclusive rights to the resources of the exclusive economic zone but the international community's freedoms of navigation, overflight, and the laying of submarine cables and pipelines would be unaffected.

II. RIGHTS OF COASTAL STATES IN THE EXCLUSIVE ECONOMIC ZONE

What are the rights of coastal States in the exclusive economic zone? First, the coastal State has sovereign rights to the resources of the exclusive economic zone.[31] This includes both living and non-living resources, in the water column, the seabed and its subsoil. The main forms of living resources in the water column are marine mammals and marine animals. The two most common species of marine mammals are whales and dolphins. Marine animals in the water column are mainly fish. Marine biologists classify fish into two categories: the pelagic fish or surface-living fish and the demersal fish or bottom-living fish. The marine animals which live on the bottom of the seabed are called benthos. The most important species of benthos to man are lobsters, crayfish, shrimp, oysters, scallops and clams. The most important forms of non-living resources in the seabed and subsoil are the hydrocarbons or oil and gas. The coastal State is said to have "sovereign rights" to all these resources in its exclusive economic zone. In respect of fish, does this mean that a coastal State has exclusive right to them? Some writers have argued that under the Convention, a coastal State has only preferential not exclusive right to the fish in its exclusive economic zone because the coastal State is under a legal duty to allocate to other States the difference between the total allowable catch and its own harvesting capacity.

Secondly, the coastal State has the exclusive right to undertake activities for the economic exploration and exploitation of the zone, such as the production of energy from the water, currents and winds.[32] The main sources of energy from the oceans are tides, waves, temperature differences, ocean biomass, offshore wind and salinity gradients. Of these, only the first three look promising. Tides are produced by the gravitational pull of the moon and the sun. The moon's gravity pulls the ocean towards her. The range between low tide and high tide is called the tidal range. A tidal range of 10 metres or more is needed to make tidal power feasible. The technology of tidal power is similar to hydro-power. A dam will be built across a bay. At high tide, water will pass through the dam into the bay. As the tide ebbs, the water will pass through the dam, driving its turbines. France has a tidal power plant at La Ranee. Canada has built a pilot project in the Bay of Fundy, which has the world's largest tidal range.

[31] Article 56, para. (l)(a), 1982 Convention, *supra,* note 1.

[32] *Ibid.*

Waves in the ocean are produced by the wind and winds are, in turn, produced by the sun. The United Kingdom is known to have undertaken a large project on wave energy but has decided that it will not be economical for the next 20 years. The Government of Mauritius, with funding from the UN Development Programme, is building a pilot project. It will dam a coral reef and build an outlet where a turbine is installed.

The third potential source of energy from the ocean is the temperature difference between the warm surface layer of water and the cold water at depths of 1,000 metres or more. The temperature difference between the two layers of water is particularly pronounced in the equatorial regions and the tropics where the surface temperature may be between 28–30°C and the temperature of the bottom layer may be between 3–8°C. The concept is extremely simple: the temperature difference equals potential energy. A fluid, such as ammonia, is brought into contact with warm surface water. When this happens, the ammonia vaporises and the vapour drives the turbines in a generator. The ammonia vapour is then brought into contact with cold water from the ocean bottom. This causes the vapour to condense and the ammonia fluid is then pumped out to start the cycle all over again. The technology is called ocean thermal energy conversion (OTEC). Japan has built a pilot plant in Nauru. According to information supplied by the United Nations,[33] the Netherlands and Indonesia will be building an OTEC plant on Bali, Indonesia and Jamaica and Sweden will be building one near Kingston, Jamaica.

A. *Jurisdiction of Coastal States in the Exclusive Economic Zone*

What is the jurisdiction of the coastal State in the exclusive economic zone? The coastal State has jurisdiction in its exclusive economic zone over three matters.[34] First, over the establishment and use of artificial islands, installations and structures and secondly, over marine scientific research. Thirdly, over the protection and preservation of the marine environment. The provisions of the Convention affecting the jurisdiction of the coastal State over artificial islands, installations and structures are contained in Part V, entitled "Exclusive Economic Zone". The provisions dealing with the jurisdiction of the coastal State over marine scientific research are, however, contained in part XIII and the provisions dealing with the jurisdiction of the coastal State over the protection and preservation of the marine environment are contained in Part XII.

III. THE LIVING RESOURCES OF THE EXCLUSIVE ECONOMIC ZONE

Although article 56 characterises the right of the coastal State to the living resources of the EEZ as "sovereign" it is, in fact, qualitatively different from the right of the coastal State to the non-living resources of the zone. The convention imposes two important duties on the coastal State in respect of the living resources in the EEZ. First, the

[33] I am grateful to Mr. Lawrence Newman of the Ocean Economics and Technology Branch of the UN Secretariat for this information.

[34] Article 56, para. (1)(b), 1982 Convention, *supra,* note 1.

coastal State has a duty to "ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation".[35] Second, the coastal State has a duty to promote the objective of optimum utilization of the living resources in the EEZ.[36] The coastal State, therefore, has a duty to practise proper conservation and management of the living resources in its EEZ. The coastal State must ensure, through proper conservation and management, that the living resources in its EEZ are not endangered by over-exploitation. One of the reasons advanced for the EEZ was that it would lead to the better conservation and management of the living resources. The argument was that under the traditional law, fish outside the territorial sea was the common property of all nations. Every nation and every fisherman was out to get as much of the fish in the high sea as possible. Although every one paid lip service to the need for conservation, no one was, in fact, prepared to limit his catch because no one was prepared to sacrifice unless every one had to make a sacrifice. The result was a classic zero sum game and many fish stocks were dangerously over-fished. It was said that the regional fisheries organisations could not solve the problem because their member States were not prepared to give them the power necessary to do the job. The establishment of the EEZ would end the common property problem and coastal States would have the power and the incentive to practise proper conservation and management.

A. *Optimum Utilisation*

Why is the coastal State under a legal obligation to promote the optimum utilisation of the living resources in the EEZ? It is placed under such a duty because we live in a world of hunger and fish is a very important source of animal protein.[37] It is also the premise from which the convention proceeds to impose on the coastal State a duty to allocate to other States any surplus between the total allowable catch and its own harvesting capacity. It should be pointed out that optimum utilisation is not the same as maximum utilisation. A simple analogy will bring out the difference between maximum and optimum. Let us suppose that the maximum speed of a motor car is 100 miles per hour. Its optimum speed, based on the criteria of speed, safety and fuel-efficiency is, let us say, 55 miles per hour. Therefore, if our objective is the maximum utilisation of the living resources of the EEZ, the total allowable catch or maximum sustainable yield will be greater than the total allowable catch when the objective is optimum utilisation. When the objective is optimum utilisation, the coastal State, in fixing the total allowable catch or optimum sustainable yield, is entitled to take relevant biological, environmental, economic and social factors into account. The reason for the recent trend in fisheries science in moving from the concept of maximum sustainable yield to the concept of optimum sustainable yield is prudence. If you are harvesting the maximum sustainable yield of a species or biomass and an environmental mishap were to occur which reduces the population of the species or biomass, the capacity of the species or biomass to

[35] Article 61, para. 2, *ibid.*

[36] Article 62, para. 1, *ibid.*

[37] S.J. Holt & C. Vanderbuilt, "Marine Fisheries", in E.M. Borgese & N. Ginsburg (Editors), *Ocean Yearbook,* Vol. 2 (1980), at p. 28.

maintain itself at a stable level could be seriously endangered. This is because maximum sustainable yield pushes the catch too close to the brink and does not contain any safety margin. Optimum sustainable yield is supposed to rectify that shortcoming.

B. Determining the Total Allowable Catch

How shall the coastal State establish the total allowable catch or optimum sustainable yield of the living resources in its EEZ? The Convention suggests various ways to assist the coastal State. First, the coastal State should take into account, the best scientific evidence available.[38] Secondly, it could consult the Food and Agricultural Organisation or the appropriate regional fisheries organisation.[39] Thirdly, in setting the total allowable catch, the coastal State shall be guided by the objective of maintaining or restoring "populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international standards... ."[40] The objective is to maintain the populations of the harvested species at a stable level. Where the population of a particular species has fallen below the desirable level, owing to over-fishing or because of an environmental hazard or both, the total allowable catch may be lowered in order to restore the population to the desired level. The following are two examples of environmental factors which should be taken into account in fixing the total allowable catch.

Suppose that we are fixing the total allowable catch of the anchoveta fishery in the EEZ of Peru. We know from historical record that every six to ten years a warm current, nicknamed "El Nino", comes down the coast of Peru. The warm current stops the upwelling which brings nutrients from the lower layer of water to the surface. When an "El Nino" occurs the population of anchoveta is drastically reduced. We would take the temperature of the water in order to detect any warming trend. Let us suppose that the total allowable catch of anchoveta has been fixed at 10 million M.T. for the current year. Let us further suppose that the temperature of the water indicates that an El Nino has occurred. This should be taken into account in fixing the total allowable catch of anchoveta for next year which will be fixed at, let us say, 8 million M.T.

Another situation would be the occurrence of a major oil spill in the EEZ. Let us suppose that the oil spill has seriously damaged a fishery which will take five years to recover. This factor should be taken into account in fixing the total allowable catch for the next five years.

Fourthly, the coastal State shall take into consideration the effects of the total allowable catch of one species or another species which is

[38] Article 61, para. 2, 1982 Convention, *supra,* note 1.

[39] *Ibid.*

[40] Article 61, para. 3, *ibid.*

associated with or dependent upon the former.[41] The coastal State should ensure that the total allowable catch of one species would not have the effect of reducing the population of the associated or dependent species below a desirable level. There is an intricate food web linking various species in the oceans. For example, the anchoveta and the sardine in the Peruvian EEZ, are associated species in the sense that they compete for food. In another case, one species may be dependent upon another species. For example, cod feeds on herring; it can, therefore, be said that cod is dependent upon herring. The interrelationships between different species in a biqmass must, therefore, be understood and taken into account in fixing the total allowable catch of each of the species.

Finally, the coastal State should take into account statistics on catch, on fishing effort and other data relevant to the conservation of fish stocks.[42] Fisheries science has abandoned the use of "catch per unit effort" by a fishing vessel as a criterion for calculating the abundance of the species. In recent years, the total allowable catches have been based upon what fisheries scientists call, "virtual population analysis". The idea is to use the data on the total catch of a species and its age distribution to calculate its abundance. Fisheries biologists can tell the age of a fish. Therefore, if data on total catch and age distribution are available for a number of years, it is possible to estimate, retrospectively, the size of each year's class of that stock. Developing countries may, however, find it difficult to obtain the necessary data. Statistics on the total catch of each species may not be available. If statistics are available, they may not be reliable. There may not be available an adequate number of trained personnel to compile statistics on the age distribution of the catch. Meanwhile, fisheries science in the West has marched on and the latest thinking on fisheries management seems to emphasize the fact that the different species in a biomass form an interactive system and fisheries management must, therefore, take into account, "the interactive and flexible community nature of the resource base."[43]

C. *Harvesting Capacity and Surplus*

After determining the total allowable catches of the different species in the EEZ, the coastal State should then determine its own harvesting capacity.[44] If the coastal State has the capacity to harvest the entirety of the total allowable catches of some or even all the species, it is entitled to do so. In that event, there would be no surplus in respect of some or of all the species. However, if the coastal State's harvesting capacity is less than the total allowable catch, the coastal State is under a legal duty to give other States access to the surplus.[45]

D. *Criteria For Allocating the Surplus*

If a surplus exists and only one State is seeking access to the surplus, no problem arises. A problem arises when the surplus is not big enough to

[41] Article 61, para. 4, *ibid.*

[42] Article 61, para. 5, *ibid.*

[43] L.M. Dickie, "Perspectives on Fisheries Biology and Implications for Management", (1979) 36 J. Fish. Res. Bd. Can. 838 at p. 843.

[44] Article 62, para. 2, 1982 Convention, *supra,* note 1.

[45] *Ibid.*

satisfy the requests of all those seeking a share of it. How should the coastal State allocate the surplus? Who gets to the head of the queue? The Convention lays down a number of criteria on the allocation of the surplus.

First, the coastal State shall have particular regard to the provisions of articles 69 and 70, especially in relation to the developing States referred to in those articles.[46] Articles 69 and 70 deal, respectively, with the rights of land-locked States and geographically disadvantaged States.

Secondly, the coastal States shall take into account all relevant factors, including, *inter alia,* (a) the significance of the living resources of the area to the economy of the coastal State concerned and its other national interests, (b) the provisions of articles 69 and 70, (c) the requirements of developing States in the subregion or region in harvesting part of the surplus and (d) the need to minimize economic dislocation in States whose nationals have habitually fished in the zone or which have made substantial efforts in research and identification of stocks.[47] In view of the use of the words "including" and "*inter alia*" we should read article 62, paragraph 3, as meaning that the four factors mentioned are not exhaustive. The first factor, *i.e.,* the significance of the living resources of the area to the economy of the coastal State concerned and its other national interests, would appear to be superfluous since the coastal State is entitled to harvest as much of the total allowable catch as it has the capacity to do. Are the second, third and fourth factors intended to indicate their rank in the hierarchy or their places in the queue? I think it would be reasonable to interpret article 62, paragraph 3, as creating a hierarchy and giving the first place in the queue to land-locked and geographically disadvantaged States; the second place to developing States in the same subregion or region as the coastal State; and the third place to States which have habitually fished in the zone or which have made substantial efforts in research and identification of stocks. This interpretation is supported by the emphasis given to land-locked and geographically disadvantaged States in article 62, paragraph 2, and by the fact that land-locked and geographically disadvantaged States have a "right" to a part of the surplus[48] whereas the States belonging to the other two categories do not have a "right" but a "privilege".[49]

E. *Land-locked and Geographically Disadvantaged States*[50]

We have established that in applying for a part of the surplus, the first priority shall be given to land-locked[51] and geographically disadvan-

[46] *Ibid.*

[47] Article 62, para. 3, 1982 Convention, *supra,* note 1.

[48] Articles 69 and 70, *ibid.*

[49] The terms "right" and "privilege" are used in accordance with Professor Hohfeld's taxonomy. See generally, W.N. Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning* (1946).

[50] See S. Jayakumar, "The Issue of Rights of Landlocked and Geographically Disadvantaged States in the Living Resources of the Economic Zone", (1977) 18 Va. J. Int'l L. 69.

[51] The following 30 landlocked States participated in the Third United Nations Conference on the Law of the Sea: Afghanistan, Austria, Bhutan, Bolivia, Botswana, Burundi, Byelorussian SSR, Central African Republic, Chad, Czechoslovakia, Holy See, Hungary, Laos, Lesotho, Liechenstein, Luxembourg, Malawi, Mali, Mongolia, Nepal, Niger, Paraguay, Rwanda, San Marino, Swaziland, Switzerland, Uganda, Upper Volta, Zambia and Zimbabwe.

taged States. What are geographically disadvantaged States? The Convention defines them as: (a) coastal States which can claim no exclusive economic zones of their own and (b) coastal States, including States bordering enclosed or semi-enclosed seas, whose geographical situation makes them dependent upon the exploitation of the living resources of the exclusive economic zones of other States in the subregion or region for adequate supplies of fish for the nutritional purposes of their populations or parts thereof.[52] The first limb of the definition is very precise but, to the best of my knowledge, only one State, Singapore, has claimed to satisfy it. The second limb of the definition is less precise and would include the case of coastal States whose exclusive economic zones are extremely small as well as the case of coastal States whose exclusive economic zones are very poor in living resources. Jamaica, for example, has claimed that its exclusive economic zone is like a biological desert. .

F. Rights of Land-Locked and Geographically Disadvantaged States

Land-locked States and geographically disadvantaged States have a right to an appropriate part of the surplus of the coastal States of the same subregion or region.[53] Developed land-locked and geographically disadvantaged States can assert their right only against developed coastal States of the same subregion or region.[54] It would appear that developing land-locked and geographically disadvantaged States can exercise their right against both developing and developed coastal States of the same subregion or region.

When a land-locked or geographically disadvantaged State applies to a coastal State for a part of its surplus, the terms and modalities for allocating a part of the surplus shall be governed by a bilateral, subregional or regional agreement.[55] In negotiating such agreements, account shall be taken of the following factors, amongst others. The first factor is the need to avoid effects detrimental to fishing communities or fishing industries of the coastal State.[56] This factor does not appear to be relevant when the right of the, land-locked and geographically disadvantaged States is limited to a share of the surplus. When a surplus exists it must follow that the interests of the fishing communities and fishing industries of the coastal State have already been taken care of. This factor is only relevant in a no-surplus situation.

The second factor is the extent to which the land-locked State or geographically disadvantaged State is, at present, participating in the exploitation of the living resources of the exclusive economic zones of other coastal States or is entitled to do so, under existing bilateral,

[52] Article 70, para. 2, 1982 Convention, *supra,* note 1. The following 25 States claim to qualify as geographically disadvantaged States: Algeria, Bahrain, Belgium, Bulgaria, Cameroon, Ethiopia, Finland, Gambia, German Democratic Republic, Federal Republic of Germany, Greece, Iraq, Jamaica, Jordan, Kuwait, Netherlands, Poland, Qatar, Singapore, Sudan, Sweden, Syria, Turkey, United Arab Emirates and Zaire.

[53] Article 69, para. 1, and Article 70, para. 1.

[54] Article 69, para. 4, and Article 70, para. 5.

[55] Article 69, para. 2, and Article 70, para. 3.

[56] Article 69, para. 2(a), and Article 70, para. 3(a).

subregional or regional agreements.[57] In other words, account shall be taken of the extent to which a land-locked or geographically disadvantaged State is, at present, fishing in the exclusive economic zones of other coastal States or is entitled to do so under an existing agreement.

The third factor is the extent to which other land-locked and geographically disadvantaged States are fishing in the exclusive economic zone of the coastal State and the need to avoid a particular burden for any single coastal State or part thereof.[58] If, in a particular subregion or region, there are several land-locked and geographically disadvantaged States and several coastal States with a surplus, it would be unfair for all the land-locked and geographically disadvantaged States to apply to one coastal State only. The burden of accommodating the land-locked and geographically disadvantaged States should be shared among the several coastal States of the subregion or region. This factor would be inapplicable if of all the coastal States of the subregion or region only one has a surplus. It may also be inapplicable to a situation in which the surplus of the other coastal States is in respect of species which the land-locked or geographically disadvantaged States have no economic interest in harvesting.

The fourth factor is "the nutritional needs of the respective States"[59]. Does the phrase, "respective States" refer to the land-locked and geographically disadvantaged States, on the one hand, and the coastal State, on the other? Does it refer to the land-locked and geographically disadvantaged States, *inter se,* when more than one has applied for a share of the surplus? In a situation where a surplus exists and only one land-locked or geographically disadvantaged State has applied for a share of it, this factor is irrelevant. However, if two or more land-locked and geographically disadvantaged States have applied and the sum of their requrest exceeds the surplus available, the coastal State may take this factor into account in deciding the priority and the amounts to be allocated to the applicants. In a no-surplus situation, it would be relevant to take into account the nutritional needs of the populations of the coastal State, on the one hand, and the land-locked and geographically disadvantaged State or States, on the other hand.

The four factors mentioned above apply to both developed and developing land-locked and geographically disadvantaged States. There is a fifth factor which is applicable only to developed land-locked and geographically disadvantaged States. The fifth factor requires us to give "regard to the extent to which the coastal State, in giving access to other States to the living resources of its exclusive economic zone, has taken into account the need to minimize detrimental effects on fishing communities and economic dislocation in States whose nationals have habitually fished in the zone".[60] I find this factor rather puzzling. We have previously established that the Convention creates a hierarchy of applicants for a share of the surplus and that land-locked and geographically disadvantaged States are placed at the head of the queue, ahead of States which have habitually fished in the zone. How can we reconcile this with the fifth factor? One

57 Article 69, para. 2(b), and Article 70, para. 3(b).

58 Article 69, para. 2(c), and Article 70, para. 3(c).

59 Article 69, para. 2(d), and Article 70, para. 3(d).

60 Article 69, para. 4, and Article 70, para. 5.

way to reconcile the two is to posit that the priority of developing land-locked and geographically disadvantaged States is an absolute one whereas the priority of developed land-locked and geographically disadvantaged State is relative. In other words, if a developed land-locked and geographically disadvantaged State and a habitual fishing State apply for a share of the surplus of a coastal State and the surplus is not big enough to accommodate the requests of both to the full, the coastal shall share the surplus between them, giving the former relatively more weight than the latter.

G. When No Surplus Exists

What happens when no surplus exists? In such a situation, the Convention makes a clear distinction between developed and developing land-locked and geographically disadvantaged States.[61] When no surplus exists there is nothing to be done for developed land-locked and geographically disadvantaged States. In the case of developing land-locked and geographically disadvantaged States, the Convention requires the coastal States of the subregion or region to cooperate in order to establish equitable arrangements so that the developing land-locked and geographically disadvantaged States can continue to fish. Such arrangements could be of a bilateral, subregional or regional nature. The terms on which continued access will be granted to developing land-locked and geographically disadvantaged States, in a no-surplus situation, must be satisfactory to all the States concerned. In implementing this provision, the four factors relevant to the allocation of the surplus, must also be taken into account.

H. Equal or Preferential Rights

Nothing in the Convention prevents the countries of any subregion or region from agreeing upon arrangements whereby the coastal States will grant to the land-locked or geographically disadvantaged States of their subregion or region, equal or preferential rights for the exploitation of the living resources in the exclusive economic zones.[62] This provision was included in the Convention in order to take account of developments in Africa. The conclusions of the 1972 African States Regional Seminar on the Law of the Sea, held in Yaounde, Cameroon, contain the following:

> "the exploitation of the living resources within the economic zone should be open to all African States both land-locked and near land-locked provided that the enterprises of these States desiring to exploit these resources are effectively controlled by African capital and personnel."[63]

The Declaration on Issues of the Law of the Sea, adopted by the Council of Ministers of the Organisation of African Unity in 1973, contained the following paragraph:

> "That the African countries recognize, in order that the resources of the region may benefit all peoples therein, that the land-locked

[61] Article 69, para. 3, and Article 70, para. 4.

[62] Article 69, para. 5, and Article 70, para. 6.

[63] *Supra,* note 29.

and other disadvantaged countries are entitled to share in the exploitation of living resources of neighbouring economic zones on an equal basis as nationals of coastal States on bases of African solidarity and under such regional or bilateral agreements as may be worked out."[64]

At the second session of the Third UN Conference on the Law of the Sea, draft articles on the exclusive economic zone were submitted by eighteen African States.[65] The draft articles, *inter alia,* recognized that, "Developing land-locked and other geographically disadvantaged States have the right to exploit the living resources of the exclusive economic zones of neighbouring States and shall bear the corresponding obligations".[66] The nationals of the land-locked and geographically disadvantaged States were to "enjoy the same rights and bear the same obligations as nationals of coastal States".[67]

I. Restrictions

The rights conferred by articles 69 and ,70 on land-locked and geographically disadvantaged States cannot be exercised against a coastal State whose economy is overwhelmingly dependent on the exploitation of the living resources of its exclusive economic zone.[68] Iceland is an example of such a coastal State.

The rights conferred on LL/GDS by the said articles cannot be transferred, directly or indirectly, to third States by lease, license, joint ventures or otherwise, except with the consent of the coastal State.[69] This prohibition does not, however, preclude the LL/GDS from obtaining technical or financial assistance from third States or international organisations so long as such assistance does not have the effect of transferring the rights of the LL/GDS to third States.[70]

J. Terms and Conditions For Access To Surplus

We have established that if a coastal State is unable to harvest the entire allowable catch, it has a legal duty to allocate the surplus to other States. Can the coastal State charge fees or other forms of remuneration for granting access to its surplus? Can the coastal State demand other terms and conditions? The following are the terms and conditions specified by the Convention. The list is, however, not exhaustive.

First, the coastal State may demand the payment of fees.[71] The amount of the fee and the manner in which it is calculated vary from

[64] Para. 9, OAU Declaration on the Issues of the Law of the Sea, reprinted in the Report of the Committee on the Peaceful Uses of the Sea-bed and the Ocean Floor Beyond the Limits of National Jurisdiction, UN Gen.Ass.Off.Rec., 28th Sess. (1974), Supp. No. 21, Vol. II, pp. 4–6 (UN Doc. A/9021).

[65] UN Doc. A/CONF.62/C.2/L.82, Third United Nations Conference on the Law of the Sea, Off.Rec., Vol. **III,** 2nd Sess. (1974), pp. 240–241.

[66] *Ibid*., Article 6, para. 1.

[67] *Ibid*., Article 6, para. 2.

[68] Article 71, 1982 Convention, *supra,* note 1.

[69] Article 72, para. 1, *ibid.*

[70] Article 72, para. 2, *ibid.*

[71] Article 62, para. 4(a), *ibid.*

jurisdiction to jurisdiction. The following are some of the license fees in force in various parts of the world. Brazil (mainly for lobsters) charges US$1,215 per vessel annually.[72] Mexico (mainly for shrimps) charges US$ 18 per capacity ton.[73] Ecuador (mainly for tuna) charges a registration fee of US$700 together with US$60 per registered ton for 50 days or one full load, whichever comes first.[74] Peru charges a registration fee of US$500 annually together with US$20 per net registered ton for 100 days.[75] Canada charges an access fee and a fishing fee.[76] The access fee is calculated on the basis of C$1.45 per GRT of the vessel. The fishing fee is calculated on the bases of (a) the GRT of the vessel, (b) the number of days the vessel is fishing and (c) the species fished. Thus, a foreign fishing vessel of 3,000 GRT which spends 30 days in the Canadian EEZ fishing for squid, will have to pay an access fee of C$1.45 X 3000 = C$4,350 + a fishing fee of C$0.377 X 30 X 3000 = C$33,930, making a total of C$38,280. In the case of a developing coastal State, the Convention permits it to demand, in place of cash payment, compensation in the field of financing, equipment and technology relating to the fishing industry. Thus, a developing coastal State can ask the State applying for the surplus to finance the construction of fishing vessels or to build fish processing plants in lieu of the payment of licensing fees.

Secondly, the coastal State could require the State or States to which the surplus is allocated to undertake specified fisheries research programmes.[77] This requirement can be very useful to developing coastal States which do not have the scientific capacity to carry out such necessary research programmes as assessing what living resources exist in its EEZ, where they are to be found, their life cycles, the interactions between the different species, the abundance of each species, etc.

Thirdly, the coastal State can require the landing of all or part of the catch by the foreign vessels in the ports of the coastal State.[78] The purpose of this requirement is to capture the value added in the downstream activities such as processing and marketing. The coastal State should not, however, insist on this requirement unless it has adequate processing plants to process the fish landed at its ports and unless it has the capacity to market the end product.

Fourthly, the coastal State can request the applicant State to enter into a joint venture or other cooperative arrangement to harvest the surplus.[79] Fifthly, the coastal State can ask the applicant State to train the former's personnel and to transfer fisheries technology, including enhancing the coastal State's capacity to undertake fisheries research.[80] One very important condition not mentioned in the Conven-

72 F.W. Bell, "World-Wide Economic Aspects of Extended Fishery Jurisdiction Management", in L.A. Anderson, *Economic Impacts of Extended Fisheries Jurisdiction* (1977) at pp. 10–11.

73 *Ibid.*

74 *Ibid.*

75 *Ibid.*

76 Sections 3 & 4, Coastal Fisheries Protection Act, R.S.C. c. C-21, Coastal Fisheries Protection Regulations, CRC (1978) c. 413, p. 2911.

77 Article 62, para. 4(0, 1982 Convention, *supra,* note 1.

78 Article 62, para. 4(h), *ibid.*

79 Article 61, para. 4(i), *ibid.*

80 Article 61, para. 4(j), *ibid.*

tion is access to the market of the State applying for a part of the surplus.

K. Are the Same Terms and Conditions Applicable to LL/GDS and Developing States?

Articles 69 and 70 accord first place in the queue for access to the surplus to land-locked and geographically disadvantage States. Article 62, paragraph 3, accords the second place to developing States in the same subregion and region. States which have habitually fished in the zone or which have made substantial efforts in research and identification of stocks in the zone, which are probably all developed States, are accorded the third place. The question is whether the same terms and conditions for being allocated a part or the whole of the surplus, are applicable to all three categories of States or only the third category.

I think the correct answer is that the same terms and conditions are applicable to all three categories of States. Under articles 69 and 70, the rights of the land-locked and geographically disadvantaged States to an appropriate part of the surplus, are to be exercised, "in conformity with the provisions of... article 61 and 62". Article 62, paragraph 4, empowers coastal States, *inter alia,* to establish the terms and conditions for gaining access to the surplus. The provision makes no distinction between the three categories of States in the queue for access to the surplus. The conclusion is that a coastal State may require land-locked and geographically disadvantaged States as well as developing States of the same subregion or region to comply with the same terms and conditions for access to the surplus as States in the third category. This conclusion casts a new complexion on the whole question of priority in the queue for the surplus because if the coastal State demands the same terms and conditions from all three categories of States, the land-locked and geographically disadvantaged States and the developing States may find themselves unable to make use of their priority and the surplus will, therefore, be allocated to the highest bidder. Such an outcome seems contrary to the policy of giving priority to the land-locked and geographically disadvantaged States and to developing States. There is, however, no escape from this conclusion because the Convention does not state that the preferential access to the surplus is to be granted gratis or on terms more favourable than those applicable to States in the third category. The only cure lies in the coastal State itself deciding, as a matter of its regional and foreign policy, not only to grant preferential access to the States in the first and second categories but to do so on more favourable terms and conditions than those demanded of other States. Thus, Venezuela, for example, may decide to give preferential access to the small countries of the Caribbean and to demand less onerous terms from them than from developed countries in order to enhance Venezuela's ties with the countries of the Caribbean. Indonesia, to take another example, may well do the same in respect of her regional partners in the Association of South-east Asian Nations.

L. Conservation and Management Measures

The Convention imposes on the coastal State a duty to ensure, through proper conservation and management measures, that the maintenance

of the living resources in the EEZ is not endangered by over-exploitation. In order to avoid the danger of over-exploitation, the coastal State is required to determine the total allowable catch of the living resources in the EEZ. The coastal State is entitled to harvest as much of the total allowable catch as its fisheries industry is capable of doing.

In order to ensure that the total allowable catch is not exceeded, the coastal State should enact laws and regulations and establish an infrastructure to enforce such laws and regulations. The laws and regulations apply, in the first place, to the domestic fisheries industry. In a situation where there is a surplus to be allocated to other States, then the conservation and management laws and regulations, which may or may not be the same as those applicable to the domestic fisheries industry, will also apply to the foreign States granted access to the surplus. Article 62, paragraph 4, requires the foreign States fishing in the EEZ, to comply with the conservation and management laws and regulations of the coastal States. That provision enumerates a long but not exhaustive list of the measures which the coastal State may adopt.

M. Types of Fishery Regulations

Kesteven and Williams have divided fishery regulations into 4 classifications: regulations with respect to catch; regulations with respect to fishing operations; regulations with respect to fishing gear; and regulations with respect to fishing units.[81]

Regulations with respect to catch belong to 4 sub-divisions. First, the regulation may fix a quota of the total amount of the catch of a particular stock. The objective of such a regulations is the maintenance of the catch. Its expected effect is that the stock will remain stable. The second kind of regulation imposes a limit on the amount of fish per fishing unit, *e.g.,* limit per bag, limit per trip and limit per boat during the fishing season. The objective of this kind of regulation is to spread the employment or recreational opportunity. The main expected effect is the sharing of the allowable catch among the optimum number of participants. Kesteven and Williams have pointed out that this kind of regulation may lead to under-exploitation or to increase in operational inefficiency. The third kind of regulation controls the size or age of the fish which can be caught. The objective is to obtain the maximum yield from a fishable stock. The expected result is the survival and successful growth of a significant proportion of the undersize or underage individuals and hence the maintenance of the best average size in the catch. An undesirable effect of this kind of regulation is the rejection at sea of significant amounts of captured undersize fish unless this regulation is complemented by other regulations with respect to fishing operations and fishing gear. The fourth kind of regulation deals with the sex composition of the catch, *e.g.,* a prohibition against the taking of crayfish in berry. The objective of this regulation is also the maintenance of catch through the preservation of the reproductive capacity of the stock.

[81] G.L. Kesteven and G.R. Williams, "Fishing Regulations — Conflicts in Exploitation of Fishery Resources", in Kesteven, et. al., *Essays in Fisheries Science* (1971), at p. 77.

Kesteven and Williams have also divided regulations with respect to fishing operations into 4 sub-divisions. The first type of regulation deals with periods of fishing, *e.g.*, prohibiting fishing of certain species during a specified period of time. The objective of such a regulation could be either the maintenance of the catch or the prevention of the capture of unsalable fish. The effect is to exempt from fishing, fish which would otherwise be vulnerable during the close season. In order to overcome this restriction, fishermen would, of course, concentrate their fishing capacity during the open season. Therefore, this kind of regulation may have to be supplemented by controls on the amount of catch or of fishing effort. The second kind of regulation either closes an area to fishing or partitions a fishing ground into two or more portions. The objective of closing an area is either to maintain the catch or to prevent the capture of unsalable fish. The effect is to protect fish in the close area from fishing. This will also result in the concentration of fishing capacity in the open area and may, therefore, have to be supplemented by controls on the amount of catch or fishing effort. The objective of partitioning a fishing ground is usually to spread employment opportunity. The effect is the development of separate fleets for the different portions of the fishing ground. The third type of regulation limits the frequency or amount of use of gear by each fishing unit. Its objective is the maintenance of catch. Its effect is to restrict fishing capacity as well as to limit the total catch. However, if the intention is to limit the total fishing effort it can be defeated by increasing the number of fishing units. The fourth kind of regulation seeks to limit the total effort expended. Its objective is to maintain the catch. Its effect is the same as the third type of regulation. Kesteven and Williams warn that this type of regulation may produce intense competition among fishing units and that its enforcement requires very close supervision of fishing operations.

The third class of regulations, dealing with fishing gear, may be divided into three categories. The first category of regulation specifies the mesh size or escape gaps. Its objective is to promote the maximum yield from the fishable stock. Its effect is that small fish are allowed to escape and to grow to optimum size. The second type of regulation contains limits on gear dimensions such as the length or other dimension of the net or the width of the dredge. Its objective is the maintenance of the catch. Its effect is to restrict fishing power and to limit the total catch. Economically, this type of regulation has the effect of limiting the efficiency of the fishing unit. It can also be circumvented by improvements to the non-regulated characteristics of fishing gear. The third kind of regulation deals with the properties of materials of which fishing gear is constructed, eg prohibiting the use of monofilament nylon nets. Its objective is to spread employment opportunity. Its effect is to restrict fishing power and to limit the total catch. Economically, it has the effect of preventing the development of improvements and of increased efficiency.

The fourth class of regulations, dealing with fishing units, can be divided into 2 categories. The first category of regulation limits the number of vessels allowed to fish a stock by a system of licensing. Its objective is to maintain the total catch and the catch per vessel. It is expected to have the effect of limiting the fishing effort thereby resulting in orderly operations to take the allowable catch. This kind of regulation can have two types of negative effect. On the one hand, it may have the effect of reducing the incentive to improve efficiency. On the other hand, the allowable effort and catch may be exceeded if

the licensed vessels increase their fishing power. The second kind of regulation imposes limits on the fishing power of individual fishermen, eg limits on the number of lobster pots or the number of dredges. The objective of this kind of regulation is to maintain the catch and to spread the employment opportunity. Its expected effect is to limit the fishing effort and the total catch. This kind of regulation can be defeated unless the number of fishermen is limited or the amount of fishing effort is directly limited.

Each coastal State should decide for itself what its fishery policy is. Within the framework of its fishery policy, it should then establish its conservation and management measures. In doing so, it should attempt to integrate the contributions of the fisheries biologist, the fisheries economist, the lawyer, sociologist, environmentalist, the representative of the fishermen and the politician. Difficult choices may have to be made in situations where conflicts occur, for example, between the commercial fishermen and the sport fishermen, between the inshore fishermen and the offshore fishermen, between the artisanal fishermen and fishermen employing more sophisticated boat and gear, between economic efficiency and social equity and between competing social objectives. The fishery administrators should keep in mind the need to promote communication with the fishermen for no system of conservation and management will succeed unless the administrators can convince the fishermen that the system is in their interest.

N. The Canadian Model

The conservation and management measures applicable to domestic fishermen may not be wholly applicable to foreign fishermen who are only permitted to fish in the EEZ when the coastal State has a surplus. We shall examine the regime of one particular country, Canada, as it relates to the fishing fleets of foreign States granted access to its surplus.[82] It is given not as the only model but as one model which appears to work reasonably well.

As a result of scientific research by fisheries biologists, it has been determined that there are separate stocks of fish which tend to congregate in different areas of the Canadian EEZ. Each year, Canadian scientists determine the health of each stock and recommend its total allowable catch. Next, the portion of the total allowable catch of each stock which Canadian fishermen are likely to harvest is calculated. If there is a surplus in the total allowable catch of any of the stocks, this is available for allocation to other States. The allocation is done through bilateral negotiations between Canada and the foreign States applying for access to the surplus. The negotiations, if successful, will result in the allocation of a fixed quota (in metric tonnes) of catch and a quota of the number of fishing days in order to catch the allocated quota.

A country which has obtained the twin quotas will then apply for licences for their fishing vessels to utilise these quotas. The applicant State must have a representative in Canada with whom Canadian

[82] I am grateful to R.J. Prier, Chief, Conservation and Protection Division, Scotia-Fundy Region, of the Canadian Department of Fisheries and Oceans for the information.

government officials can liaise in respect of the licensing procedure and of the activity of the vessel. The licence application is in the form of a specification and data sheet which details a vessel's identification, specifications, fishing gear, communications equipment, processing equipment, fish storage hold and a fishing plan. The licence granted outlines the specific requirements of each vessel, regarding the mesh size of its net, the area of vessel's operation and the reporting requirements.

Once a vessel is licensed and fishing in the EEZ, it is required to submit certain reports concerning its catch and activities. The vessel must submit a report 24 hours before entering the EEZ. The report will specify the time and position of the vessel's entry into the zone and its anticipated activity while in the zone. The vessel must submit a report 24 hours before the estimated time of entry into any Canadian port. A vessel must report its departure from any Canadian port at the actual time of its departure. A vessel must also report 72 hours before departure from the EEZ. The purpose of this last requirement is to enable the Canadian authorities to schedule an inspection of the vessel's catch before she leaves the zone. In addition, a vessel must submit a weekly report giving details of fishing activities during the week, including, the area in which it fished, the species it was permitted to fish, the tonnage of the species caught, the species of the by-catch and their tonnage and any biological samples taken. If the vessel had not been fishing, it must explain why it had not done so. The vessel must also report any transshipments of fish to other vessels or of fish discarded.

At the time when a licence is issued to a vessel, it is also provided with three logbooks: a fishing log, a production log and a transshipment log. The fishing log indicates the catch of each tow and the type of fishing gear used. The production log gives a record of the amount and type of product rendered by the production plant on board the vessel. The transshipment log contains a record of fish transferred from the fishing vessel to a transport vessel. All the information collected is stored in a computer programme called "Flash" which is used as a surveillance and management tool.

An important aspect of the Canadian system is the observer programme. The Department of Fisheries and Oceans has forty two observers. The observers are given instruction in navigation, marine biology, fisheries law and enforcement as well as practical training. Each observer is assigned to a fishing vessel for a period ranging from ten to thirty days. The observer has two primary duties. His first duty is to monitor the ship's compliance with Canadian fisheries regulations and policies regarding areas fished, fishing gear used, species caught, logbook record-keeping practice and reporting conditions. His second duty is to collect and record biological data from representative fish samples, such as age and sex determinations, length and weight measurements, detailed species morphologies, stomach analysis as well as catch and effort data.

The information provided by the observers enables the Department of Fisheries and Oceans to manage the fishery more realistically and to pass on such information to the fishing industry. The observer endeavours to ensure that the captain of the vessel is aware of and understands the various fishing regulations. Regular reports by the observer helps to keep the Canadian authorities informed of the

vessel's activities. The observer programme has apparently worked well and forms an important component of Canada's surveillance and enforcement machinery.

O. Surveillance and Enforcement

It is not enough for a coastal State to adopt conservation and management measures. The coastal State must also develop a capacity to ensure compliance with its conservation and management laws and regulations. Unless the coastal State develops such a capacity, there will be no sanctions against violations of its laws and regulations. If fishermen, both domestic and foreign, know that violation will not attract sanction then some, if not all of the fishermen, will feel free to violate the coastal State's conservation and management laws and regulations. Therefore, it is very important for coastal States, within the limits of their financial, manpower and technical resources, to develop a capacity for surveillance and enforcement.

Surveillance and enforcement can be carried out in three ways: by using ships, by using aircraft and by placing observers on board fishing vessels. Ships patrolling the EEZ will identify the fishing vessels and determine their location, verify that they are licensed to be in the zone and in that particular location, observe their fishing activities and, where necessary, board and inspect the fishing vessels. When a fishing vessel is boarded, inspection should include the examination of its logbook entries, the nets in use, the catch on deck and the fish processing and storage facilities below deck.

The use of aircraft, in conjunction with ships, is extremely common and effective. There are many different types of aircraft being used for this purpose. Since the aircraft will be flying among and identifying fishing vessels, it must have • a good low-level flying capability and be highly manoeuvrable. The aircraft must be equipped with radar; with accurate navigation equipment in order to determine if a violation is taking place; with good communications equipment to report violations, to communicate with patrol vessels and fishing vessels; with day and night photo capability; and night illumination or searchlight.

The use of observers by the Canadian Government has already been referred to. By placing an observer on board a fishing vessel, the latter is deterred from violating the coastal State's laws and regulations. Under the Canadian observer programme, the observer will collect certain data, report violations and, where necessary, call for a boarding inspection. An interesting feature of the Canadian programme is that the cost of the observer is borne by the fishing vessel.

For many developing countries, developing a capacity for surveillance and enforcement will not be an easy task. This is because they lack finance, equipment and trained manpower. This is, therefore, an area in which developed countries can assist developing countries in acquiring ships and aircraft, in manpower training and in financing. It must, however, be pointed out, in all candour, that helping developing countries to acquire the necessary equipment and to train their manpower will be in vain if the developing countries do not, on their part, stamp out corruption and ensure that those who are charged with the tasks of surveillance and enforcement are men and women of

integrity who cannot be bribed. One way in which the cost of surveillance and enforcement can be reduced is for the fisheries management to enlist the help of the armed forces in carrying out sea and air patrols. In Canada, the Department of National Defence assists the Department of Fisheries and Oceans in carrying out both sea and air patrols. The arrangement is cost-effective and appears to work well.

P. Straddling Stocks

If a fish stock spends its entire life cycle within the EEZ of one coastal State, the right to manage and conserve that fish stock lies exclusively with that coastal State. Reality is, however, sometimes more complex than our intellectual constructs. Thus, we find some fish stocks which straddle two EEZs in that the fish spawn in one EEZ and spend the rest of their lives in another EEZ. There are also cases in which a fish stock straddles three EEZs, *e.g.,* it spawns in one EEZ, grows up in a second EEZ and lives as adults in a third EEZ. In both situations, the Convention enjoins the coastal States to seek, either directly or through appropriate subregional or regional organizations, to agree upon the measures necessary to coordinate and ensure the conservation and development of such straddling stocks.[83]

A fish stock may also straddle an EEZ and a part of the high sea adjacent to it. In such a situation, efforts of the coastal State to conserve the fish stock in its EEZ, will be undermined if it is over-exploited in the adjacent high sea. Canada faces such a situation on its east coast. It tried unsuccessfully to persuade the conference to expand the right of the coastal State, beyond its EEZ, to conserve the fish stock. The conference rejected the demand because most delegations perceived it as another example of creeping jurisdiction by the coastal States. The Convention directs the coastal State and the states fishing for such stock in the adjacent high sea to seek, either directly or through appropriate subregional or regional organizations, to agree upon measures to conserve such stocks in the high sea.[84] The approach of the Convention contains two loopholes. First, some of the states fishing the stock in the high sea may not belong to the subregional or regional fisheries organization. Second, the coastal States and the other states may not be able to agree on the measures necessary to conserve such stocks in the high sea.

Q. Highly Migratory Species

Annex I of the Convention lists seventeen species of highly migratory fish. The first eight are all tunas. The characteristic they share in common is that their normal migration covers great distances, often covering thousands of miles. This fact raises a number of questions and problems. First, does a coastal State have sovereign right over a highly migratory species in its EEZ? Second, does another state have the right to harvest a highly migratory species in the EEZ of a coastal State without its agreement? Third, how and by whom are the highly migratory species to be managed and conserved?

[83] Article 63, para. 1, 1982 Convention, *supra* note 1.

[84] Article 63, para. 2, *ibid.*

Article 64 of the Convention states that the coastal State and other states whose nationals fish in the region for the highly migratory species shall cooperate, directly or through appropriate international organizations, with a view to ensuring conservation and promoting the objective of optimum utilization of such species throughout the region, both within and beyond the EEZ. In regions where no appropriate international organization exists, the coastal State and other states whose nationals harvest these species in the region, shall cooperate to establish such an organization and participate in its work. I don't think article 64 is intended to derogate from the rights of coastal States in article 56. If this assumption is correct, then it follows that the sovereign right of coastal States to the living resources in its EEZ extends to the highly migratory species. Therefore, a third state may not harvest the highly migratory species in the EEZ of a coastal State without its agreement. This interpretation of article 64, paragraph 1, would appear to be supported by paragraph 2 of the same article which states that, "The provisions of paragraph 1 apply in addition to the other provisions of this Part."

R. Anadromous Species

Anadromous species of fish are fish which spawn in rivers and live most of their lives at sea but which return to the places of their birth to spawn. Salmon is a paradigm example of an anadromous species. If an anadromous stock spawns in the river of State A and lives the rest of its life in the EEZ of that State, no particular problem is created.

Problems arise in the following situations. First, if an anadromous stock spawns in the river of State A and lives the rest of its life in the EEZs of States A and B. Second, if an anadromous stock spawns in the river of State X and lives the rest of its life in the EEZ of State X and in an adjacent part of the high sea. In the first situation, do the two States have equal right to the anadromous stock? If not, which State has the greater right? How and by whom is such a stock to be managed and conserved? In the second situation, do third States have the right to harvest the anadromous stock in the high sea? How and by whom is such a stock to be managed and conserved?

The Convention states that the State in whose river an anadromous stock originate shall have the primary interest in and responsibility for such stock.[85] This seems to confer on the state of origin the primary right to such stock and to impose on the state of origin the primary responsibility for its management and conservation. In a situation where the anadromous stock originates in State A and lives in the EEZ, of States A and B, the Convention imposes an obligation on State B to cooperate with State A with regard to the conservation and management of the stock.[86] Does this mean that State B has no right to harvest the stock in its EEZ? No, it does not mean that. Both States A and B have the right to harvest the stock in their respective EEZ. Of the two States, however, the state of origin, A, is recognized to have the primary interest. This must, therefore, be taken into account in the negotiations between the two States to apportion the total allowable catch between them. The Convention also imposes on the

[85] Article 66, para. 1, *ibid.*

[86] Article 66, para. 4, *ibid.*

state of origin, A, the primary responsibility for the conservation and management of such stock. The responsibility of State B is to cooperate with State A in this regard.

In a situation where the anadromous stock originates in State A and lives its life in the EEZ of State A and in the high sea, can third states harvest the stock in the high sea? The general rule seems to be no because article 66, paragraph 3(a) states that, "Fisheries for anadromous stocks shall be conducted only in waters landward of the outer limits of exclusive economic zones". There is, however, an exception to this rule. The exception is where the application of the rule would cause economic dislocation for a third State.[87] The state of origin and a third state which would suffer economic dislocation if it were prevented from harvesting the anadromous stock in the high sea, shall consult with a view to achieving agreement on the terms and conditions of such fishing. The agreement shall give regard to the conservation requirements and the needs of the state of origin in respect of the stock. The state of origin shall minimise the economic dislocation for the third State by taking into account its normal catch and its mode of operations as well as all the areas in which such fishing has occurred.[88] A third state which has incurred expenditures in participating, with the agreement of the state of origin, in measures for the renewal of the anadromous stock shall be given special consideration.[89] The enforcement of the regulations of the state of origin, beyond its EEZ, shall be by agreement between the state of origin and the other states concerned.[90]

S. Catadromous Species

A paradigm example of a catadromous species is the eel. A catadromous fish has a life cycle which is the reverse of an anadromous fish. A catadromous fish spends most of its life in the fresh waters of rivers but spawns at sea. An anadromous fish spends most of its life at sea but spawns in rivers. The migratory pattern of eels from different parts of Europe is highly interesting. There is evidence to suggest that they swim thousands of miles to spawn in the Sargasso Sea. The young eels then make the opposite journey and return to the waters of their ancestors.

The Convention gives the coastal State, in whose waters a catadromous stock spends the greater part of its life cycle, the responsibility for the management of that stock.[91] A catadromous stock will traverse the high sea, both on its way to its spawning ground and on its way back. Can states harvest the catadromous stock in the high sea? The answer is apparently no because the Convention states that, "Harvesting of catadromous species shall be conducted only in waters landward of the outer limits, of exclusive economic zones".[92] There is no exception to this rule.

[87] Article 66, para. 3(a), *ibid.*
[88] Article 66, para. 3(b), *ibid.*
[89] Article 66, para. 3(c), *ibid.*
[90] Article 66, para. 3(d), *ibid.*
[91] Article 67, para. 1, *ibid.*
[92] Article 67, para. 2, *ibid.*

A catadromous stock may migrate through the EEZ of another State, whether as mature fish on their way to the spawning ground or as juvenile fish on their return journey. In such a situation, can the coastal State through whose EEZ the catadromous stock is migrating, harvest the stock? The answer is yes but the harvesting must be regulated by agreement between such State and the State in whose waters the stock spends the greater part of its life cycle.[93] The management of the stock shall also be regulated by agreement between the states concerned.

T. Marine Mammals

Marine mammals consist of three main groups. The first group, cetaceans, comprise whales, dolphins and purpoises. The second group, pinnipeds, comprise seals and sea-lions. The third group, sirenians, comprise manatees and dugongs. Throughout history, the marine mammals have been hunted by man for their meat, fur, blubber, ivory and bone. Among the marine mammals, whales are the most endangered species. During the past decade, a world-wide movement, spearheaded by environmentalists, has been campaigning to stop the commercial hunting of whales. In 1972, the United Nations Conference on the Human Environment recommended a ten year moratorium on commercial whaling.[94] This recommendation was endorsed generally by the United Nations General Assembly during the same year.[95] On the 23rd of July, 1982, the International Whaling Commission approved, by a vote of 25 in favour, 7 against with 5 abstentions, an amendment to paragraph 10 of its Regulatory Schedule which has the effect of banning all commercial whaling from 1985 until 1990. The seven States which voted against the decision were: Brazil, Iceland, Japan, Republic of Korea, Norway, Peru and USSR.[96]

The Convention contains one article, article 65, on marine mammals. Although the article is located in Part V, dealing with the exclusive economic zone, article 120 makes article 65 also apply to the conservation and management of marine mammals in the high seas. What principles or rules does article 65 prescribe? First, the duty of coastal States to promote the optimum utilisation of the living resources of their EEZs does not apply to marine mammals. Thus, a coastal State or a competent international organization can decide to prohibit altogether the exploitation of marine mammals. They may also limit or regulate the exploitation of marine mammals more strictly than provided for in Part V of the Convention. Second, States shall cooperate with a view to the conservation of marine mammals. Third, in the case of cetaceans, States shall work through the appropriate international organizations for their conservation, management and study.

[93] Article 67, para. 3, *ibid.*

[94] Recommendation 33, Report of the UN Conference on the Human Environment, (1972) 11 I.L.M. 1416 at 1434. (UN Doc. A/CONF.48/14/Rev.l)

[95] UN General Assembly Resolution 2994, UN Gen.Ass.Off.Rec., 27th Sess. (1972), Supp. No. 30, at p. 42 (UN Doc. A/8730)

[96] See P. Birnie, "The International Organization of Whales", (1984) 13 Denver J. Int'l L. & Policy 309 at p. 321.

IV. JURISDICTION OF COASTAL STATES IN THE EXCLUSIVE ECONOMIC ZONE

In the EEZ the coastal State has jurisdiction with regard to: (1) the establishment and use of artificial islands, installations and structures; (2) marine scientific research; and (3) the protection and preservation of the marine environment.[97]

Although the terms, "artificial islands", "installations" and "structures" are not defined in the Convention, they refer to things which are, by now, quite familiar. Man's search for oil and gas began to move offshore after the end of the Second World War. Artificial islands, installations and structures have been constructed to search for and exploit offshore deposits of oil and gas. In the Beaufort Sea, the Canadians have constructed artificial islands to exploit the offshore petroleum because of the danger of icebergs. Installations and structures used for offshore oil exploration include the submersible oil rig and the jack-up oil rig.

In the EEZ, the coastal State has the exclusive right to construct and to authorize and regulate the construction, operation and use of artificial islands, installations and structures.[98] The customs, fiscal, health, safety and immigration laws and regulations of the coastal State shall apply to them. There is, however, a lacuna in the law with respect to drillships and semisubmersible oil rigs. Are they vessels or are they structures? They are registered as vessels and fly the flag of the registering State. As vessels, they are subject to the laws and regulations of the flag State. However, once the drillship or semisubmersible oil rig arrives at their drill site, they function just like an installation or structure. Do they then cease to be vessels and become structures? Are they subject to the laws and regulations of the coastal State as well as of the flag State? The law is unsettled and this has given rise to difficulties over such questions as whose safety regulations apply and, in the event of an accident, whose courts have jurisdiction.

If an artificial island, installation or structure is to be constructed, the coastal State must give due notice of such construction.[99] The coastal State must also ensure that permanent means for giving warning of their presence will be maintained.[1] If an installation or structure is abandoned or disused, it shall be removed to ensure safety of navigation but "taking into account any generally accepted international standards established in this regard by the competent international organization".[2] Obviously, the Inter-Governmental Consultative Organization (IMCO) does not require removal in all cases because paragraph 3 of article 60 goes on to state that, "Appropriate publicity shall be given to the depth, position and dimensions of any installations or structures not entirely removed". The removal of such installation or structure shall have due regard to fishing, the protection of the marine environment and the rights and duties of other States.

[97] Article 56, para. l(b), *ibid.*

[98] Article 60, para. 1, *ibid.*

[99] Article 60, para. 3, *ibid.*

[1] *Ibid.*

[2] *Ibid.*

A coastal State may, where necessary, establish safety zones around artificial islands, installations and structures.[3] The breadth of safety zones shall be determined by the coastal State.[4] In general, such zones shall not exceed a distance of 500 metres, measured from each point of their outer edge, unless authorized by generally accepted international standards or recommended by the competent international organization. A coastal State shall give notice of the extent of safety zones. All ships must respect these safety zones and shall comply with the generally accepted international standards regarding navigation in the vicinity of artificial islands, installations, structures and safety zones.[5]

Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.[6]

Finally, artificial islands, installations and structures dp not possess the status of islands.[7] Consequently, they have no territorial sea of their own and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf.

V. THE STATUS OF THE EXCLUSIVE ECONOMIC ZONE

One of the most difficult questions relating to the EEZ is its legal status. Is the EEZ a zone of national jurisdiction? Is it part of the high seas? Is it a sui generis zone? The negotiations over this question at the conference took several years. It was finally resolved at the sixth session of the conference in June-July, 1977, thanks to the initiative of the leader of the Mexican delegation, Dr Jorge Castaneda.[8] On the 25th of June 1977, Castaneda invited to dinner the leaders of the following delegations: Australia, Brazil, Bulgaria, Canada, Egypt, India, Kenya, Mexico, Nigeria, Norway, Peru, Senegal, Singapore, Tanzania, UK, USA, USSR and Venezuela. Castaneda proposed to the group that it set about the task of resolving the issue of the legal status of the EEZ. The group agreed and started work that very evening. Between the 25th of June and the 12th of July, a total of thirteen meetings were held. The group succeeded in agreeing on a number of amendments to the RSNT.[9] The amendments were accepted by the Chairman of the Second Committee and incorporated into the text.[10]

[3] Article 60, para. 4, *ibid.*

[4] Article 60, para. 5, *ibid.*

[5] Article 60, para. 6, *ibid.*

[6] Article 60, para. 7, *ibid.*

[7] Article 60, para. 8, *ibid.*

[8] See K.C. Brennan, *The Evolution of the Sui Generis Concept of the Exclusive Economic Zone* (1983) at p. 8.

[9] The Revised Single Negotiating Text consists of four parts: Parts I, II, and III appear in Third United Nations Conference on the Law of the Sea, Off.Rec., 4th Sess. (1976), Vol.V, pp. 125–185 (UN Doc. A/CONF.62/WP.8/Rev.l); Part IV appears in Third United Nations Conference on the Law of the Sea, Off.Rec., Vol. VI, 5th Sess. (1976), pp. 144–155 (UN Doc. A/CONV.62/WP.9). The RSNT provisions on the EEZ are contained in Vol. V at pp. 160–161.

[10] The revised provisions were incorporated into the ICNT (Informal Composite Negotiating Text) (UN Doc. A/CONF.62/WP. 10), Third United Nations Conference on the Law of the Sea, Off.Rec., Vol. 8, 6th Sess. (1977), pp. 13–16.

First, it was agreed that the EEZ was neither territorial sea nor part of the high seas but was sui generis.[11] This agreement is reflected in article 55, the very first article of Part V, which states: "The exclusive economic zone is an area beyond and adjacent to the territorial sea, subject to the specific legal regime established in this Part V, under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provisions of this Convention." The words, "subject to the specific legal regime established in this Part" are intended to convey the sense that the EEZ is sui generis.

Second, it was agreed that no State could subject the EEZ to its sovereignty.[12] How is this agreement reflected in the text? Article 89 states that, "No State may validly purport to subject any part of the high seas to its sovereignty". Article 58, paragraph 2 states that, "Articles 88 to 115 and other pertinent rules of international law apply to the exclusive economic zone in so far as they are not incompatible with this Part." The application of article 89 to the EEZ is not incompatible with Part V of the Convention. Therefore, no State may validly purport to subject any part of the EEZ to its sovereignty.

Article 58 contains the rights and freedoms of the international community in the EEZ of coastal States. Bernard Oxman classifies those rights and freedoms into two groups.[13] The first group of rights and freedoms are unqualified: the freedoms referred to in article 87 of navigation, overflight and the laying of submarine cables and pipelines. What is the significance of the cross-reference to article 87? The significance is that article 87 is the basic article listing the freedoms of the high seas. Therefore, the freedoms which the international community enjoys in the EEZ, of navigation, overflight and the laying of submarine cables and pipelines are qualitatively identical to those in the high seas. The cross-reference to article 87 also makes clear that "treaties regulating these freedoms on the high seas apply in the same way to the exercise of these freedoms in the exclusive economic zone".[14]

The second group of rights and freedoms of the international community in the exclusive economic zone is qualified. It is subject to a compatibility test. What are these rights and freedoms? Article 58, paragraph 1, refers to "other internationally lawful uses of the sea related to the freedoms of navigation, overflight and the laying of submarine cables and pipelines, such as those associated with the operation of ships, aircraft and submarine cables and pipelines, and compatible with the other provisions of this Convention." Article 58, paragraph 2, makes articles 88 to 115, the basic articles elaborating the high seas regime, apply to the EEZ in so far as they are not incompatible with Part V of the Convention.

Another difficult issue has to do with the residual rights. If the Convention does not attribute a right or jurisdiction to the coastal State or to third States within the EEZ, who gets the residual right or jurisdiction? The coastal States, of course, argued that residual rights

[11] Brennan, *supra,* note 8 at p. 10.

[12] *Ibid.*

[13] B.H. Oxman, "An Analysis of the Exclusive Economic Zone As Formulated in the Informal Composite Negotiating Text", in T. Clingan (editor), *Law of the Sea: State Practice in Zones of Special Jurisdiction* (1982) at p. 68.

[14] *Ibid.*

should go to the coastal State. The maritime powers, understandably, argued that they should go to the international community. The solution contained in article 59 is that, "the conflict should be resolved on the basis of equity and in the light of all the relevant circumstances, taking into account the respective importance of the interests involved to the parties as well as to the international community as a whole." Thus, the residual rights do not automatically belong either to the coastal State or to the international community. Each case has to be judged on its merit.

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