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International Ocean Institute

WORKING PAPER 1

THE LAW OF THE SEA CONVENTION AND THE RESTRUCTURING OF THE UNITED NATIONS SYSTEM

Background Paper

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EXECUTIVE SUMMARY

It is the thesis of this paper that the actual and potential contributions of the United Nations Convention of the Law of the Sea to the UNCED process, the Agenda for Peace, the Agenda for Development, and the progressive development of international law are of prime importance and may have a major impact on the restructuring of the United Nations system as a whole.

The Convention provides the legal framework, the dispute settlement system, and the enforcement mechanisms for Chapter 17 of Agenda 21, and interacts with the Conventions and decisions adopted at the Rio Conference. These Conventions and decisions on the one hand, and the Law of the Sea Convention on the other, can be utilized to reinforce each other.

The development of the peaceful uses of the oceans and the further elaboration of the principle of the reservation for peaceful purposes as well as the provisions for mandatory peaceful settlement of disputes all have the potential of making major contributions to the Secretary-General's Agenda for Peace.

The implementation of the Agenda for Development can be greatly enhanced by the Convention's provisions especially in the areas of security and development (peaceful uses of navies), sustainable use of living resources, expanding the resource base, integration of environment and development, enhancement of science and information, technology cooperation, and development of human resources.

Among the Convention's most important contributions to the progressive development of international law are the concept of the Common Heritage of Mankind, the creative development of the concept of Sovereignty, the

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comprehensive and mandatory dispute settlement system, and the comprehensive and mandatory international environmental law.

The impact of the UNCLOS process, converging with that of the UNCED process, on the restructuring of the United Nations system has already begun. A whole new section -- the Commission for Sustainable Development and its supporting organs -- has been created, and coordination, streamlining and integration of U.N. agencies and programmes in the marine sector is proceeding apace.

We are, however, just at the beginning of this process, and peering into the next century this working paper makes, explicitly or implicitly, the following recommendations.

1. The further development of the concept of the Common Heritage of Mankind and its extension to the living resources of the oceans, starting with those of the High seas and the international seabed.

2. The strengthening of the Commission for Sustainable Development and its relocation at the centre of the restructured U.N. system as Commission for Comprehensive Security and Sustainable Development.

3. The establishment of a broadly representative "Ocean Forum" or "Ocean Assembly," reporting to the General Assembly, where States and other entities can consider the closely interrelated problems of ocean space as a whole.

4. The establishment of some form of international taxation, starting, perhaps with a tourist tax and taxes on other industrial/commercial uses of the seas and oceans, on a regional basis, to contribute to the cost of implementing Agenda 21 and the Agendas for Peace and Development.

5. Early reconsideration, by the Council and the Assembly of the International Seabed Authority, of the "initial functions" of that Authority, to implement the "evolutionary approach," contribute to cost-effectiveness, and make the Authority immediately useful to the international community and, in particular, to developing countries;

6. A request to the International Law Commission, for an elaboration and development of the concept of reservation for peaceful purposes, and the harmonisation and integration of the Seabed Disarmament Treaty and the Law of the Sea Convention.

7. The establishment of a Federation of Ocean Universities to enhance interdisciplinary (comprising the natural as well as the social sciences) international cooperation in ocean affairs;

8. The establishment of regional Commissions for Comprehensive Security and Sustainable Development as executive bodies for Regional Seas Programmes, as a step in the process of bringing them up to date, "moving them from Stockholm to Rio."

9. The implementation of Articles 276 and 277 of the Law of the Sea Convention by establishing Regional Centres for Technology Cooperation, based on the EUREKA system of public/private regional cooperation;

10. The establishment of proper linkages between the new type of interdepartmental mechanisms for EEZ and coastal management, strengthened regional organisations, and the U.N. system.

INTRODUCTION

It is the thesis of this paper that the actual and potential contributions of the United Nations Convention of the Law of the Sea to he UNCED process, the Agenda for Peace, the Agenda for Development, and the progressive development of international law are of some magnitude and importance and may have a major impact on the restructuring of the United Nations.

While the Convention must be read as an integral whole, it consists nevertheless of distinct building blocks, some of which update and codify existing law as part of an ongoing process of updating and codifying (Parts I-X). Other building blocks are constitutive (Parts XI-XV): They embody new concepts, create new law, establish new institutions. Even the Parts which are codifying rather than constitutive and which have already become part of customary law, contain elements which are entirely innovating and have a great development potential for the future.

Part V, for instance, which defines the Exclusive Economic Zone, is considered customary international law, with regard to the boundary delimitation it provides: which is most often seen as an extraordinary expansion of national jurisdiction, "the greatest land grab in history." There are far more important aspects to this new institution which may indeed have significant impacts on the progressive development of international law.

Other innovations in the Convention are specific to the ocean medium and do not lend themselves to generalisation or adaptation to other areas of international law. "Transit passage" through straits used for international navigation is an example. It would be difficult to find an application or adaptation outside the seas and oceans: even in space law, which is so closely related to the law of the sea.

For the purpose of this paper, we have selected seven innovative concepts which may have implications far beyond the law of the sea.

. The exclusive economic zone, particularly for its treatment of "Management" and "Sovereignty,"

. The Common Heritage of Mankind, particularly in its relationship to sustainable development and comprehensive security;

. The international seabed authority as an embodiment of the common heritage concept;

. the conservation of the marine environment: interaction with UNCED;

. the regime for science and technology cooperation; interaction with the Agenda for Development;

. Dispute settlement;

. Reservation for peaceful purposes: interaction with the Agenda for Peace.

1. *The Exclusive Economic Zone*

The concept of the EEZ is a contribution of the developing countries. In Latin America it was first embodied in the Santiago Declaration of 1952 (a response to the Truman Declaration of 1945) and the Montevideo and Lima Declarations of 1970. The Latin American States called it "the patrimonial sea." In Africa, it was particularly Kenya that promoted the concept which, under the name of "Exclusive Economic Zone" was adopted first in Yaounde and then by the Asian African Consultative Committee in 1972.

The most important aspects of the EEZ concept are:

- It significantly increases the resource base of coastal States. For small island States, lacking land resources, this heralds a virtual revolution.
- It provides a *framework for management* for ocean space totalling almost 40 million square nautical miles and containing about 85 percent of all living and about 87 percent of all known and estimated hydrocarbon reserves. This management framework replaces the system of free-for all laissez-faire that preceded, entailing resource depletion and pollution of the marine environment.
- It is a *multipurpose development zone,* covering all uses of ocean space and resources and taking into consideration the *interaction of uses* and the *interdependence of ocean problems.* It is this new concept that has given rise to the notion of *integrated coastal and ocean management.*
- It most effectively encourages *scientific and technological development,* since it is impossible for coastal States without scientific and technological capacity to enjoy the benefits which potentially have accrued to them with the acquisition of the EEZ.

Each one of the italicised terms has implications wider than the oceans -- among them, *institutional implications* as well as *policy implications* affecting the evolution of *government and governance.*

Management

The effective utilization of the EEZ requires an institutional framework of the kind of interdepartmental, trans-sectoral governmental structures (*horizontal integration*) posited by the Brundtland Report (*Our Common Future).* Only such

structures --inter-ministerial committees, under the guidance of the Prime Minister or the Minister of the lead agency --are able to consider the closely inter-related problems of ocean space as a whole, to formulate integrated ocean policy, and to regulate the management process.

Even though the establishment of the EEZ has been interpreted as a result of nationalism, it is in fact leading to more intense international, especially regional, cooperation. *Laissez faire*, free for all, encourages competition rather than cooperation. *Management* requires cooperation, which must cover the whole area of what is to be managed.

It has become clear that not even the largest EEZ is a self-contained management unit, and if resources and the environment are not managed beyond the 200 mile limit, they cannot be managed effectively within the zone either. The current negotiations on straddling and highly migratory fish stocks in the high seas make this amply clear. Just as the boundaries between Departments, Ministries, disciplines, also those between local, national and regional jurisdiction are blurring. This requires *vertical integration*, i.e. harmonisation and integration of local, national, and regional governance/management structures and policies.

In a more literal sense, perhaps the main lesson that we are gradually learning is that the drawing of boundaries in the ocean environment is not an effective means of solving problems. Gradually, the concept of "boundaries" may be overtaken by the more modern, dynamic, and management-oriented concept of joint development zones or joint management zones. This may well be part of an ongoing trend making political boundaries in general obsolete in the 21st century, when our descendants may have to govern systems where political space, economic space, and ecological

space coincide and the concept of sovereignty will have completed its current phase of re-interpretation and transformation.

The management structures -- as is generally acknowledged -- have to be *participational*, including local and national governments as well as ocean users (producers, consumers) and scientific institutions and nongovernmental organisations. Integrated coastal management requires *long-term planning*, integrating *development, environment, and equity* concerns. It requires large-scale *development of human resources*: not only in developing countries, but in the industrialised countries as well. Integrated ocean management is a new science that has to be learned by the rich as much as by the poor. The current crisis in fisheries management theory and practice is a good example.

Obviously, all these requirements are wider than the oceans. To reflect them in a legal/institutional framework will be the task of the next decades. Most of the work done thus far is in fact in the marine sector, triggered by the Convention in conjunction with chapter 17 of Agenda 21. Agenda 21 constitutes the bridge between ocean management, based on the framework of the Law of the Sea Convention, and land management: the tool for integrating ocean development strategy into national (and international) development strategy. Here, *inter alia*, the Law of the Sea Convention can make major contributions to the Secretary-General's *Agenda for Development*.

Sovereignty

The concept of sovereignty in the context of the EEZ is innovative and has far reaching implications.

The concept of sovereignty is much under discussion in the world situation as a whole. In the form we inherited it from the Westphalia Peace Treaty of 1648, it is not viable in a world of globalised production and financial systems and technological and environmental interdependence.

On the one hand, States are breaking up under the pressure of ethnic, linguistic or religious forces that may have remained dormant since the beginning of the age of nation States some three hundred years ago. On the other hand, States are entering new types of Unions and creating international if not supranational institutions, under the pressure of economic, environmental or technological forces and to solve problems which clearly transcend the boundaries of national jurisdiction and therefore cannot be managed by national institutions.

Often, these two trends are considered as puzzlingly contradictory. They are not. They are the two faces of the same coin. Sovereignty has an internal and an external face: the sovereignty of the ruler over the ruled, internally; the sovereignty in relation to other States, externally, including the right to wage war against them. The internal face, historically, was the more important one. Jean Bodin, in the 16th century, used internal sovereignty to defend the power of the French king over the rebellious feudal lords. Sovereignty was instrumental in the transition from feudalism to nationalism. It should be noted that it was a *unitary* concept. You had it or you did not have it. There was no in-between. The French Constitution of 1791 states:

> Sovereignty is one, indivisible, unalienable and imprescriptible; it belongs to the Nation; no group can attribute sovereignty to itself nor an any individual arrogate it to himself.

Democracy, internally, and the increasingly denser net of international treaties and conventions, externally, soon started to erode this unitary concept. Federalism proposed the theory of *shared sovereignty*. Léon Duguit, Hugo Krabbe, and Harold Laski, among others went farther advancing the theory of *pluralistic sovereignty*, shared by political economic, social and religious groups that may dominate governments at various times.

> But we must not think of federalism today merely in the old spacial terms. It applies not less to the government of the cotton industry, or of the civil service, than it does to the government of Kansas and Rhode Island, Indeed, the greatest lesson the student of government has to learn is the need for him to understand the significance for politics of industrial structures, and, above all, the structure of the trade-union movement. The main factor in political organization that we have to recover is the factor of consent, and here trade-union federalism has much to teach us...
>
> Harold Laski, *The Pluralistic State*, New Haven: Yale University Press, 1993

It is along the line of this evolution, from an absolutistic, unitary, and territorial concept to a pluralistic, participatory and functional one, that the United Nations Convention on the Law of the Sea occupies an advanced position, offering probably the most constructive approaches to the problems arising from the ongoing disintegration of the traditional concept in both its internal and external aspects. It is surprising that little reference to this phenomenon is found in the current literature about the Convention.

No doubt, there is some lip service paid to the traditional concept: the new legal order for the seas and oceans is to be established "with due regards for the sovereignty of all States" (Preamble). Article 2 declares that "the sovereignty of a coastal State, extend, beyond its land territory and internal waters...to an adjacent

belt of sea, described as the territorial sea..." (Art. 2). The *sovereignty* of strait States (Art.34), archipelagic States (Art. 69) is equally stressed. It should be noted, however, that, more fundamentally, the Convention *limits, transforms, and transcends* the concept of sovereignty.

It *limits* sovereignty

- by making peaceful settlement of disputes mandatory and creating a comprehensive dispute settlement system, not as an optional protocol but as an integral part of the Convention binding for all parties;
- by subjecting "sovereign rights" over resources to the duty of conservation, environmental protection, and even sharing.
- by imposing the *duty to cooperate* in matters concerning the environment, resource management, marine scientific research and technology development and transfer.
- by imposing *international taxation*, non only on resource exploitation in the international area but even in areas under national jurisdiction (continental shelf beyond 200 miles).

It *transforms* sovereignty

- by *disaggregating* the concept into a *bundle of rights* ranging from "sovereign rights" (Art.60) to "exclusive right" (Art. 81), "jurisdiction and control" (Art. 94), and "Jurisdiction" (Art. 79) which is shared. Sovereign rights and shared jurisdiction cohabit in the same space (the Exclusive Economic Zone, the continental shelf, the archipelagic waters) which adds a new dimension to Laski's "pluralistic sovereignty."

. by according equal, or almost equal, treatment to States and non-State entities. Reference is made, throughout, to "States and competent international organizations" --again, an application of "pluralistic sovereignty";

- non-State entities, companies ("juridical persons"), even individuals have a standing before the International Tribunal for the Law of the Sea (Sea-bed Disputes Chamber); non-State entities, like the European Union, are Parties to the Convention and subjects of international law.

It *transcends* the concept of sovereignty through the concept of the *Common Heritage of Mankind*: a concept of *non-sovereignty* and *non-ownership*. Article 137 states that

1. No State hall claim or exercise sovereignty or sovereign right over any part of the Area or it resources, nor shall any State or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized.

2. All rights in the resource of the Area are vested in mankind as a whole on whose behalf the Authority shall act...

One might indeed go so far as to claim that this Article bestows Sovereign Rights on Mankind as a whole and makes it a subject of international law: the ultimate transcendence of the concept of the Sovereign State.

2. *The Common Heritage of Mankind*

Concepts akin to that of the Common Heritage of Mankind are known to almost all religions and some schools of philosophy of law. In international law, the concept

of outer space as a "province of mankind" is a predecessor to the common heritage of mankind. It was, however, Arvid Pardo's merit to adapt the general idea to a very specific situation, to give it a legal and economic content and to formulate it in terms of international law. He pointed out that, until now, there had been two ways of dealing with ocean space: the freedom of the high seas and national appropriation: the "national lake doctrine," i.e., to divide entire seas or oceans among coastal States. Neither approach, he contended, could cope with the problems of overfishing and pollution of the marine environment. Either one would lead inevitably to armed conflict. He suggested that a new principle was needed to deal with the problems eschewing the dangers both of uncontrollable freedom and national competition and appropriation. That was the principle of the common heritage of mankind. He defined it in precise terms, all of which found their way into Resolution 2749 (XXV) and then into various articles of the Law of the Sea Convention:

1. The Common Heritage of Mankind cannot be appropriated by any State or legal or physical person. It is nonproperty. The Roman-Law attribute of *ius utendi et abutendi* (the right of owners to use and abuse their property) does not apply.
2. In contrast to the situation generally prevailing with regard to "the commons," that is, lack of management entailing "the tragedy of the commons," the concept of the common heritage of mankind implies *management*, through an authority representing humankind as a whole.
3. This management must be based on three fundamental principles:

- Benefit sharing, with particular consideration for the needs of developing countries;
- Reservation for exclusively peaceful purposes;
- Conservation for future generations.

Different interest groups have interpreted "benefit sharing" in different ways. In industrialised countries and their companies, a restrictive interpretation tended to prevail: benefit-sharing meant the payment of some royalties (as low as possible) but otherwise "business as usual" was to be left untouched. Developing countries gave a more comprehensive interpretation: to them benefit sharing was not restricted to financial benefits only but implied the sharing of managerial prerogatives and the sharing of technologies. This also implied the establishment of an Enterprise as the operational arm of the Authority, through which smaller and developing countries could participate in the management of the common heritage of mankind.

The principle of the reservation for exclusively peaceful purposes follows directly from the concept of benefitting humankind *as a whole*. For, if the common heritage were to be used for purposes of warfare, it might benefit individual States, but certainly not humankind as a whole.

The principle of conservation for future generations equally flows from the concept of benefitting humankind as a whole. For humankind does not consist only of present generations but includes future generations as well. The care for future generations --not to be used as a pretext for ignoring or rejecting the development needs of the present generations! -- implies resource conservation and the

conservation of the environment within which the resources are to be exploited. It means harmonisation between short-term and long-term planning.

The concept of the Common Heritage of Mankind, thus defined, has a *development* dimension: It must be *developed* for the benefit of mankind as a whole; it has an *environment* dimension: Resources and environment must be conserved for future generations: and it has a *disarmament* dimension, in the principle of the reservation for exclusively peaceful purposes. The integration of *development* and *environment* dimensions make it the best available basis for "sustainable development," an otherwise dangerously underdefined principle, as we all know. The integration of *development, environment, and disarmament* dimensions make it the best available basis for *comprehensive security*, as developed first by Olof Palme, which, equally, has its military (disarmament), economic (development), and environmental components.

While there is already a broad consensus in today's world on *the philosophy of the common heritage*, much new thinking is still needed on *the economics of the common heritage*, which, based on the concept of non-ownership, will necessarily differ from, and transcend both the free-market and centrally-planned economic theories of the past.

The concept of the Common Heritage is generalisable and will not remain restricted to the minerals of the deep seabed. If the living resources of the oceans are to have any future, they must be managed under a common-heritage regime of some sort. Ocean space as a whole must fall under this concept.

The concept of the Archipelagic State and Archipelagic waters, another innovative principle, may also lead in this directions. Even though it bestows

somewhat all too generous advantages on the 16 States that have claimed archipelagic status, the concept is historically interesting and has global implications.

Nation-building was a difficult task for the newly independent oceanic States consisting of a multitude of islands separated by what was then High Seas, in which other States were free to move and act as they pleased with their fleets. To strengthen national unity, the oceanic States therefore looked at ocean space not as something external, separating island from island, but as an *integral part of their territory*. It was the unity of the State that gave to the waters their new status of *archipelagic waters*, common to all the islands.

One could think of the world at large as one single archipelago, with the continents taking the place of the islands, the land-to-water ratio being 1 to 4. *It is the growing unity and interdependence of this world of ours that gives to the waters, the world ocean, that used to separate continents, a new status: that of the Common Heritage of Mankind.* While this status has been recognized by international law thus far only to the sea-bed beyond the limits of national jurisdiction, future generations will have to extend it to ocean space as a whole, as proposed already in 1971 by the prophetic Arvid Pardo.

Beyond its applications to the oceans, developing countries, in the 'seventies, proposed that it should become the basis for the New International Economic Order in general. Today, and for the reasons discussed above, we cannot but come to the conclusion that it must be the basis of sustainable development and comprehensive security ("human security"), even though regimes to be established for different areas of sustainable development may differ.

3. *The International Sea-bed Authority*

No matter what the present status and prospects of the sea-bed mining industry might be, the importance of the institution of the International Sea-bed Authority cannot be overrated.

- It is the first institutional embodiment of the principle of the common heritage of mankind.
- It pioneers a new type of international organisation which is itself economically productive and generates an international income;
- It introduces the principle of international taxation, not only on activities in the international area but even on activities in areas under national jurisdiction (the continental margin beyond the 200 mile limit of the EEZ).
- It offers a framework for the genuine internationalisation of High Technologies, with the full participation of the developing countries; to fully utilize and develop this framework would not only enhance development, it would also be a confidence building measure of some magnitude, enhancing peace, security and disarmament: Technologies which are developed through international cooperation will not be developed under the auspices of ministries of defense for military purposes.
- It offers a framework, at the global level, for new forms of private/public international cooperation. More than a "code of conduct" for multinationals, which has remained on the drawing boards of the United Nations, it structures the private sector into the system and gives it legitimacy as a subject of international law (standing in the Dispute Settlement Chamber of the International Tribunal for the Law of the Sea).

This is not to say that Part XI of the Convention is perfect or that it could or should be implemented fully on the day the Convention comes into force on November 16 this year. As the most innovative part of the Convention, it posed more problems than any other part and, in many details, it reflects political compromise rather than managerial and economic realism. Analysis shows that the "Parallel System" is the most cost-ineffective system that could have been devised, causing problems relating to financial arrangements as well as technology transfer which have remained unresolved. The text, furthermore, is overburdened with details excogitated twenty years ago when really too little was known about the not yet existing sea-bed mining industry --details which necessarily are already obsolete today. The too narrow focus on the manganese nodules in the international Area has been overtaken by the more recent discoveries of other mineral resources (sulfides and crusts) both in the international area and in areas under national jurisdiction. The whole picture is further complicated by the fact that commercial mining, expected to be practical when the Convention comes into force, has been delayed, perhaps to the year 2010 or even 2020. This generates an "interim period," lasting from 1994 to the time when sea-bed mining becomes feasible.

As is well known, Part XI of the Convention, defining the concept of the Common Heritage of Mankind and its embodiment in the International Seabed Authority, has been a stumbling block on the road to the ratification and implementation of the Convention. Industrialised countries, under the leadership of Ronald Reagan and Margaret Thatcher, refused to ratify the Convention, creating uncertainties and hesitations. Fourteen years after its adoption by 159 States and

entities at UNCLOS III, the Convention has been brought into force by 60 States, only one of which (Iceland) is an industrialised country.

All of this prompted the Secretary General in 1990 to initiate a process of "consultations" which were to make the Convention "universally acceptable."

This process, led by the Under-secretary General for the Law of the Sea, unfortunately, was warped from the beginning, and eventually led to the adoption of an "Agreement" which, in the words of the Legal Counsel of the United Nation himself, does not live up to the highest standards of international law but represents a political compromise that will facilitate the ratification or accession of a number of industrialised . States, although the effect of the "agreement," until now, does not appear to be fulminant.

On the substantive side, the Agreement establishes a Sea-bed Authority and an Enterprise, which are dysfunctional. The voting system gives a veto to three industrialised States over any decision of the Council; the Enterprise has been abolished, for all practical purposes, and the real power of the institution resides in a Finance Committee, which may suspend any session of the institution's governing bodies on account of "cost-efficiency."

All this is remote from the spirit of the Common Heritage.

The practical task before us now, however, is not to lament the past but to see what can be done to make this new International Seabed Authority still as useful as possible to the international community and especially to developing countries, and to revive the flagging spirit of the Common Heritage.

The first point that should be noted is that what has been changed once most certainly can be changed again. If the Authority turns out to be dysfunctional at the

time seabed mining becomes economically and environmentally sustainable, its structure can and will have to be changed again, in spite of the fact that the "Agreement" abolishes the Review Conference mandated by the Convention. The review and revision will have to take account of economic, scientific/technological, and political circumstances which we cannot predict today. Hopefully, future changes will conform more closely to the highest standards of international law than the "Agreement" adopted in July, 1994.

Secondly, if our purpose is, on the one hand, to enhance international cooperation in seabed mining activities and, on the other, to make the Authority useful to the international community --and if it were not to be useful, it should not have been established! --we should stress two principles built into the "Agreement," in their interaction: *the principle of cost-effectiveness, and the evolutionary approach*: That is, we will have to evolve an agenda that will contribute to making the Authority economically self-reliant. This would mean, to widen the scope of the activities as they are circumscribed initially.

The emergence of the pioneer regime, in response to the requirements of Resolution II, has been a most positive development. The Training Programme, adopted by the Preparatory Commission, as well as the joint programme for the exploration of a first mine site for the Enterprise, are exemplary: something to continue and build on. Here is the needed framework for international cooperation in deep-sea mining activities and the development of human resources. This framework should not be left to rest and rust, but should be utilized immediately.

The Training Programme should be expanded and coordinated with the other training efforts in the U.N. system. Seabed mining technologies are High Tech: and

here is a mechanism to train persons from developing countries in High Technology which cannot be transferred in the traditional sense, but must be "learned." *Here, again, the implementation of the Convention could make a significant contribution to the Agenda for Development.*

Training, however, costs money. It does not bring an income to the Seabed Authority which, instead, should be generated as soon as possible, considering that one year after the entry into force of the "Agreement" --if that is to happen --any financial support through the regular budget of the United Nations would cease.

The Pioneer Investors, jointly, have skills and technology and services which could be utilized immediately: e.g., for the exploration for offshore oil and minerals in the economic zones and on the continental shelves of developing coastal States. This might be done in the context of the Agenda for Development. It could be paid for by low-interest of interest-free loans from Regional Development Banks or through equity participation agreements between the Pioneer joint venture and coastal States. It would be a useful, productive and remunerative activity and could be started immediately.

Another useful, productive,if not immediately remunerative activity would be the implementation of a joint programme for long-term (at least five years) environmental impact assessment of ocean mining activities, in conjunction with the testing and upgrading of technology. The Federal Republic of Germany has proposed such a programme in two studies submitted to the Prepcom. It would be highly cost-effective for the Pioneer Investors: for it would cost far less for them to undertake a task of this sort jointly rather than individually. And if it were done under the auspices of the Authority, and open to the participation of developing

countries, it would contribute to the evolutionary approach to Authority functions and structures.

Another joint activity of the Pioneer Investors and open to others might be the mapping of the deep ocean floor, of which less than 3 percent have been mapped thus far.

Joint R&D in deep-sea technologies, not limited to the manganese nodules which would make the Authority obsolete, but including --why not --R&D on OTEC or on the thermophile bacteria which inhabit the volcanic spreading centres and form the basis for unearthly chemo-synthesis based life discovered in recent years, would be another way of advancing international cooperation in science and technology. These bacteria are already being recovered and cloned and are the basis of an industry that generates profits of some $800 million a year which is expected to increase to billions during the coming decades. These bacteria, too, belong to the Common Heritage of Mankind, and joint development of the required biotechnologies would benefit developing countries and international cooperation in general.

The Authority's Council should encourage, and help to negotiate, joint undertakings in these and similar areas. It would enhance the evolutionary approach as well as the cost-effectiveness prescribed by he "Agreement."

The only way of testing the Authority as established under the "Agreement" and of finding out where improvements will be needed is to *use* it: On projects here and now: to have it sitting there, and waiting, "monitoring," until commercial seabed mining becomes practical --ten, twenty years from now, would be a colossal waste. It would leave ocean mining development completely in the hands of States and

their companies, outside the framework of the Authority. It would be difficult to imagine how the Authority could effectively take over at the time mining becomes commercial, once all the preparatory work and investment will have been done under national auspices.

The potential of the International Seabed Authority in the changed political context is more fully explored in Working Paper 2.

4. *Comprehensive International Environmental Law*

Part XII of the Convention contains the only existing, binding, enforceable, global, comprehensive environmental law. It covers pollution from all sources, whether oceanic, land-based, or atmospheric. It is of fundamental importance for Agenda 21. Chapter 17 of that agenda, dealing with the seas and oceans, is entirely based on this Convention, which provides the binding legal framework, the dispute settlement and the enforcement mechanisms for what would remain otherwise at the level of powerless recommendations.

It is clear, however, that Part XII must be read as a *framework* that must be complemented or filled by more specific agreements covering particular uses or particular regions of which there are already well over a hundred today. Part XII relies heavily on IMO and UNEP initiated Conventions. But there is no other Convention, binding and enforceable, that covers *all uses and all regions.*

Chapter 17 of Agenda 21 is the link-pin between the UNCLOS and the UNCED processes. On the one hand, Chapter 17 depends on the legal framework of the Law of the Sea Convention. On the other, Chapter 17 is part of the Agenda as a whole which covers the global economic/environmental system as a whole and has already begun to impact on the restructuring of the United Nations system: adding a whole new Division and establishing the Commission for Sustainable Development.

The main outcomes of the United Nations Conference on Environment and Development (UNCED, Rio, June 3-24, 1992) were:

. the Rio Declaration on Environment and Development;

. Framework Convention on Climate Change

. Convention on Biological Diversity;

- Agenda 21, including provisions on implementation, financial resources and mechanisms, transfer of environmentally sound technology, cooperation and capacity-building as well as international arrangements;
- Statement of Principles on the management, conservation and sustainable development of all types of forests;
- Statement of intention to deal with the problems of desertification;
- Agreement on the establishment of the United Nations Commission for Sustainable Development;
- Decision to convene U.N. Conferences on Straddling and Highly Migratory Stocks in the High Seas, on the sustainable development of small islands; on integrated coastal management.

All of these --even the forests and the deserts --have a marine dimension. "All types of forests" include the mangrove forests; desertification also extends to coastal deserts which must be included in "integrated coastal management" whose implementation interacts with the implementation and progressive development of the Law of the Sea.

Framework Convention on Climate Change

The implementation of the Framework Convention on Climate Change (hereinafter referred to as "Climate Convention") will depend to a very large extent on the study of ocean/atmosphere interactions which are as yet very poorly understood. The capacity of the oceans to absorb CO_2, on the one hand, and, on the other, the oceans' contribution of CO_2, caused by under-water volcanic activities, which may account for as much as 30 percent of the CO_2 in the

atmosphere, obviously are of fundamental importance for an understanding of climate change. Equally important is the impact of evaporation on the "greenhouse effect." Integrated coastal management, including the study of the ocean/land interface constitutes another link between the Law of the Sea and the Climate Convention.

All this leads back to Parts XII, XIII, and XIV of the Law of the Sea Convention, the need for and modalities of strengthening international cooperation and, as a basis for international cooperation, the strengthening of national infrastructures and the development of human resources in developing countries. The specific commitments of the developed country Parties with regard both to financial assistance and technology cooperation and transfer, in Article 4 of the Climate Convention should be used to strengthen the implementation of these Parts of the Law of the Sea Convention.

The Climate Convention contains an Article (Art. 14) on dispute settlement -- not as binding, and not as comprehensive as Part XV of the Law of the Sea Convention. However, in any dispute arising from the interpretation and application of the Climate Convention, involving the marine environment -- and many cases undoubtedly will --the dispute settlement system of the Law of the Sea Convention, in particular "Special Arbitration" could be utilised.

Global Convention on Biological Diversity

The Global Convention on Biological Diversity is equally closely related to the implementation of the Law of the Sea Convention. Marine flora and fauna obviously constitute an integral and very large part of biodiversity. The two scientifically most

interesting and in many ways similar components of biodiversity are coral reefs and rain forests.

Biodiversity in the seas and oceans is just as seriously threatened as on land: by water pollution, overfishing, coastal development and habitat destruction. Parts V and XII of the Law of the Sea Convention therefore can be considered as a basis for and an integral part of the Biodiversity Convention, while the commitments made in the Biodiversity Convention, for technical and financial assistance to developing countries to enable them to fulfil the obligations of that Convention, can be invoked to strengthen the provisions of he Law of the Sea Convention on fisheries research, training, management and conservation.

Agenda 21

SYNTHESIS OF PROGRAMME AREAS AND OBJECTIVES

The chapter identifies seven major programme areas, each with a number of objectives. These are briefly outlined below.

(1) Integrated management and sustainable development of coastal areas, including exclusive economic zones.

(2) Marine environmental protection.

(3) Sustainable use and conservation of marine living resources of the high seas.

(4) Sustainable use and conservation of marine living resources under national jurisdiction.

(5) Addressing critical uncertainties for the management of marine environment and climate change.

(6) Strengthening international, including regional, cooperation and coordination.

(7) Sustainable development of small islands.

- Programmes 1 and 4 spell out modes of implementation of Part V of the Convention; Programme 2 is a guide to the implementation of Part XII. Programme 3 details the content of Section 2 of Part VII of the Convention. Programme 5 will largely depend on the successful implementation of Part XIII of the Convention for which it provides an agenda; Programme 6 ties in with Part IX of the Convention, as well as the references to regional cooperation throughout the other Parts. Programme 7, finally, should be read in conjunction with Part VIII of the Convention. The development of small islands indeed may be most dramatically affected by the Convention which multiplies the resource base of many of these islands while also greatly increasing their responsibilities. Programme 7 provides most useful guide lines for this development.

One might say that, with Chapter 17 of Agenda 21, UNCED has done for the other Parts of the Convention what the Jamaica Prepcom has done for Parts XI and XV and their respective Annexes, to which its mandate was restricted. Thus the implementation of Chapter 17 is really part of the implementation of the Convention itself.

Conference on Straddling & Highly Migratory Stocks on he High Seas

While the Small Islands and the Coastal Management Conferences are more of an implementing character, the Conference on Straddling Stocks has the

potential, and will have to meet the challenge, of progressively developing the Law of the Sea.

The Negotiating Text prepared by the Chairman of the Conference after the New York Session of July, 1993 (A/Conf.164/13, 29 July 1993; revised as A/CONF.164/22, 23 August 1994) may give an adequate idea of the eventual outcome of the Conference. Basically, it is an expansion of Section 2 of Part VII (High Seas) of the Law of the Sea Convention, extending to the High Seas the principles of conservation and management contained in Part V (EEZ) and adding many of the useful details contained in Chapter 17 of Agenda 21. Fundamental is the recognition that

- It is impossible to manage fisheries within even the largest EEZ if they are not equally managed beyond the limits of the EEZ;
- the two management systems must be properly integrated;
- regional cooperation and organisation are to play a crucial role in the management of the fisheries of the high seas;
- Port States' responsibilities are extended from enforcement of environmental regulations to fisheries regulation.

On the negative side, two points should be raised:

- The dispute settlement system included in the Negotiating Text conflicts with that of the Law of the Sea Convention in some detail (number of arbitrators; time schedules, etc.). While the purpose of these deviations clearly was to make proceedings more expeditious, these deviations are nevertheless regrettable and should have been avoided. Arbitration and, in particular, Special Arbitration, as provided for in Annex VII and VIII of

the Convention, would have been perfectly adequate, considering that (a) the Law of the Sea Convention's dispute settlement system is accessible also to non-Parties; and (b) while maintaining the maximum flexibility, the uniformity and consistency of ocean governance should be maintained.

The Negotiating Text takes a somewhat sectoral approach to fishing and neglects interaction between fishing and other sea uses. This will be elaborated further in Working Paper 3, on the management implications of the UNCLOS/UNCED process.

The Conference is still struggling with the fundamental question whether it should adopt a *binding Convention* as advocated by some coastal States (e.g., Canada), or whether the final result, at this stage, should be "guidelines" which would not be binding, as preferred by distance-fishing States (e.g., Japan).

Two more Sessions to settle this question and finalise the document are scheduled for 1995. The results of this Conference must be considered in conjunction with the Agreement to Promote Compliance with International Conservation and Management Measured by Fishing Vessels on the High Seas, adopted by FAO in 1993, and the International Code of Conduct for Responsible Fishing which should be adopted by FAO in 1995. UNCED and FAO efforts have been running in parallel, sometimes duplicating, sometimes conflicting with, each other.

If the end result of the Conference were to give unilateral rights and enforcement powers to the coastal State beyond the 200 mile limit of the EEZ, the new Convention would signify an erosion of the Law of the Sea Convention; if the result were to be regional arrangements for naval/coastguard joint

surveillance and enforcement, the new Convention would be a significant contribution to the progressive development of the law of the Sea. The draft tries a middle road. There is a strong emphasis, throughout, on regional agreements and arrangements for compliance and enforcement. As far as the powers of the coastal State are concerned, they are left somewhat open. Article 20 establishes that

> In the context of subregional and regional arrangements for compliance and enforcement, States shall agree on procedures under which the appropriate authorities of one State may board and inspect a fishing vessel flying the flag of another State, including notification requirements and procedures under which one State might arrest and detain a fishing vessel flying the flag of another State.

In any case, the recognition that the living resources of the high seas can no longer be left at the mercy of "the freedom to fish" as one of the "high seas freedoms," but that they must be *managed* for the benefit of humankind as a whole, with particular regard for the needs of poor countries and for conservation for future generations, has one clear implication: With the adoption of the instrument foreshadowed in the Negotiating Text, the living resources of the seas and oceans will be a Common Heritage of Mankind, declared as such or not. The idea of applying the Common Heritage principle for these resources is not new, for that matter. During UNCLOS IIIit was suggested twice by one Delegation: the Delegation of the Holy Sea. It was embodied in the 1971 Ocean Space Draft Convention submitted by the Delegation of Malta to the Seabed Committee. These proposals were premature at the time. Now their time has come.

Sustainable Development of Small Island Developing States (SIDS)

A global conference on this subject was held in Barbados (April 25 - May 6, 1994). The Conference adopted a Barbados Declaration as well as an Action Programme for the Sustainable Development of SIDS. A special SIDS unit has been established with in the Secretariat of the Commission for Sustainable Development to follow up on the Barbados decisions. Funding for implementation has fallen far short of expectations, and no significant follow-up activity has developed thus far.

Forthcoming UNCED Developments

An important IOC/UNESCO Conference on Oceanography, with broad interdisciplinary implications for the sustainable use of oceans and coastal zones, will be held in Lisbon, Portugal on November 14-19. IOC is organising, furthermore, an International Conference on Coastal Change, in Bordeaux, France in February next year; and UNEP is preparing an Intergovernmental Meeting on the Protection of the Marine Environment from Land-Based Activities. This is scheduled to be held in Washington, D.C. in November 1995 and will follow up on the conclusions of the Nairobi Experts meeting of December 1993, and the Halifax conference of June, 1991.

Commission on Sustainable Development

The impact of the UNCED/UNCLOS process on the structure of the United Nations system became clear in the decisions of the 47th General Assembly. An entirely new sector of the United Nations has been established, consisting of the

Commission on Sustainable Development (Draft Resolution IV, "Institutional Arrangements to Follow up the United Nations Conference on Environment and Development," A/47/719, 18 December, 1992), a High Level Advisory Board of 20 individuals appointed for a two-year period, and Secretariat support arrangements through the establishment of a new Department for Policy-Coordination and Sustainable Development, headed by an Undersecretary-General. The Commission, with the status of a functional Commission of ECOSOC, consists of 53 Members. The Resolution also provides for the participation of intergovernmental, nongovernmental, and regional organisations. The Commission is responsible for monitoring progress in the implementation of Agenda 21 activities related to the integration of environment and development goals throughout the United Nations system.

This review is always to be linked to an assessment of financial availabilities. Funding should be provided through new and additional resources. The total cost of implementing Agenda 21 has been calculated as $85 billion. A considerable part of this, at least, should come through the Global Environment Facility (GEF) managed jointly by the World Bank, UNDP, and UNEP. This facility has recently been restructured (GEF Participants' Meeting, Geneva, 14-16 March, 1994). It now has a 32-member Executive Council, with 16 members coming from developing, and 16 from developed countries. Voting is based on a double-majority system, requiring a 60 percent majority of all GEF participants, and a 60 percent weighted majority of the donors based on their contributions to the GEF. The Facility has just been replenished with over $2 billion for the next three years. New and additional funding could be provided

through various forms of international taxation, for which the Law of the Sea Convention has set a precedent. International taxation was also proposed at the SIDS conference, by the Administrator of UNDP, by a case study on Tourism presented by Cyprus and by the meeting of Eminent Persons. International taxation, in one form or another, may indeed be an idea whose time has come.

The Sustainable Development Commission has held two Sessions thus far. The first (24-26 February, 1993) dealt with organisational matters; the second (16-27 May, 1994, was substantive. The Chairman of the Commission now is the Minister for the Environment of Germany, Dr. Klaus Töpfer.

Agenda 21 has been divided into nine thematic "clusters", including five cross-sectoral and four sectoral clusters. The Atmosphere and the Oceans fall into the eighth Cluster and will be on the agenda only in 1996.

One interesting feature of the Commission is its "High-Level segment," i.e., a meeting of Ministers, and, as became clear during the first session of the Commission, the Ministers are seeking to give a "high political profile" to the Segment and endow it with decision-making power.

The task of the Commission is of a bewildering complexity. One wonders indeed whether it can be accomplished in the annual meetings of two to three weeks provided for in the Resolution. If the principle of "sustainable development" is to penetrate the U.N. system as a whole --and only in this case can it ever be realised --the Commission should be placed right at the centre of the system, not at its margins.

It is interesting to note that proposals, from highly authoritative sources, are already on the table for the establishment of an *Environmental*

Security Council as well as of an *Economic Security Council.* It would seem that three powerful, decision-making Councils at the centre of the system, dealing with issues which can no longer be separated, might be less effective than one.

- Based on the recognition that the contemporary concept of *Security* as *comprehensive security including an economic as well as an environmental dimension* is inseparably linked with *sustainable development*, it is logical to envisage eventually the replacement of the obsolete Security Council with a Council or Commission for Comprehensive Security and Sustainable Development as the central organ and executive body of the United Nations system. This may be far off in the future. Regional organisation and development, bringing Regional Seas Programmes up to date, from Stockholm to Rio, may perhaps show the way by the establishment of regional commissions for sustainable development as executive bodies which may be needed to carry out their broadened mandates. These developments are examined in Working Paper 4.

Ocean affairs to not appear on the agenda of the Commission for Sustainable Development for the first three years. During this period, all marine activities the United Nations system should be streamlined and coordinated under the aegis of the ACC, with a newly established section for marine affairs with its Secretariat at IOC/UNESCO in Paris.

The contribution of the UNCLOS/UNCED process to the restructuring of the United Nations can be summarised under three headings:

. *Addition of new institutions*

- International Sea-bed Authority
- International Tribunal for the Law of the Sea
- Regional Centres for the Advancement of Marine Science and Technology
- Commission for Sustainable Development
- Department for Policy Coordination & Sustainable Development

Others are in the making.

- *Coordination and integration of the policies and programmes of all UN Agencies engaged in marine affairs*, generating a new pattern of horizontal and vertical integration of policy making. The institutional implications of the recognition (Preamble to the Law of the Sea Convention) that "the problems of ocean space are closely interrelated and need to be considered as a whole" have not yet been fully developed. What is required, in the final analysis, is a forum, within this new part of the U.N. structure, where States and other entities can in fact consider the closely interrelated problems of ocean space as a whole. Such a forum does not exist at this time (UNCLOS III was such a forum) and will have to be established in some form --as proposed already by Peru and Portugal before the end of UNCLOS III.
- *Conceptual innovation*: Broadening the concept of the Common Heritage of Mankind to include living resources; the Economics of the Common Heritage.

This section will be more fully elaborated in Working Paper No.3.

5. *A New Regime for Marine Scientific Research*

Part XIII of the Convention, complemented by other Articles throughout the Convention, establishes a new regime for marine scientific research.

UNCLOS III was indeed fully aware of the fundamental importance of the marine sciences for the rational management of ocean space and its resources. Without marine biological research, fisheries and aquaculture could not be developed or sustained; marine geology is an essential tool for the discovery and utilisation of offshore and deep-sea minerals; physical oceanography, including the study of ocean currents and waves and the interaction between water and atmosphere is essential for an understanding of pollution, weather prediction, the understanding of climate change, the safety of navigation. All major uses of ocean space and resources depend today on marine scientific research, which has itself become broadly interdisciplinary -- the investigation of one single phenomenon may require the contribution of all branches of oceanographic research --and depends on international cooperation, global as well as regional, considering the very nature of the medium.

It is indeed remarkable that out of the 320 Articles of the Convention, about 100, or almost one third, touch in one way or another on the marine sciences. In this regard, as in so many others, the Convention is a most modern, forward-looking document, more so than any national Constitution today. In view of the fundamental importance of science for modern industry, for peace and disarmament, for the conservation of the environment, for modern life *in toto*: its power for good or for evil, for destruction or the improvement of living,

conditions, there has indeed been a great deal of discussion about the role of science in governance and the ethical and civic responsibilities of the scientist in our age. But this discussion is not yet reflected in the political structures of our time. The Law of the Sea Convention goes far in reflecting the importance of science in political decision-making.

The new regime for marine scientific research has some other extremely interesting features. One of the key words to describe it is "cooperation," and this cooperation is not just left to the good will of States: it is *mandatory*. The Convention establishes that States *shall* (not "should") cooperate. One scholar of international law, Christopher Pinto, goes so far as to consider the Convention as a source of a "new international law of cooperation."

Cooperation is favoured also institutionally: Research projects approved by competent international institutions -- in this case, the Intergovernmental Oceanographic Commission of UNESCO or the International Seabed Authority -- are given a certain preference: Such projects do not need the explicit consent of the coastal State under whose jurisdiction the research is to be carried out, provided only that State is a member of the organisation that approved the research and did not object at the time the research was approved. This provision could be used to strengthen the internationalisation of research. One could envisage the competent international institutions developing into some sort of clearing house guaranteeing the good faith of projects which then would not need the explicit consensus of individual coastal States, thus reducing bureaucratic red tape. The genuine internationalisation of marine scientific

research, in which developing countries could participate as equal partners, would obviously benefit developing countries.

Another interesting feature is that marine scientific research is "reserved for peaceful purposes." The concept of "reservation for peaceful purposes will be covered in detail in Working Paper No. 6. What is intended, in the context of scientific research, obviously is that military research or research for purposes of warfare does not enjoy the protection and promotion of the Convention. While this is logical, it will, in practice not be easy to implement. As the years of discussions in the Third Committee of UNCLOS III have amply clarified, practically any type of marine scientific research may have military as well as economic or scientific implications. To minimize the military implications of marine scientific research it is less meaningful to restrict research than it is to reduce the chances and the causes of warfare.

The new regime for marine scientific research established by the Convention is often called a "consent regime," because research in the now vast ocean spaces falling under national jurisdiction requires the "consent" of the coastal State under whose jurisdiction the research is to be carried out. Such consent is generally expected to be forthcoming, except in very few cases specified by the Convention.

On the whole, this system is beneficial to developing coastal States. They have the right to participate in the research and to share all results and samples and should maximize these opportunities for their own educational purposes. The consent regime potentially enhances cooperation between researcher State and coastal State in the selection of projects which should be of interest and use not

only to the researcher State as in the past but also to the coastal State in question.

Since the 'Seventies, when this regime was designed, there have been many changes also in the field of marine scientific research. Remote sensing has made dramatic advances. It is becoming so accurate, with such a high resolution, that it can explore, directly or indirectly, almost anything that used to be explored by ships *in situ*. And it can explore far wider areas in a far shorter time. Research from satellites is not subject to the regulations of the Law of the Sea Convention. The research thus carried out is "free." But it is reserved for the few and the rich. Thus the industrialised countries can, in many cases, circumvent the consent regime and the obligations it imposes on them. It is therefore advisable for coastal developing countries to maximize efforts at international cooperation and the internationalisation of research and minimize reliance on defensive measures and prohibitions in bilateral scientific relations.

Some new trends can already be discerned, and should be encouraged, linking national and international development.

Ocean Universities (e.g., in Uruguay and China) are a new phenomenon indicating the growing public awareness of the fundamental importance of ocean sciences, both hard and soft, and their interaction. Traditional universities in many countries are adding Departments for Marine Affairs or Ocean Institutes to their faculties (e.g., Canada, Netherlands). In other countries (e.g.,Philippines, Thailand) Governments have established marine think-tanks or institutes to advise them on matters of ocean policy which must always be science-based.

Two Universities -- the University of Malta and Dalhousie University of Canada -- have recently taken the initiative to establish a sort of Federation of such ocean-oriented universities and institutions. Utilizing electronic information communication, and teaching technologies, besides the traditional means of exchange of faculty, students, information and programmes, such a "Federation" could undoubtedly make a contribution to the advancement of interdisciplinary (including both the natural and social sciences) international cooperation in ocean affairs.

6. *The most advanced framework for technological cooperation and development;*

The direct application of the marine sciences to the development of marine technology and the intensification and diversification of ocean industries is a dramatic spectacle. We may call it the penetration of the industrial revolution into the oceans -- with vast implications for the global economy, the environment, military strategy, national and international organisation. It is in this wider context that the marine sciences have assumed the fundamental importance they have today.

UNCLOS III was fully aware of this importance. The entire Part XIV of the Convention, supplemented by articles throughout the other parts of the document, is devoted to this subject. This part of the Convention should be read, furthermore, in conjunction with a resolution adopted by UNCLOS III together with the Convention (Annex VI, Final Act), calling on member States, both industrialised and developing, on the World Bank, the United Nations

Development Programme, the United Nations Financing System for Science and Technology and other multilateral funding agencies to augment and coordinate their operations for the provision of funds to developing countries for the preparation and implementation of major programmes of assistance in strengthening their marine science, technology and ocean services.

Technology development is to be carried out on three levels.

Of basic importance is the strengthening of national infrastructure, without which international cooperation remains illusory. If a State has no technologists, the importation of foreign high technology is sheer waste. Modern high technology cannot be "bought;" it must be "learned." Considering the amount of service, maintenance, training and upgrading involved, each "transfer of technology" today is a "joint venture," the donor and the recipient, the "producer" and the "consumer" working together as "prosumers," to use the expression coined by Alvin Toffler.

To strengthen the scientific/technological infrastructure in the less developed African countries, two steps should be taken:

First of all the leadership in many countries should wean itself of the idea that science and technology are luxuries about which they might start thinking when the "basic problems" --food, shelter, health and education --have been resolved. Science and technology are not luxuries: in today's world they are the premises, the prerequisites for the solution of the "basic problems." It is enough to remember that about 85 percent of economic growth today does not depend on material inputs but on technological innovation based on research and development and scientific research. In many countries, a fundamental change

of attitude towards science and technology is needed.

Secondly, in accordance with a recommendation by the Third World Academy of Science, every country should earmark a fairly high percentage of its educational budget to fundamental research, applied research, and research and development.

Only on such a basis can international cooperation be fruitful.

The second level of technology cooperation and development is the regional level. The Convention mandates the establishment of regional centres for the advancement of marine science and technology. While it describes some of the functions of these centres, it does not specify how they should be paid for, and at a time when existing international organisations are starved for funding, it is indeed difficult to imagine the financing of a whole slew of new organisations. The International Ocean Institute has undertaken a number of studies to look for answers to this problem. We analyzed the most advanced systems of technology cooperation and development and were particularly impressed by the systems developed in Europe such as EUREKA with its subproject EUROMAR, which have already been taken over and adapted to the needs of the Latin American countries, under the name of Project Bolivar.More than "Centres," in the sense of "brick and mortar" and new bureaucracies, these are "systems" new forms of cooperation between private and public sector and intergovernmental organisations which share in the funding of selected projects, reducing costs, spreading risks, and generating a synergism that has produced billions of investments in the short span of a few years.

The regional "centres" prescribed by the Convention should be conceived

as such "systems" enhancing both South-South and North-South cooperation in joint technology development. They could be developed within the framework of regional seas programmes whose functions and institutional structures will have to broadened and strengthened if they are to move forward from "Stockholm" to "Rio" and after and respond to the new challenges of integrating environment and development concerns.

The third level, finally, is the global level. The "competent international organisation" for technology development and cooperation is, in particular, UNIDO, whose capacity should be strengthened. With the coming into force of the Law of the Sea Convention, there will be a new instrument for technology cooperation and development: the International Sea-bed Authority. As pointed out under that heading above, sea-bed mining technologies involve practically each and all of the "High Technologies" known today, and the Enterprise, especially if conceived as a system of joint ventures, provides a splendid global framework for the internationalisation and joint development of these technologies.

6. *The most comprehensive and binding system of peaceful settlement of disputes.*

It is generally recognized that the dispute settlement system is one of the highest achievements of the Law of the Sea Convention. It is the most comprehensive, the most binding, yet flexible, system to which nations have ever agreed. It has been upheld as a new paradigm that should be adapted to other fields of international law, beyond the Law of he Sea, such as environmental law or the

space law. In the context of restructuring the United Nations system, it might even be adapted to that system as a whole.

Perhaps the strongest feature of this design is that States which become Parties to the Convention, thereby *eo ipso* accept the obligation of binding peaceful settlement of disputes. What, in the Geneva Conventions of 1958 was an "optional protocol" has become a binding and integral part of the Convention, and this marks a big step forward in the development of international law.

States are free to choose the *method* of dispute settlement, and if they can settle them politically through negotiation or conciliation, whether bilaterally or regionally, they have the right to do so. But if there is no such solution, then they are obliged to choose one of four possible fora: Arbitration, the International Court of Justice in the Hague, the newly established International Tribunal for the Law of the Sea in Hamburg, or -- and this is another interesting innovating feature -- "Special Arbitration" which, for the first time, brings the "competent international organisations," specifically identified only on this occasion as IMO, UNEP, IOC/UNESCO, and FAO, into the dispute settlement system (see Annex VIII of the Convention).

If the Parties cannot agree on the forum, then Arbitration is the method to fall back on.

Whatever forum is chosen, the judgment is final and binding.

Few are the exceptions exempting Parties from the obligations of peaceful dispute settlement, but they are important (see Article 298 of the Convention). They can be considered as "loop-holes" in the system, inevitable concessions to the concept of sovereignty as still perceived in the 'Seventies. There are,

however, two encouraging developments. One is the innovative concept of "mandatory conciliation," in cases exempted from binding settlement. "Mandatory conciliation" (see Annex V) means that parties are bound to go through a conciliation process even if they are not obliged to accept the opinion of the conciliation forum. This procedure certainly exercises some degree of moral suasion and pressure. The second encouraging development is that precisely in the case of boundary delimitation, which is exempted from mandatory dispute settlement, States are in fact voluntarily resorting with increasing frequency to the ICJ for binding settlement.

As the concept of sovereignty is further evolving (see above, under this heading), it may be assumed that the "loop-holes" will eventually be closed.

The jurisdiction of the Convention's dispute settlement system is not limited to cases involving the interpretation and application of this Convention but equally to the interpretation or application of any international agreement related to the purposes of this Convention which is submitted to it in accordance with the agreement. Thus this most advanced system might be further developed and applied to disputes, e.g., arising from the interpretation and application of the Treaty Banning Nuclear Weapons and Other Weapons from the Seabed or of any of the environmental agreements, many if not most of which involve the oceans.

7. *Reservation for Peaceful Purposes*

The concept of Reservation for Peaceful purposes was dealt with in connection with the *Common Heritage of Mankind* as well as with *Marine Scientific*

Research. The Convention goes further than that: Also the High Seas are reserved for peaceful purposes. While not clearly spelled out -- Article 301, defining, in most general terms, the "peaceful uses of the sea," cannot be considered an adequate definition of "reservation for peaceful purposes," or "reservation for exclusively peaceful purposes (*Common Heritage of mankind)* -- the concept may be seminal. If elaborated, during the coming decades, by the International Law Commission and/or other institutions of international jurisprudence, It may be developed as the legal basis for the denuclearization of regional seas or the world ocean as a whole, or the designation of seas and oceans as zones of peace, enhancing both military and environmental security. It may provide the legal basis for regional naval cooperation for peaceful purposes (monitoring and surveillance, disaster relief, search and rescue, abatement of piracy and drug traffic, etc.). It may also encourage the establishment of a naval component of the United Nations peace-keeping system.

The denuclearisation of oceanic regions, whether for disarmament or environmental reason, or the demilitarisation of e.g., the international seabed area, may require verification mechanisms. The Law of the Sea Convention mandated the Review Conference (Art. 155) "to ensure the maintenance of the principles laid down in this Part with regard to...the use of the Area exclusively for peaceful purposes...," presumably on the basis of the inspections of all installations in the area the Authority was authorized to carry out. Unfortunately, the Review Conference was abolished by the "Agreement." A feature common to most contemporary conventions, the review conference should be reinstated by the next necessary revision of Part XI, at the time when commercial seabed

mining is about to begin. Now that the Law of the Sea Convention is entering into force, will also be advisable to utilize the next upcoming review conference of the Seabed Disarmament Treaty (The Treaty Banning Nuclear Weapons and Other Weapons of Mass Destruction from the Seabed, etc.) to harmonise the provisions of that treaty with those of the Law of the Sea Convention, with regard to the geographic terms of reference as well as other issues such as verification and the intention, expressed in the Seabed Disarmament Treaty, of continuing disarmament efforts in the oceans

Thus verification in the international seabed might now well be entrusted to the International Seabed Authority whose Council, under the Law of the Sea Convention, has the power to establish an inspectorate to inspect all installations in the Area.

Verification on the high seas might be entrusted to regional arrangements for the cooperation of navies for peaceful purposes, which eventually might also include enforcement of agreed measures for the conservation of the living resources of the high seas, further developing the provisions of the Straddling Stocks Draft Convention.

Responsibility for verification in the EEZ should rest with the coastal State

The harmonisation and integration of the two Conventions could strengthen both and contribute to the institutional and legal development of the concept of reservation for peaceful purposes. The contribution this could make to the implementation of the Agenda for Peace would indeed be significant.