

THE FUTURE OF THE OCEANS

To write about the future of the oceans is like writing about the future of eternity.

The oceans were there long before life began and they will be there long after it ends, if it ends.

Much depends, of course, on how life is going to end.

There may be a series of natural and anthropogenic ecocatastrophes: climatic changes, induced by technological imprudence interacting with natural causes; the consequences of a Great War with its doomsday machines, petroleum pouring from uncapped wells no one cares any longer to control or exploit; radio-active wastes escaping from corroding cannisters dumped on the bottom of the sea: Life may be exterminated over large stretches of the sea; but the oceans would still be there.

There have been ecocatastrophes before, and death reigning over ocean space. Coral reefs, the oldest ecological communities on our planet, disappeared for many millions of years at a time and were reborn, destruction alternating with creation, like high tide and low tide. "I have seen it all perish, again and again," Brahma said to Vishnu, "at the end of every cycle. At that time, every single atom dissolves into the primeval water of eternity, whence originally all life arose. Everything then goes back to the fathomless, wild infinity of the oceans which is covered with utter darkness and is empty of every sign of animate being."

And new life, then, can only come from the ocean.

We may be on the down-beat now. And what we are doing to ourselves and to our environment, cries to high heaven. We are cooperating with ultimate fate. But we need not. The Big Down-beat belongs to geological time, to mythical time.

Within its curve, however, there are smaller ups and downs, which belong to human time, or history: and within these limits, evolution is in our own hands. We can stem the tides, change the course of history, act on ourselves in our environment. Although this involves problems of a terrifyingly complex social, political, and economic nature and collisions of classes, of generations, of races and cultures, it is curious, though often not noticed, how great the importance of the oceans is in deciding the direction of the movement: up or down, forward or backward.

The importance of marine resources and ocean management in the economy of nations and in the world household is rapidly growing.

Food production from the seas is still rising and could rise far more rapidly under appropriate management policies, hastening the ongoing transformation from hunting stage to culture stage.

Here, in fact, we may be witnessing one of the major transformations of homo sapiens in his environment: the evolution of aquaculture, brought upon us by a number of convergent factors, such as the approach of the outer limits of agricultural growth, changes in the world's climate, and others, is an event of a magnitude matching that of the emergence of agriculture ten thousand years ago.

Aquaculture may mean turning endless blue deserts into croplands. Weeds and algae are a largely untapped resource that can be exploited for human food and cattle feed, energy and fertilizer, and a long array of chemical and pharmaceutical products. Seaweeds and algae can be cultured, selected, genetically improved, and grown anywhere in the ocean, provided there is a suitable infrastructure not too far from the sunlit surface, and provided that nutrient-rich water is pumped up from the lower levels of the sea. The infrastructure may be floating, dynamically positioned nets, covering thousands of acres; the water may be pumped up with simple wave-powered pumps; the nets may be lowered below the turbulence level

during storms.

This is not science fiction: the U.S. Navy is carrying out feasibility studies on the coast of California. The results are highly encouraging.

Seaweed culture, practiced all over South-East Asia and the Far East, has reached, during the past twenty years, prodigious proportions in China.

Aquaculture means breeding, nursing, rearing fish, crustaceans, molluscs, in practically unlimited quantities in three-dimensional aquatic space, in polycultures where every "ecological niche" is utilized, that is, phytoplankton feeders, zooplankton feeders, herbivores and detritus feeders, surface-, midwater, and bottom-dwellers are raised together and yield multiple crops: carps and catfish, pikes and perches, whitefish, mullets, milkfish and eels, salmon, trouts and sturgeons, snappers and groupers, plaice, sole, flounder, halibut and turbot. Aquaculture means raising this varied aquatic livestock in ponds, lakes, cages, embayments, or releasing them into the open sea ("sea ranching"); it means transplanting, hybridizing species, fertilizing the waters of the sea.

Even with our present, very limited understanding of marine biology and ecology and with presently available technologies for breeding aquatic animals, rearing them and caring for them, aquaculture, which has been growing by leaps and bounds over the past two decades, can be multiplied tenfold by the end of the century. Science and technology, however, are moving fast in this area: much faster than the capacity of our social, economic, and legal infrastructures: the constraints on the practically boundless potential of aquaculture are social, economic, and legal., the "outer limits," within man himself.

Over the next 25 years, half of the world's conventional energy resources (hydrocarbons) will come from the oceans, and new technologies to extract energy from tides, waves,

currents, thermogradients, osmotic pressures and biological processes are ready, pointing towards a transition from an economy based on non-renewable, exhaustible, and polluting energy resources to one based on renewable, inexhaustible, and nonpolluting resources.

With the mining of polymetallic nodules from the deep seabed, about to begin in the 80s, a new chapter in the history of metal mining will have opened. Some pioneers in seabed mining, like John Mero, have in fact predicted that, in the long run, ocean mining will displace land mining altogether. The consequences, in economic and political terms, would be enormous. Development, in non-industrialized countries up to now has been tantalizingly slow, due to the fact that the world economy still is what might be termed a post-colonial extraction economy, geared to the needs of the industrialized countries, not to those of the mineral exporting developing countries. If mining shifts to the oceans, under a regime under which developing countries participate in the management and in the profits of production, the pace of diversification and industrialization within these countries will necessarily accelerate, and there will be a different division of labor .

In ecological terms, a process would be initiated, transforming an extractive, exhaustible system into a cyclic, inexhaustible one: minerals and metals welling up from the interior of the earth, extracted from the seas, and being returned by the rivers and the atmosphere.

Recent work points to the importance of aquatic weeds and algae in the process of recycling heavy metals.

For instance, the oceans contain billions of tons of uranium, whereas reserves on land are estimated as below three million tons. To extract uranium from the oceans with conventional energy has been too costly in the past. Now experiments are under way to develop hybrid green algae that absorb and accumulate the uranium in concentrations several thousand times that of normal seawater. Mesh containers holding the hybrid algae in "uranium farms" will be immersed in ocean currents to harvest the uranium.

Another example: the National Aeronautic and Space Administration

in the United States has been experimenting with water hyacinth. Water hyacinth has the extraordinary capacity of absorbing, through its roots, heavy metals from industrially polluted waters. Mercury and cadmium, nickel and lead, even gold and silver. What is more, this metal can be recovered from the harvested water plants. This can be done by accumulating them in specially designed pits, on a scale that makes extraction economical. Fertilizer and biogas are by-products.

Algin, a chemical extracted from a number of seaweeds such as Laminaria, gelidium, Irish moss, and others, has the capacity of absorbing, and eliminating from the gastro-intestinal tract, radio-active strontium 90, the dreaded substance likely to be ingested by people together with mild contaminated by nuclear fall-out. Strontium 90, as is well known, causes leukemia and bone cancer in the victims of nuclear accident. Algin, taken orally, reduces the uptake of strontium by a factor of 9. Even if the strontium has already reached the bone tissue, up to 25 percent can be removed. Algin does not destroy the bone calcium, however, which is chemically related to the strontium.

In spite of the rapid development of aviation and the decrease in maritime passenger traffic, the world's shipping tonnage has been increasing dramatically. In the 1960s, the amount of cargo transported by sea more than doubled, from 1,110 million to 2,280 million metric tons. In the early 70s reached all-time record figures, and it was anticipated that, by 1980, production would again have doubled. Together with this quantitative increase came significant advances in nautical technology affecting size, speed, and materials of ships as well as safety and impact on the environment. Hovercraft, huge, atomic-powered passenger submarines, and structures which may raise doubts as to whether they ought to be classified as ships or as artificial islands, are no longer science fiction.

During these last few years, the industry has been hit by a severe crisis, due to unregulated competition resulting in overproduction; due also, to a large extent, to the oil

and tanker crisis. This, however, is bound to be temporary. International trade and communications will continue to depend on ships, and the volume of shipping will continue to grow.

National security, the earth sciences and the science of the atmosphere and its impact on the earth's climate on which all life depends: all intersect in the oceans and are affected by ocean management.

To create a legal and institutional framework for ocean management and the multiple, interacting uses of ocean space, is the task of the United Nations Conference on the Law of the Sea, the greatest international conference ever convened in history, which has been laboring now for ten years on the issues put before the United Nations on November 1, 1967, in a historic three-hour intervention, by Malta's Ambassador Arvid Pardo.

One should not be surprised that the Conference has not yet succeeded in reaching final results: One should be surprised, on the contrary, that it has gotten as far as it has in drafting a Constitution which, in fact, is a constitution for the world and bears the seed of a new international order.

For the oceans are our great laboratory: in dealing with the issues of the law of the sea we deal with food and fiber, minerals and metals, energy, trade, communications, science policy, technology transfer, multinational corporations, disarmament and arms control, development, East-West South-North confrontations, regional development -- the whole range of issues and problems besetting the world community as a whole, and if we find new and creative solutions for these problems in the relatively contained ocean environment, they may find other and wider applications later on.

The central theme of the Conference, determining the future of the oceans, is that technological advance, totally transforming traditional uses of the sea and adding a number of new ones; and political change, introducing a set of new

actors -- the developing nations -- have made the old maritime order obsolete and dysfunctional. That order was based on the twin concepts of national sovereignty over a narrow strip of territorial sea, and freedom of the seas beyond that. Neither freedom nor sovereignty are adequate to deal with the novel problems of pollution and resource depletion or to forestall conflict and chaos. The new law of the sea must transcend the antiquated concept of sovereignty and of freedom. It does this by introducing the new and revolutionary concept that ocean space and its resources are the common heritage of mankind which cannot be appropriated by any nation or person but must be managed jointly by all nations, with particular regard for the needs of developing countries.

Around this central theme a group dynamics has evolved, more intricate, more complex than has been seen anywhere in international negotiations.

To divide the contending parties into "nationalists" and "internationalists" and to blame the die-hard nationalists for the failure of the conference, will not do. This division is based on an obsolete, dualistic philosophy -- the same that opposes the "individual" to "society" when, in reality, the two cannot be opposed but are part of one another and stand or fall, grow or wither, together. The international community is made of nations, and the whole can only be as strong as the weakest part. All nations are nationalistic. But the fact is in the world in which we are living they can assert their national interests only through international action.

Thus the division between "nationalists" and "internationalists" really does not play a role at the Conference.

Nor has the East-West conflict really determined anything. The rhetoric of States is influenced by circumstances outside and independent of the Conference. Thus U.S./U.S.S.R. deteriorating relations in Africa and other crises affect the Conference climate, but on the concrete

issues of the Conference itself, the East/West division is heavily overlaid by the North-South division, and industrialized States, whether capitalist or communist, defend the same interests. Had this division been clear-cut and stable, however, the Conference would be over by now, a Glorious Revolution, in which the far more numerous developing countries would have achieved, democratically, a New International Economic Order. That we are remote from such encouraging results is due to the fact that the North-South division itself is overlaid by several other divisions. One of these is the division between coastal States and States with no or short littoral, the group of "landlocked and geographically disadvantaged States." Clearly the coastal States are aiming at a maximum expansion of their sovereign rights over ocean space and resources, not brooking any interference from other States, while the disadvantaged States insist on free access to the sea and some sort of participation in the development of the new wealth of the oceans. To complete the cycle of confusion, this division is overlaid, on the one hand, by ideological/^{economic} and regional differences which make it difficult for either side to agree on any consistent line of conduct. The group of landlocked and geographically disadvantaged States consists of developing -- mostly African -- States, together with the most conservative members of the EEC, alongside with a number of Eastern European Socialist countries: In other words, almost all the problems dividing the Conference as a whole keep dividing this group within itself. The coastal States group, on the other hand, consists of strong States with worldwide naval interests, and of weak, developing States, with, primarily, resource interests. They cannot really want the same thing; and across the line between coastal and geographically disadvantaged States cuts another line -- dividing mineral-exporting from mineral importing States: the former being interested in maintaining production controls and high prices, the latter, in increased production and lower prices.

The strong, developed coastal States themselves, finally, are torn by internal conflicting interests; for they have the traditional interest in the freedom of the seas to operate their far-flung navies while, at the same time, they need secure rights to deploy their technologies in coastal waters, as far as these technologies will reach, for resource development and exploitation and, thirdly they want to protect their coasts against pollution from foreign ships or operations. They have mining lobbies, pressing for maximum expansion of national claims, navy lobbies, pressing for freedom of the seas; fishing lobbies -- which, to top it all, are divided among themselves: like those of the West Coast and East Coast of the United States, the tuna fishermen of the Pacific needing freedom of the seas for their distant-water operations, the coastal fishermen of the East needing a wide "zone" from which to exclude foreign competition.

No wonder it is so difficult to put the pieces of this multi-dimensional puzzle into place.

Above or below it all there operates a technological imperative: the oceans must be managed. There must be a strong management system for all major uses of the seas, both national and international, reflected in the two major developments of the Conference, that is, the emergence of the Exclusive Economic Zone and of the International Seabed Authority.

Considering the intricate web of conflicting interests, the establishment of the Exclusive Economic Zone is bound to create more problems than it solves, and the rumblings of dissatisfaction are becoming more audible as the facts unravel. By far the greatest advantage from the "grab" of the 200-mile zone accrues to a few, already rich, coastal States, and the majority of poor developing States, including the poorest among them which are landlocked, get nothing. This is how the new law of the sea is going to work out: Apart from Micronesia, whose huge area can be calculated in different ways, the USA, acquiring an economic zone of 2,222,000 square nautical miles,

is the principal gainer, the next three being Australia (2,043,300 square nautical miles), New Zealand (1,409,500 square nautical miles), and Canada (1,370,000 square nautical miles). 25 States will acquire 76 percent of the total area of all economic zones; 13 of these are developed States. Together they will gain 48 percent of the total area of all economic zones; 12 are developing countries who will gain, together, 28 percent of the total area. About 80 countries will gain nothing.

The question, however, is what do we really mean by "gain"? Is it meaningful to extend the law of the land, with its hard-and-fast, cut-and-dry concepts of sovereignty and ownership, beyond terra firma, into a medium where everything is fluid?

The rich and powerful coastal States "gain" what they already have: for the former freedom of the high sea bestowed on their might the right to exploit marine areas as far as their technologies, and their national interests, would reach: 200 miles out or further. Developing coastal States, on the other hand, formerly at the mercy of fishing fleets and factory ships of wealthy distant-water fishing States free to deplete and pollute their coastal waters, now, at least theoretically, are protected against these inroads. But the big question is: is it really going to work out like this? The problems of surveillance, enforcement, and management of vast maritime zones are rather staggering.

There is bound to be a moment of convulsion and transition. Idle distant-water fishing fleets, which will have to be re-deployed somewhere; underproduction in many economic zones; the world fish catch sharply declining; busy re-negotiations of all fishery agreements, bilateral and multilateral.

When the dust -- or the whirled up drops of water -- will have settled, however, the scene will look old rather than new. Continuity will have triumphed over change, the economic reality (the balance of business) over political illusion (territorial expansion).

The rich countries will continue to rule the waves and to exploit the resources of the sea: within what now are their economic zones, and as far out as they care to, into the no-man's land of the High Seas as well as in the economic zones of poorer coastal States. In these zones the rich States and their companies, whether national or transnational, will have made suitable bilateral arrangements, paying rent or royalties. This, however, will not be substantial enough to make any dent in the social and economic status quo. Production, as heretofore, will be geared to the needs and interests of the industrialized countries, not to the needs of the poor, not toward a redistribution of resources, technologies, and skills. If the economic zones of poor coastal States are not exploited by the companies of the rich, they will be under-exploited, for the development of local technological capacity will take a considerable amount of time. The provisions of the Convention emerging from the Law of the Sea Conference are often ambiguous and not to the advantage of poorer coastal States. And who will be able to resist the pressure of the powerful? Nature abhors a vacuum.

The law will last, however, so long as the power structure that created it.

There have been national claims over vast ocean expanses in the past: claims more radical even than the present ones. They were staked at the time the nation states came into being and the modern concept of sovereignty took shape: they are repeated at this time when the concepts of sovereignty and ownership are undergoing profound transformations and the age of nation states is drawing to an end -- the dusk curiously resembling the dawn. Then, thanks to the enormous advances in nautical and navigational technologies, Portugal and Spain were superpowers, Portugal claimed sovereignty over the whole Indian Ocean as well as the Atlantic south of Morocco while Spain claimed the Pacific and the Gulf of Mexico. There was no U.N. at the time, but there was the Papacy, and it issued

bulls, as good as Conventions on the Law of the Sea. In 1493 Pope Alexander VI legitimized the claims of the superpowers in two papal bulls, which became the basis of the Treaty of Tordesilla of 1494.

But the law lasted as long as the supremacy of the fleets of the superpowers and the unchallenged prestige of the Papacy. As the British technological revolution got under way, the Portuguese might decayed, the Spanish fleet succumbed, and Papal Bulls lost their grip on world affairs in the era of ascendant Protestantism, the regime of sovereignty over the oceans gave way to one of freedom of the seas.

Also the nouvelle vogue of sovereignty will last as long as the power structure behind it, no longer. What direction and what form the new shift will take is a question obviously far wider than the oceans. Considering the technological imperatives of our age, it cannot take the form of a return to the freedom of the seas. History is likely to move beyond the concept of the economic zone, not back of it.

The poor nations have a number of possibilities to move beyond the economic zone concept and to turn it to their advantage.

1. The boundaries of the zone have to be more clearly defined than it is in the Text presently under consideration by the U.N. Conference on the Law of the Sea. This would imply above all a stricter definition of the baselines from which national ocean space is measured; a stricter definition of islands; and a clearer definition of the limits of the legal continental shelf which should not extend beyond the 200-mile limit of the economic zone. Only if these steps were taken could a further escalation of national claims in ocean space be forestalled.

2. Next, if the exclusive economic zone is to be of use to developing countries, there should be public international institutions to assist them in the exploration and exploitation of their resources -- lest they be forced to fall back on multinationals and private consortia. New institutions must

be created where necessary; existing international institutions must be restructured and strengthened for their new operational and managerial functions, on a global and regional basis.

3. The third measure to make the economic zones a viable part of a new international order is to merge them, where appropriate, into regional economic zones or "matrimonial seas." This is the only solution for enclosed or semi-enclosed seas, like the Mediterranean or the Caribbean, where national economic zones would be exceedingly complicated to delineate and would make rational resource management totally impossible. Cooperation, through an appropriate regional institutional framework, should extend to all major marine activities, from the management of living resources and the protection of the environment to scientific research, from navigation to the mining of minerals. Regional regimes can be established, however, not only in enclosed or semi-enclosed seas; they can be conceived as part of a land-based regional economic development, such as the EEC or the African or Latin American common markets. The extension of such common markets to "matrimonial seas" holds by far the greatest promise for the solution of the problems of landlocked and geographically disadvantaged States which would participate in the marine common markets on an equal footing.

4. Since nations can manage their own national ocean space and its resources only in the context of, and in cooperation with, international management systems, it is only too fair that they should contribute financially towards the maintenance of such international systems. This can be done most efficiently through some sort of international taxation which would insure automaticity of transfers and contribute to a redistribution of international income. The modalities for the establishment of such taxes are being studied at present by UNEP, in connection with the de-desertification programme. There is no reason why such a tax should not

to applied to the oceans, in the form of an Ocean Development Tax: a small levy -- let us say, one percent -- on all major uses of the oceans, be it the production of offshore oil and gas, commercial fish production, navigation or the use of cables and pipelines. Such a tax should be collected by States and paid to the international ocean institutions, or, in other words, States' contributions to the international community would be assessed on their uses of the oceans. The tax would be based on a functional criterion (the use of the oceans, anywhere) not on territorial criteria (there would be no distinction between areas under national jurisdiction and international areas). The tax rate would be modified by income-per-capita factors so that poor nations will get much more than they pay. A tax of this kind would put billions of dollars annually into the treasury of the international community to spend on international development and assistance to developing countries. It could be a tool of substantial importance in the development strategy for the 80s and beyond. It also could, to a large extent, compensate landlocked and geographically disadvantaged States for the vagaries of geography that have been invoked in fashioning the iniquities of the exclusive economic zone. An ocean development tax may be an idea whose time has come.

5. One of the problems developing countries have to face in planning for the management of the economic zones is that of surveillance and enforcement: and the larger the zone, the worse the problem. Rich countries, like the U.S.A., are spending billions of dollars reinforcing their coastguards, acquiring helicopters, linking up with satellite surveillance, installing tracking devices. But what can a poor country do? Expenditures on warships in Third-world countries are rising much steeper than in the rest of the world. While this development is partially due to the rise of tensions in international affairs in general, it is, undoubtedly, also related to the

need to protect the resources in the newly acquired economic zones. What is being spent on warships, however, cannot be spent on fishing fleets, and the arms race directly impinges on the development of the zone.

Developing countries thus would do themselves a great service if they pressed for the internationalization of surveillance and enforcement instruments. Regional surveillance by planes, helicopters and satellites would be cheaper and more effective than national surveillance. Even coastguard contingents could be internationalized for regional enforcement purposes. This may be a long-range development and cannot take place everywhere at once, but it would, again, contribute toward making of the economic zone a viable part of the new international economic order. It would contribute both to development and disarmament.

The other major development of the Law of the Sea Conference is the International Seabed Authority -- a totally new type of international institution, with operational and managerial capacity, to manage the minerals of the deep seabed beyond the limits of national jurisdiction.

Apparently the establishment of the Seabed Authority and the establishment of the economic zone point in opposite directions: one internationalist, the other nationalist. In reality both respond to the same need: for more planning and more management for the uses of the oceans, whether national or international. While the development of national management systems is a continuation of existing trends, however, the establishment of a public international system, partly political, partly economic, partly scientific, is a breakthrough, beset with all the difficulties and uncertainties inherent in the process of change.

The provisions for the system of mineral production in the international area in the proposed Text are conceptually defective and practically inapplicable. As they stand, they are not acceptable either to the industrialized States who

alone possess the technology and the capital required for deep seabed mining, nor to the developing countries who have a right to participate in the management of these resources, declared by the General Assembly to be the Common Heritage of Mankind. The text presently under consideration is based on a curious sort of compromise between the positions of these two major groups of States: not by reconciling or synthesizing them, but merely by adding them up. Thus the industrialized States wanted a licensing system under which their companies would essentially have a free hand, after payment of certain fees to the International Authority and obeying certain general guide lines with regard to the Authority's resource policy. This position, however, was unacceptable to the developing States and was considered contrary to the principle of Common Heritage which assumes common management of the resource.

To embody the principle of Common Heritage, the developing countries proposed a public international Enterprise as the operational arm of the International Seabed Authority: an Enterprise essentially modelled after the nationalized mining enterprises in Latin America. But the Authority is no State; and it has neither technology nor capital, and if the industrialized States and their private consortia refused to cooperate, the system simply was unworkable.

The "compromise" added these two alternatives: There was to be an "Enterprise" as the operational arm of the Seabed Authority, and there was to be free access to States and consortia under a licensing or "contract" system. The addition of an unacceptable and an unworkable system was to result in a workable and acceptable one!

The difficulties that arose in fact turned out to be unsurmountable. How was the Authority's Enterprise going to be financed? How was it going to obtain its technology? If the industrialized States and their companies were free to mine what they needed, who needed the Enterprise? Rather than an

embodiment of the principle of Common Heritage, was it not to become a status symbol of poor nations? Like a restless sleeper, the huge Conference tossed over from one side to the other: on the one side, imposing financial burdens and obligations of technology transfers on the industrialized States which should enable the Authority's Enterprise to get off the ground but which were unbearable to the industrialized States; on the other side, trying to make their demands bearable to the industrialized States, but then the Enterprise could not get off the ground. There was no way out of this dilemma as the "compromise text" grew longer, more complicated, more involved, more contradictory, more abstruse. Disillusioned, frustrated, the Conference was dragging itself down towards the end of a dead-end road.

But there are other roads.

In 1976 the Delegation of Nigeria proposed a unitary joint-venture system as a realistic alternative. The proposal was elaborated in some detail in 1977 by the Delegation of Austria. The Austrian proposal tries to meet the objectives and objections of all major groups of States. What it proposes is a unitary joint-venture system based on the principle, not of an unsustainable competition between the Authority and established industry, but of cooperation: established industry is structured into the system by solid and well-tried, familiar rules of the game.

States and their companies, whether public or private, have guaranteed access to the international seabed area, but only in joint venture with the Authority. In other words: Each one of the four or five international consortia, duly authorized by their States of origin, must form an Enterprise with the Authority whereby the Authority must furnish at least one half of the capital investment (including the value of the mineral nodules in situ, which are the Common Heritage of Mankind), appoint at least one half of the Board of Directors and obtain at least one half of all profits. Companies are obviously

quite used to work under such a system which offers them the advantage of reducing their capital investment and sharing their risks. On the other hand, this system offers to developing countries the possibility of broad participation in all Enterprises, through appointment, by the Authority, to the Governing boards; and it offers the Authority the possibility of control and of broad financial participation, besides, of course, the general control it can exercise through its political organs (the Council and the Assembly).

The system vastly facilitates the problem of "financing" the Enterprises (since half the capital and the know-how comes from established industry) and of technology transfer (which follows standard form under a joint-venture arrangement and raises no particular problems). What is more, the system would be applicable not only to the international area but even to areas under national jurisdiction which, due to the peculiar boundary provisions proposed in other parts of the Draft Convention, will contain at least 20-30 percent of the exploitable mineral nodules. In such areas, especially where they are under the jurisdiction of developing States (e.g., Mexico), the coastal State would not have to depend on private consortia for the exploitation of its resources but could enter into joint venture with one of the Authority's "Enterprises" which would plow back its share of profits into international development.

The proposal has a number of other technical and political advantages over the "parallel system" belabored by the Conference at present. Among other things, the new proposal would greatly shorten and simplify the present text, freeing it of involved subparagraphs and lengthy annexes.

If there were a breakthrough in this direction, the consequences for the future of the oceans and the world would be far-reaching. In the first instance, the same system could be applied to a number of other marine enterprises -- in fishing and sea farming, in shipping, in offshore oil production -- initiating an inevitable development towards the establishment

of integrated management systems for the other major uses of the oceans which need such systems at least as urgently as the still rather exotic activity of deep seabed mining. In the second place the system could be applied in other areas where world problems call for international solutions: such as outer space and satellite technology (the recently concluded INMARSAT Convention points already in the same direction and, in fact, partly served as model for the Austrian proposal). Finally, the system could provide a framework to replace the private, uncontrollable transnational corporate structure with a publicly controlled, and partially public owned international structure, welding the world economy, giving a new impetus to Development and the international distribution of income and of know-how, and making war, between economic systems so welded, well-nigh impossible.

If one looked at water conservancy and management as the matrix of an integrated system of water- and land- uses, one would get a new and different perspective on Development. Only one country has consistently applied this principle, and the results, for land and water uses, flood control, irrigation, agriculture, aquaculture, and navigation, all considered as an integrated system -- and the results have been rather spectacular. Suffice it to mention that that country alone, the People's Republic of China, today produces almost half of the world's total aquaculture harvest, generating food and employment for many millions of people.

The oceans are the lakes and rivers of the world community. Water conservancy and management, as the matrix for an integrated system of managing the uses of the oceans, including navigation and communication, aquaculture as a complement of agriculture, ocean mining as a complement of land mining, could, over the next decades, reach similarly spectacular results.

The future of man in the oceans could be a lot brighter than the future of eternity.