

1. The over-all slow increase in the production of living resources continues, albeit with a pronounced shift from over-exploited or collapsed fisheries to "unconventional" species and regions. While Volume I predicted a drop in production, due, in part, to the jurisdictional changes in the oceans, it is remarkable how negligible, thus far, has been the international impact of the new political boundaries on the production and distribution of living resources. Distant-water fishing nations have instantly adjusted to the widespread establishment of extended fishery zones or economic zones, of which there are already over sixty prior to the adoption of the new Law of the Sea. Distant-water fishing nations have made their agreements, in the form of licenses or joint-ventures, with coastal States, and their production, on the whole, has remained constant or gone up. Rich coastal nations, with highly developed coastal-zone management systems have profited most from the newly acquired fishing zones. Canada, e.g., has seen a dramatic increase of over 11 percent in its Atlantic and 29 percent in its Pacific fisheries between 1976 and 1978, clearly as a consequence of the establishment of its scientifically managed 200-mile fisheries zone. The greatest increase in the Atlantic is due to the introduction of a new fishery, that is, squid. In poor countries, on the other hand, local consumption shows no sign of increase, and the beneficial impact of extended EEZs on the nutrition of local population, on employment, on coastal development, are yet to come (see article by Sidney Holt and Caroline Vanderbilt).

2. Following last year's analysis of oil production and consumption, the present volume presents a survey of the geology of oil. Further confounding the pseudo-scientific assumptions underlying present negotiations on the limits of the outer continental margin, the authors point out that "the lesson to be remembered, when applying North Sea experience to other parts of the world, is that geographical coastlines can also be geological boundaries and that land geology will not necessarily continue out to shallow waters.

The geological evidence cited confirms that oil is a finite resource with a remaining useful life of some thirty years.^{1/} Unless alternative energy technologies are developed, there will be a shortfall in total energy by the year 2000 of as much as 40 percent. In the development of these alternative technologies the oceans will play an important role (see article by Gaskell and Simpson).

3. The world economic recession of the 'seventies' has had various effects on ocean development. There can be no doubt, for instance, that it was the depression of the nickel market, more than the intricacy of legal and institutional problems, that has slowed down negotiations on the International Seabed Authority, while, at the same time, slackening the pressure of unilateral legislation. Even more obvious, in the somewhat longer term -- given the long lead time -- are the effects on the development of the shipping industry. U.S. shipping companies were reported to be receiving \$290 million in federal operating subsidies. By March 1978, one London ship-broking firm estimated that over one-third of world tanker tonnage was laid up (see article by Suzanne Strange and Christopher Cragg).^{2/} An aspect generally neglected in the discussions on shipping and its role in the relations between "North" and "South" is the insurance business in this sector. The first Third-World Insurance Congress was held in the Philippines in October 1977 and produced some rather startling figures: It was estimated that in 1975 only 6.5 percent of the total volume of world premium income originated from all the Third-World countries put together. Only 16 percent of insurance companies operated in developing areas at all, and 61 percent of those operating in Asia were foreign-owned. Regional cooperation among developing countries could, in this sector as in others, reduce Third-World dependency. But the task of adapting the multi-billion shipping insurance business to the challenges arising from new technologies and the magnitude of ecological risks and pollution liabilities is an arduous one and will take time and require structural change.

4. Two fundamentally important U.N. Conferences, where marine sciences and technologies are playing, or should play, an important role, were held in 1979. One was the World Climate Conference (WCC), which was held in Geneva from February 12 to 23, 1979. It was organized by the World Meteorological Organization (WMO) in collaboration with FAO, UNESCO, UNEP, WHO, ISCSU and IIASA. The crucial importance of the oceans in meteorology is stressed in the report "Meteorology and Ocean Affairs" in this volume. The World Climate Conference dealt, in particular, with the interactions between climate variability and the development and management of water resources, marine resources and offshore development and fisheries. It is likely that under the impact (partly natural, partly man-made) of climatic change on agriculture, there will be a far greater pressure to increase the contribution of aquatic resources to food production than there has been in the past. Ten thousand years ago, the receding glaciers -- among other factors -- enabled humankind to transform its economy of hunting and gathering into an economy based on agriculture and husbandry: one of the major transformations of the culture of homo sapiens. Present and forthcoming climatic changes may be a strong contributing factor to the ongoing transformation of capture fisheries into systems of husbanding, and of the marginal gathering of weeds into the large-scale scientific cultivation of seaweeds and algae for food, industry, and pharmaceutical purposes.

The other of these U.N. Conferences in 1979 was the U.N. Conference on Science and Technology for Development (UNCSTD) held in Vienna, August 1979. Here the oceans were notably absent. In spite of the fact that marine sciences and technologies are absolutely essential not only to the understanding of the evolution of our planet but to the development of marine resources (for international cooperation in marine sciences and technology see the article by Warren Wooster), and that the development of marine resources is increasingly becoming an integral and, in many cases, essential part of Development in general, the Conference addressed a series of topics drawn from the obsolescent development strategies of the '60s and '70.

Due, partly, to the sectoral structure of the U.N. system, partly to a variety of political reasons, the oceans practically do not exist in these Strategies. Until now, the proportion of development funds spent on the transfer of essential marine sciences and technologies has been minimal. The recent establishment of a seven-million dollar fund, under FAO auspices, to enhance the transfer of fisheries technologies, while pointing in the right direction, can hardly suffice to correct the imbalance. It is regrettable that the occasion UNCSTD could have provided has been wasted in this respect.

5. Expansion of national jurisdiction in ocean space has curious effects, not intended or foreseen by those who, during the early phase of the Law of the Sea Conference in Caracas (1974) hailed the concept of the EEZ as an instrument of distributive justice and a harbinger of a New International Economic Order. It is in the Pacific, in particular, that the establishment of economic zones and archipelagic waters around tiny and in many cases dependent islands is bringing 40 percent of this hugest of all oceans under national jurisdiction, causing grave imbalances, boundary conflicts retarding resource development, and the inevitable rise of a new, ocean-centered form of imperialism. The United States, for example, is acquiring, besides the 2 million square miles around its own long open coasts, an additional 4 million square miles of Pacific Ocean round its far-flung island possessions. The consequences, in economic terms (acquisition of oil, manganese nodules) have not yet been spelled out. It is already clear, however, that control over vast expanses of Pacific Ocean space is not without strategic importance, legitimizing the emplacement of weapons systems on the ocean floor, securing submarine bases and testing grounds (see articles by Prescott, Wilkes, Larkin and Park). Also in other areas however, the acquisition of vast economic zones is causing an increase in military activities. The rate of acquisition of highly sophisticated light naval forces, patrol craft and Fast Patrol Boats (FPB) is rapidly increasing and largely to be ascribed to new needs arising from the establishment of economic zones (see article by Karkoszka).

6. As was noted last year, the extension of national jurisdiction, by a curious dialectical process, increases the need for international cooperation: What had been left unmanaged, must now be managed, and purely national management is in many cases frustrated by the overlapping of political and ecological boundaries -- fish do not recognize the limits of national jurisdiction -- frustrated, also, by the cost of technologies and infrastructures. These factors counteract the rise of nationalism in the 19th-century sense and encourage regional cooperation and the development of a new international economic order in the oceans. This healthy development, in turn, is often slowed down by a divergence of interests between the very poor and the less poor nations in a region of developing countries: with the less poor drawn into commercial association with the North rather than with their own neighbors, and the very poor falling further behind. A "development gap" thus is widening among the developing countries themselves (see article by George Kent).

In spite of these difficulties, however, a sea-centered, ecologically oriented regionalism, complementing and overlapping with, the more traditional, continent-centered political regionalism, is clearly in the making. African Scientists, legal experts and political leaders, gathered, in December 1978, in Yaounde, Cameroon, for Pacem in Maribus IX, gave expression to this trend: stressing the need to articulate the emerging law of the sea in regional terms: to adapt it to regional situations and develop it for the benefit of the people in specified localized circumstances (see Conclusions of Pacem in Maribus IX).

7. Remarkable, in this connexion, is the sea-centered regional network emerging from the developments fostered by UNEP in cooperation with a multitude of national governments, inter-governmental and nongovernmental organizations. UNEP's Regional Seas Programme is exemplary in that it begins to build an institutional infrastructure for the implementation of Parts XII, XIII, and XIV of the Law of the Sea Convention, long before that Convention comes into force, or is ratified or even agreed upon. With all the difficulties it is necessarily encountering,

UNEP's Regional Strategy is a successful example for the interweaving of international and national activities, sea-based, land-based and outer-space-based: it demonstrates the need for integrating the management of traditional uses of the sea (fishing, navigation, oil drilling, tourism) with new and "unconventional" ones. Raising its sight far above the horizon of the Third U.N. Conference on the Law of the Sea, UNEP's Blue Plan for the Mediterranean has made a beginning in investigating the international/regional requirements of mariculture and in advancing its development at the national and international level. And mariculture, it can safely be predicted, is going to play a very great and rapidly increasing role in the world economy (for the cultivation of seaweeds, see the article by A.Miura). UNEP's Regional Strategy -- far ahead of UNCLOS -- is turning its attention to the new "alternative" technologies to produce renewable energy from the seas and oceans, such as Ocean Thermal Energy Conversion (OTEC). This Strategy is remarkable, finally, in that it stresses the importance of water management in a comprehensive sense, including both sea water and fresh water in their multiple uses. In this, too, UNEP is far ahead both of the U.N. Conference on Water (Rio Plata, 1977), which ignores sea water, and the Law of the Sea Conference, the scope of which does not include fresh water. Water management as an integrated concept, IOI research has stressed on other occasions^{3/} could instead be a basic instrument for the integration of land-based and sea-based economic planning or, in other words, for the integration of marine resources and ocean management into development strategy: a ~~task~~^{challenge} for the remaining years of this century, essential for development, beneficial for the further evolution of the law of the sea, and conducive to the building of a New International Economic Order.

8. A detailed analysis of the Informal Composite Negotiating Text (ICNT) and the ongoing work of the Law of the Sea Conference was presented in Volume I.^{4/} In the meantime, a revised Text (ICNT, Rev.I) has been issued (for the most important changes, see Annex...), and discussions on it have begun. Although undoubtedly it constitutes a significant improvement on the previous text in the sense of greater precision and technical thoroughness, the new text does not yet provide a basis for consensus. Since work is still in progress, and likely to be concluded next year, a detailed analysis will appear in Volume III.

9. While national claims, at the Law of the Sea Conference and unilaterally, continue to erode the concept of the Common Heritage of Mankind in a territorial sense, the concept shows resilience and a tendency to expand in a functional sense in other areas. In this volume a case is made for including archeological treasures on the continental shelves or in international waters in the category of common heritage resources. (see article by George Bass.) A wreck, it is argued, does not necessarily belong to the country in whose waters it lies. There are at present no international agreements to cover ancient sites discovered on the outer continental shelf or in international waters. At present, finder is keeper. The ICNT contains an article (Art. 149) providing that "All objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of the international community as a whole, particular regard being paid to the preferential rights of the State or country of origin, or the State of cultural origin, or the State of historical and archaeological origin." Thus archaeological and historical objects, the "common cultural heritage" of many nations, appear to be included in the category of nonliving resources of the international area which are the common heritage of mankind. Considering however, the uncertain status of the boundaries of the international area^{5/}, this leaves many questions unsolved.

Groping steps in the direction of expanding the common heritage of mankind have been taken in two other areas. Con-

sidering the inextricable links between resource management and technology -- resources become exploitable as technologies become available, it is understandable that developing countries are beginning to press for the inclusion of technological knowledge in the category of common heritage. The Arusha Symposium of African States (January 30 - February 4, 1978), in preparation for UNCSTD, proposed that "it must be accepted universally, for a start, that technological knowledge is the Common Heritage of Mankind." No action was taken on this proposal at UNCSTD, but patent laws and the ownership of intellectual property are in general disarray, and a new order for science and technology for development, including marine science and technology, may have to be based, in some ways, on the common heritage principle. At the same time, developing countries in the Group of 77 are beginning to direct their attention to Antarctica and its great living and nonliving resources and to call for the application of a common heritage regime to that area. Action in the General Assembly is forthcoming.

In one area, however, the conquest has been consummated and enshrined in a consensus document of the U.N.: The 1979 conference of the U.N. Committee on the Peaceful Uses of Outer Space agreed that the resources of the moon and other celestial bodies are a Common Heritage of Mankind, subject to international management and benefit sharing, just as the resources of the deep sea.

The economic exploitation of the resources of the moon and other celestial bodies may be several decades away. But before that time, the principle could be usefully applied to resources produced or processed in outer space: Satellite-based factories, taking advantage of the lack of gravity (weightlessness) for the processing of certain materials (e.g., silicon, of growing importance in the expanding microelectronics industry), are already on the drawing boards. They might be subject to a common heritage regime, including an international, publicly controlled enterprise system for their management.

Viewed from a distance, with some detachment from the frustrations of every-day negotiations, it is a rather awesome spectacle. The seed, sown by Malta in 1967, is beginning to bear fruit. The Law of the Sea Conference, called in the wake of Malta's initiative, has begun to transform the international system and the traditional concepts of sovereignty and ownership.

Notes

1. The Tenth World Petroleum Congress, meeting in Bucharest, Romania, in 1979, came to considerably more optimistic conclusions. Oil and gas reserves north of the Arctic Circle, according to these forecasts, might match those of the Middle East. These include huge gas and oil fields in Soviet Siberia and lesser reservoirs in the Beaufort Sea off Canada and Alaska. Vast untapped resources lie in deep waters: including the international area. Experience in drilling off Thailand, Surinam and elsewhere proved that "deep water is not so hostile if you disregard high cost." Even pessimists agreed that probably not even half of the known reservoirs have been tapped.

2. According to 1978 OECD statistics, Third-World countries fared better than First- and Second-World countries: better also than flag-of-convenience countries. The goal set for the Second Development Decade (1970-80) of 10 percent of world shipping for developing countries, was practically reached by 1978. The OECD countries, which in 1964 accounted for 73% of world shipping, decreased to just above 50%: the Socialist countries of Eastern Europe continued their slow growth (4.5%). Their percentage in world tonnage remained constant. Greece, with a growth rate of 15 %, showed the greatest increase and possesses now the third largest shipping fleet in the world, trailing Japan by 5 million tons.

3. Arvid Pardo and Elisabeth Mann Borgese, Marine Resources, Ocean Management, and International Development Strategy for the Eighties and Beyond, IOI Occasional Paper 7, Malta, 1980. In abbreviated form, in IFDA Dossier, November, 1979.

4. "The Evolving Law of the Sea: A Critique of the Informal Composite Negotiating Text (1977)," by Arvid Pardo. Ocean Yearbook, Vol. 1, pp. 9-34.

5. Arvid Pardo, loc cit.