

Laurie Ravelette Center

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One of my hobbies is to train my dogs to do strange things. For instance, I teach them to type on an electric typewriter. that Olivetti built for me many years ago.

I trained one dog for three years, and he was quite a typist. Presently I have three dogs who know how to type a little. The other day I taught them to type GOO. You should see how cutely they type out GOO. It would make a great add!

Your organization and the one which I represent, the Internatinal Ocean Institute in Malta, get at the problem of oil in the oceans from somewhat opposite and converging, and complementary points of view: You get at it from the local point of view, inspired by the desire to have a clean neighborhood; we get at it from the international point of view: inspired by the -esire to have world order.

When I say these approaches are convergent and complementary, I mean it: one is unthinkable without the other. They have some interesting things in common. Actually, these are the two levels where the action is: where one can do something, where the situation is fluid and flexible, where it has not ossified constitutionally and institutionally; where one can innovate, experiment with new forms of operation and cooperation. The intermediate level, that of national government, is far less interesting. It is fossilized. non human in scale: there is far less hope. It is the community level and the world community level.

Up until recently there was, apparently, not much interaction between the two. People, on the whole were interested in action on the community level, because housing and employment and prices and wages touched them directly; a small power elite and academic elite was interested in foreign affairs, which did not touch people directly.

Now this has changed. Thanks, largely, to the technologies that we have at our disposal today, there is a much stricter interaction between the local level and the world level: What we do here -- whether we put nuclear reactors into the water, orexhale poisonous gases into the air -- may affect people very far away; and, obviously, the reverse is equally true.

We are no longer able to control and regulate our own environment: Devents, developments, decisions far away, way beyond our control may impinge on it. So, if we want even a share in controlling our own destiny, we must participate in those decisions, events, and developments: which we can do only through international organization and cooperation. Thus foreign policy now comes home and touches the local community directly, and the local community must get more and more, operationally, institutionally and constitutionally, involved in it.

Of course I sympathized with the immediate goals of GOO. Although I am not as much of a Santa Barbarian as I would like to be, I happened to be here when the disaster struck in 1969. I happened to be walking with the dogs along the beach when the black tide came in. And I remember the incredible experience it was. I remember the indignation one felt when Union Oil was gracious enough to offer free shampoos for dogs messed up on the beach; I remember our indignation of the ineptness and inadequacy of the poor State prisoners who were drafted to clean up the mess; ^{EXECUTION BLOCK} the indignation about the all the way round dishonesty and hypocrisy of the whole event. One reason was the shocking recognition that accidents like that one could have been avoided: by stricter controls, by more frequent blow-out practices, and so on. These of course, cost money, and therefore business likes to minimize them: just like the coal mining business which through modern history, through the industrial revolution, has created misery and death for countless miners.

Another thought that was deeply disturbing was of course: the future. Oil in the oceans at large is becoming a rather gigantic problem. A number of accidents, naturally, involve tankers and supertankers such as the ill-famed Torry Canyon which discharged some 20 million gallons of crude into the sea.

The probability of tanker and supertanker collision, or near-collisions, with other ships is now such that one must assume a risk, or near-risk situation, approximately every four days, or nearly one hundred times a year for each tanker. That means something of the order of 10,000 risk situations a year, involving

something of the order of 10^9 tons of oil!

Normal losses from offshore oil production amount to over 100,000 metric tons a year, or probably more. Run-offs from rivers, industrial waste, and automobile wastes account for half a million tons. The total amount of oil discharged into the oceans in 1970 was about 2.1 million metric tons. Adding the possible fall-out of airborne hydrocarbons on the sea surface, estimated at 1.8 million tons, the total amount of oil and oil products contaminating the oceans may be as much as 0.5 percent of the total world production. As this is estimated to double by 1980, reaching four billion tons per year, the amount of oil entering the oceans might then reach as much as 20 million tons a year...

So, by all means, GET OIL OUT^o

But now I want you to try to look at events from another angle. There is one thing that has always bothered me about my co-environmentalists. Why has environmentalism, during the past half decade, become as powerful as it has been? Partly, of course, for objective reasons: our run-away technologies have reached a point where they are more destructive than constructive, and something has to be done about it.

But when you come to think about it: for the poor people, this has been the fact of life throughout the industrial revolution. They have lived in squalor and pollution all the time. But nobody cared, because they were poor. It was when squalor and pollution became a threat to the rich, when their "amenities" were threatened or spoiled, that they began to cry out, they cried: now it's enough: stop it! We are running out of materials, we are running out of air, we are running out of space. Stop it! And if the poor are to remain poor, let them. This is of course the reason why the environmentalist movement has been so vastly more successful in the rich countries than in the poor, and, in the rich countries themselves, among the rich classes rather than the poor. If the environmentalist movement were to remain that -- a movement of the rich, it would soon run out of steam.

In fact, to remain at the point of saying GET OIL OUT would be futile. It would be a battle with the windmills. It would be missing the real point: For oil in the oceans is

merely a symptom, it is not a cause..

What is really happening, and what we have to come to grips with is the penetration of the industrial revolution into the oceans the collapse of the laissez-faire system, the collapse of the freedom of the seas that had been the basis of the international law of the seas for centuries. A new order has to be created, a new economic order, embodied in a new legal and institutional order.

I stress the word, economic, because, on the one hand, our efforts in the oceans which go back almost a decade, are now being overtaken by the wider if somewhat inchoate efforts to build a new international economic order in the world at large, and to adapt the antiquated structures of the United Nations system to the requirements of this new international economic order. The ~~xxxx~~ floodgates are open. We are living in an epoch of revolution, which includes a revolution in international relations.

The contribution that the oceans can make to the world economy is simply staggering

If wisely managed, the oceans could solve the world's energy crisis many times over. And not on the basis of oil. Our oil-based economy is undoubtedly coming to an end over the next quarter or half of a century or so. Not either on the basis of nuclear reactors which are threatening to invade the oceans., with their risks, and their wastes, posing problems which are quite irrational: the counterpart, really of the insanity of the atomic arms race.

But, as you know, there are many othr forms of energy in the oceans. The total potential energy of the tides has been estimated at 3×10^{12} watts. Obviously, not all of this can be harnessed, but even a small proportion would be an enormous contribution. There is a model plant in St. Malo on France, which generates the cheapest electricity in France. There is a plant in the soviet union in operation now, and they are planning another, huge one, on the White Sea. There are at least twenty locations in the world where such plants could be established. One, for instance, in Australia. The reason that

it has not been built yet is that there is not yet a market in the region, including South East Asia, that could consume as much energy as would be produced by that plant!

But then there is the huge system of ocean currents. According to recent studies, the Florida Current alone could deliver perhaps 1000 million watts on a 24-hour, year-round basis -- as much as two large nuclear plants.

Then, there is the magnificent potential of thermal energy from the oceans. Deep seawater may be from 15 to 25 centigrade colder than surface water. The conversion of this heat differential into electrical energy would continuously provide much more power than mankind could use. See thermal plants can be built for around \$200 per kilowatt, whereas nuclear plants cost some \$700 per kilowatt.

Ocean thermal power plants are even more economical when the production of energy and fresh water is combined with the production of fresh water, through desalination, and of food through mariculture. This can be achieved by passing the water, before its conversion into low-pressure steam, through shallow ponds where plankton is cultivated. Shellfish, shrimps, and lobsters may be fed upon this plankton. The water may be further heated in the shallow ponds, thus raising the temperature differential. Wastes from the shrimp and lobsters can be absorbed by seaweed culture (and the seaweed can then be processed to obtain agar or carrageen) before the water is returned to the plant. Such plants have been built already experimentally.

Wave energy. Scripps. Scotland.

There is no time to go into all the other economic uses of the oceans. Let me only briefly indicate that in spite of what you read about the depletion of commercial fish stocks, the food potential of the oceans is enormous, and that I think we will see revolutionary changes in this area during the coming decades: something one might call, the blue revolution:

The value of the world's fish catch last year was about ~~fourteen~~¹⁴ billion dollars; it is true that the volume has decreased rather than increased over the last years, but that is due to very particular circumstances (Anchovetta and whaling), but what I call the "blue revolution" is not happening in the sphere of traditional commercial fishing. It is happening in "unconventional ~~xxx spp~~ species" and it is happening in mariculture. Here, we could increase food from the oceans by a factor of ten or fifteen, even with existing technologies.

Shipping involves some 40 billion dollars a year, and you know what is the value of offshore oil, and what it is likely to be in the eighties.

So you see, the oceans are producing a very considerable portion of the world GNP, and this proportion is growing. What happens to the oceans is of vital interest to the economy, and the wellbeing of every nation in the world, and to the international community.

What happens, however, is that we are not making the best use of this enormous potential; we are not making it part of the new international economic order. We are wasting it in conflict: conflict between the uses of ocean space and resources; and conflicts between nations. Conflicts over jurisdiction; conflicts over resources. These resources, furthermore, which could potentially be used to offset some of the inequalities in the uses of landbased resources, are not being used so: instead, in the oceans as on land, the lion's share goes to the rich, great, maritime nations; and the rich get richer and the poor get poorer.

We have been working, and we are working hard, to change this situation to create a new order in the oceans: to preserve the ocean environment and develop its resources rationally and equitably.

When I say "we" I mean, on the one hand the international community, which has been working on these issues ever since 1967, first through the Committee on the Peaceful Uses of the Seabed, and then through the great U.N. Conference on the Law of the Sea; and I mean nongovernmental organizations, such as yours and mine. As a matter of fact our organization is working very closely with the United Nations Conference: next week we are going to have a rather interesting seminar here in Santa Barbara, on the New International Economic Order and the Law of the Sea, which will be attended by a number of the leading delegates of the Conference, including the President; and then, as in the previous sessions of the Conference, I'll be representing our Institute in New York during the next session which is scheduled from March to May.

Now, after all this work: where are we? What are the main issues? What are the problems? and are we likely to reach our goals? or should we be discouraged by the slowness of progress?

The main issue, in a nutshell: is that we must -- we have the mandate -- to create a new type of international organization to manage ocean space and ocean resources, or at least a part of it: that part that lies beyond the limit of national jurisdiction, or at least the bottom part of it, the seabed and its resources. A new type of international organization, more responsive to the requirements of modern science and technology on the one hand, of equity and the participation of all people on the other: an institution that deals with resource management and environmental policy: an institution that has the potential of creating an independent income -- all this has never existed before. It is a great challenge to conceive such an institution, and governments have displayed a great deal of imagination in devising and designing it. We now have an official draft, the work of the Chairman of the First Committee of the Conference, and it is a rather fascinating

document

But now comes the problem: If you want to manage resources beyond the limits of national jurisdiction, you have to establish, first of all, where are the limits of national jurisdiction. On the other hand, since ocean space is no longer what it used to be, but has now this enormous economic potential, nations are reluctant to give it up to an unknown international entity, untried, nobody knows how it is going to work out; nations want to play safe, and so they prefer to extend their own jurisdiction as far out as possible, because they trust their own governments more, with regard to pollution control, and the preservation of the living resources, than they do an international organization. So -- and this is the work of the second Committee of the Conference -- we have now claims to an economic zone of 200 miles, and to an area of the seabed which may go far beyond 200 miles, to a ~~point~~^{line} that is very hard to determine, where the continental margin meets the abyssal ocean floor. The Second Committee has done its job in such a way that all boundaries are pretty ambiguous and open-ended, and the expansion of national claims may proceed, if nations think it is in their economic or security interest.

A third factor, complicating the picture, is that the great coastal maritime nations, who are the grabbiest, are, on the other hand quite concerned to have freedom of movement for their ships and navies. So while, on the one hand, they want sovereign rights over the resources off their own coasts, for vast and rather poorly defined areas, they also want freedom of navigation and scientific research near the coast of other nations. Scientific research, the transfer of technology, and environmental conservation, incidentally, are the responsibility of the Third Committee of the Conference on the Law of the Sea.

So what we have at this moment -- after many years of work, is a threefold paradox:

nations want sovereign rights over vast areas near their coasts, but they want freedoms near the coasts of other nations which may conflict with the sovereign rights of those other coastal nations; They want a new type of international organization to manage ocean space and resources that are the common heritage of mankind, but they are appropriating these resources, claiming national jurisdiction over them, so that, what we are left with in the middle of the oceans, is an unwieldy, costly international structure with no function, with nothing to manage.

If present trends continue, there is a danger that the whole conference will fall into irrelevance; that there will be no new order at all, that the only new fact will be the ~~the~~ unilateral expansion of ~~the~~ national jurisdiction in ocean space, that the basic problems: the control of pollution which transcends, which does not respect national boundaries no matter where you draw them, remains unchecked, and ~~the~~ inequality and conflict increase.

Everybody has been inconsistent and advanced simultaneously conflicting interests and point of views: and this is true of the rich nations as of the poor, of the socialist nations as of the free-enterprise nations.

But will these present trends prevail? Or are we perhaps reaching some kind of a turning point?

There is at least a fighting chance that we are: and this is what we are fighting for. It is the perspective of the conference that must be changed. From an extension of the old order to a creation of a new one. That does not mean that we have to throw away the work of the Conference and start again. Not at all. For this work still reflects the great hope, the great dream of Malta: the recognition that there is a common heritage of mankind that must be conserved and developed cooperatively, peacefully, for the benefit of all peoples, only it has been a bit

warped, mangled, and distorted. But it is still there. Of course, even in the best of hypotheses reality is never ~~being~~ going to be as beautiful and as perfect as the original inspiration, the original dream. After the period of inspiration, the period of frustration is always bound to come, and there will always be some warping, mangling and distorting of the dream. Yet even today there is a possibility of making a real breakthrough.

If I were the head of the American delegation to the U.N. conference on the Law of the sea, I would, realistically, advance these simple points.

All right, I would say, national claims have been pushed to a certain point from which, now, realistically, there can be no retreat. We have to live with an economic zone of 200 miles. The American electorate will not retreat from this: not the fishing interests, not the oil interests; and public opinion in other countries will not retreat from it either -- although about one third of the nations, the landlocked and geographically disadvantaged nations, have no brief for the economic zone. Anyway: the world community can live with the economic zone. Only let us draw the limits clear and sharp, with no ambiguities, and with no encouragement for further expansion. That means: the baselines from which the breadth of the economic zone is measured must be clearly defined, which they are not, at present, and the continental shelf must be absorbed by the economic zone, i.e., national jurisdiction stops at 200 miles, for all purposes.

~~Second, we want a strong, well organized system of international institutions to manage ocean space and resources beyond national jurisdiction. The conference, so far, has proposed to us only one such institution, charged with the responsibility of mining mineral nodules. This is a very marginal activity, and supposing even, that the~~

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seabed authority is the most perfect organization the world has ever seen, and that manganese nodules are mined just beautifully -- this still would not take care of the far more important problems of the living resources, of offshore oil, of the hazards of navigation, of new and dangerous gechnologies, and of the conflict of all these uses. So we need other organizations to take care of these other uses, just the way the Seabed Authority takes care of nodule mining.

We do not want to create a proliferation of new institutions, new international bureaucracies. Being realists, we want to use what we have got. There is indeed an organization to take care of fishing problems, international, and that is the Committee on Fisheries of the FAO. It does not work. So let us improve it; Let us figure out why it does not work and what it needs to work. This is a concrete, practical task: let us face it.

There is also an organization today that takes care of problems of international shipping and navigation. IMCO. As a matter of fact, in certain areas, IMCO has been rather efficient. It has undergone many changes since its inception in the fifties: it is still in a process of change. Let us helpbuilding it up so it can effectively cope with the problems of shipping in our day and age: in particular, also with the need of the poorer nations to have their fair share of shipping tonnage and international trade.

There is also an organization today that takes care of coordinating international research, and that is the Intergovernmental Oceanographic Commission of UNESCO. It is charged with the enormous responsibility of coordinating the International Decade of Ocean Exploration. It does not work very well. Let us improve it. Another realistic, practical, limited task.

By the time we get through, we have four functional international organization to manage the major uses of

ocean space: one for living resources, one for nonliving resources, one for navigation, and one for scientific research.

Of course, for each one of these to be really efficient, they must not only deal with their own field in a narrow technical sense: they must be in a position, also to deal with the interaction of the ocean use that is their particular technical responsibility with all other uses: Many of the issues we are facing in the oceans are interdisciplinary: and all of them have a political component.

So for this, we must create some kind of integrative machinery, so that the members of these four organizations have the occasion to discuss technical problems in their wider context. In other words: what we want to create is a sort of functional federation of international organizations. Now: this is something really new: it is a breakthrough, but it is quite practical, it is quite realistic.

Furthermore, we must not lose sight of the fact that the oceans are one ecological system, and that all ocean uses interact, but also ~~xxxxxxxxxxxx~~ all areas interact: what you do on the seabed affects the waters above ~~xxxxxxx~~ ~~xxx~~ and vice versa; and what you do in areas under national jurisdiction may affect the international area, and vice-versa; so once we have established a management system for the uses of international ocean space and resources, and a system of national jurisdictions in the Economic Zones, we must now also provide for proper interaction and co-operation between international and national ~~xxxxxxxxxx~~ systems. On a regional and global level; on a regional and local level.

You see that it is a rather awesome task: but the building blocks are all there already. What lacks is the vision, the design. But there are people who have it, at the conference.

The issues are simple and clear-cut. I told you what I would do if I could act on the American delegation. Clear-cut

firm boundaries to national jurisdiction; an effective system of management for the uses of international ocean space: all uses, not just one, based on the improvement and strengthening of existing international organizations; and proper interaction between these organizations on the one hand, and the international and the national system on the other.

And this is where you can help. Tell Senator Cranston. Tell Senator Tunney. Tell your Congressmen. You need this kind of international organization just as much as the international organization needs you. For, if we don't stop pollution 201 miles from here, you won't be able to stop it at 199 miles either.

And join us in our work at the international level. Join the Friends of the International Ocean Institute, and help us in our work.

BORDEAUX LECTURE

I should like to give you some information about the International Ocean Institute in Malta and its program, known under the title Pacem in Maribus, but I should like to set this information into a wider context, which includes the role of this Ocean Expo as well as the role of the great United Nations Conference on the Law of the Sea on the contemporary scene.

The great difficulties the world is facing at this juncture basically can be ascribed to a twofold revolution that is going on and the consequences of which have to be assimilated by the international system in some constructive way.

One component of this revolution is scientific/technological: it includes the penetration of the technological revolution into ocean space. And this is the revolution manifest in these halls. This, again has two components: On the one hand, ocean science has become so big and costly that it should be carried out internationally, cooperatively, not competitively, and this requires new forms of international organization and the strengthening of a world community of science. On the other hand, the implications and consequences of this new science and of the technology to which it has given rise, are transnational: for good or for evil, they cannot be contained within the boundaries of any one nation. And this, too, gives rise to a novel set of problems, which are only partly scientific; partly they are economic and partly political. The fact that the organizers of this ocean expo have put together this particular panel testifies to the awareness of the interdisciplinary nature of these problems.

The second revolution that is going on is apparently not reflected by this ocean expo. It is in fact conspicuously absent. It is the revolution in the relations between the developed and the developing world. It is this revolution

that dominated the Caracas session of the U.N. Conference on the Law of the Sea. What was remarkable there was not so much that the so-called Third World now has the absolute majority of votes; because voting is becoming less important in the U.N. It was not even so much that ~~xxxxxx~~ most of the key positions -- from the Presidency down -- are occupied by representatives of the developing nations. Much more impressive was the fact that intellectual initiative has passed from the industrialized nations to the Third World. The movement of change comes from there. The industrialized nations are on the defensive, and more often than not, it is a rather poor defensive.

The members of the Third World may be at loggerheads with one another when it comes to defining their own national interests, and the divisions we saw emerging, e.g., between the land-locked and the coastal developing nations, appeared at times no less deep than those between developing and developed nations.

But there was a remarkable unity among them when it came to defining new approaches towards the problems of international ocean space.

They want their share not only of the profits from but in the management of the common heritage of mankind. They want to make sure of a radical transfer of science and technology, enabling them to actively participate in the exploration and exploitation of the resources of the deep sea.

Whatever it is that is on exhibit and under discussion here -- you may be assured, will have to be shared somehow. Whether you like it or not, it will come under the control of a world community no longer dominated by the industrialized nations. For, if there will be a Treaty on the Law of the Sea, it will be, as the word goes, a "package deal," and part of the package will be the establishment of an international authority to explore and exploit the seabed resources. Freedom of scientific research will be regulated. Science and technology will be managed and this management will be shared by coastal nations and the international authority.

In spite of quite a lot of discussion on the role of

science and technology in Caracas, one did get the impression, however, that the tides of change were moving too much in the political/legal direction, and that the fundamental impact of the scientific-technological revolution was not always clearly felt. This meant that a number of old legal concepts, such as the territorial sea, the contiguous zone, the continental shelf, the High Sea, are still carried on the books although the scientific technological revolution has really eroded their content and made them quite obsolete.

There is something paradoxical -- something historically tragic -- in the fact that the two big processes of change -- the scientific/technological and the political/legal one -- are so to speak disjointed, too unaware of each other if not in opposition to each other. In the oceans, more than in any other area, they seem to converge. The task before us, it seems to us, is to build political and international structures to contain and constructively direct, both.

This has been, from the beginning, the approach taken by the International Ocean Institute in Malta and its program, *Facem* in *Maribus*.

The program was initiated by the Center for the Study of Democratic Institutions in California in 1967/8, in close cooperation and under the inspiration of Dr. Pardo, with whom we began to work very soon after the delivery of his epoch-making speech before the General Assembly of November 1, 1967. In recognition of Malta's leadership in ocean affairs, we proposed to transfer the work to Malta where the International Ocean Institute was established in 1972, with the cooperation of the Government and the University of Malta and the UNDP. The Institute is directed by a Board of Trustees whose President is Ambassador Amerasinghe of Sri Lanka who, as you know, is also the President of the United Nations Conference on the Law of the Sea, and includes among its members people like Maurice Strong, Gunnar Myrdal, the Deputy Prime Minister of Yugoslavia, Dr. Anton Vratusa, and the Founder of the Club of Rome, Aurelio Peccei. The work of the Institute is carried out by a Director, Dr. Sidney Holt and

an International Planning Council of 24 members from fourteen countries, including scientists, industrialists, and some of diplomats holding key positions at the Law of the Sea Conference. xxx

We consider ourselves a nongovernmental and therefore completely independent laboratory for new concepts and approaches. We try to think from a systematic, interdisciplinary, and long-range point of view. We try to think a few years ahead of governments. Some of the ideas first explored and developed in Malta have found their way to Caracas.

We start from the premise that an ocean regime must encompass the oceans as a whole and as a subsystem of a global system. Marine ecosystems do not correspond to political demarcations, and the ecological/economic infrastructure and the legal suprastructure must be made to fit together.

We have carried out/a series of regional research projects, exploring the interaction of all uses of ~~xxxxx~~ ^{marine} space and resources in such areas as the Mediterranean, the Caribbean, the Arctic Basin, the Pacific, the Indian Ocean, etc. and the legal requirements for their rational management. We also are carrying out research projects on the growing importance of the oceans in energy production and distribution, and on the problems of disarmament and arms control in the oceans. Besides our annual convocations in Malta we have held a number of regional ~~xxxxxxxxxxxx~~ ^{seminars} in Italy, France, Yugoslavia, Jamaica, Canada, Mexico ^{Norway} Hawaii/(the next ones). We have just finished We are convinced that the penetration of the industrial revolution into the oceans has made the traditional law of the sea obsolete. Traditional uses of ocean space and resources, fishing, shipping have been radically transformed by new technologies; we are faced furthermore, with an increasing number of totally new and unprecedented uses of the seas, for which at present there is no law: such as ~~the~~ mineral extraction, massive extraction of energy resources from the oceans; the building of artificial islands, superports, storage facilities, dams, isthmuses and other manifestations of macro-engineering which may cause changes in the natural

recommenda:

- ① Impulsion of Anthony Thomson's
- ② interactions uses
- ③ ~~control~~ ^{complementary} ~~tech~~
- ④ ~~control~~ ^{complementary} ~~tech~~

Water Column

three parts are
independently
LCC UNCTAD
FAO

conditions of large ocean areas and ~~xx~~regional or even global climate: all these uses must be regulated and managed, and this requires new forms of international cooperation and organization, new forms of interaction between the management of national and international ocean space, new forms of integration between science, industry, and politics on the national and international level.

In this we need your cooperation. Join us in our effort to realign the two big processes of change. To increase the awareness of the consequences of the technological revolution at the U.N. Conference on the Law of the Sea. Join us in our program in Malta.

It is clear that scientific/technological change as such, and unaccompanied by appropriate structural and institutional changes, national and international, will serve only to accentuate the problems of the status quo: to make the rich richer and the poor poorer, within nations and among nations. And the world can no longer afford this gap.

It is equally clear that political change not based on sound scientific information and bereft of the instruments of modern technology, is bound to break up, to come to nought. This, unfortunately seems the direction in which the world is moving much of the time. In the oceans, however -- be it be cause the situation there was less compromised and perhaps less well understood or because it happened that the right man was there at the right time -- in the oceans we have this tremendous challenge to create something new but we cannot do it unless we do it together.

I should like to give you some information about the International Ocean Institute in Malta and its program, known under the title Pacem in Maribus, but I should like to set this information into a wider context, which includes the role of this Ocean Expo as well as the role of the great United Nations Conference on the Law of the Sea on the contemporary scene.

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Whatever it is that is on exhibit and under discussion here -- you may be assured, will have to be shared somehow. Whether you like it or not, it will come under the control of a world community no longer dominated by the industrialized nations. For, if there will be a Treaty on the Law of the Sea, it will be, as the word goes, a "package deal," and part of the package will be the establishment of an international authority to explore and exploit the seabed resources. Freedom of scientific research will be regulated. Science and technology will be managed and this management will be shared by coastal nations and the international authority.

In spite of quite a lot of discussion on the role of

science and technology in Caracas, one did get the impression, however, that the tides of change were moving too much in the political/legal direction, and that the fundamental impact of the scientific-technological revolution was not always clearly felt. This meant that a number of old legal concepts, such as the territorial sea, the contiguous zone, the continental shelf, the High Sea, are still carried on the books although the scientific technological revolution has really eroded their content and made them quite obsolete.

There is something paradoxical -- something historically tragic -- in the fact that the two big processes of change -- the scientific/technological and the political/legal one -- are so to speak disjointed, too unaware of each other if not in opposition to each other. In the oceans, more than in any other area, they seem to converge. The task before us, it seems to us, is to build political and international structures to contain and constructively direct, both.

This has been, from the beginning, the approach taken by the International Ocean Institute in Malta and its program, *Facem in Maribus*.

The program was initiated by the Center for the Study of Democratic Institutions in California in 1967/8, in close cooperation and under the inspiration of Dr. Pardo, with whom we began to work very soon after the delivery of his epoch-making speech before the General Assembly of November 1, 1967. In recognition of Malta's leadership in ocean affairs, we proposed to transfer the work to Malta where the International Ocean Institute was established in 1972, with the cooperation of the Government and the University of Malta and the UNDP. The Institute is directed by a Board of Trustees whose President is Ambassador Amerasinghe of Sri Lanka who, as you know, is also the President of the United Nations Conference on the Law of the Sea, and includes among its members people like Maurice Strong, Gunnar Myrdal, the Deputy Prime Minister of Yugoslavia, Dr. Anton Vratusa, and the founder of the Club of Rome, Aurelio Peccei. The work of the Institute is carried out by a Director, Dr. Sidney Holt and

an International Planning Council of 24 members from fourteen countries, including scientists, industrialists, and some of diplomats holding key positions at the Law of the Sea Conference. xfx

We consider ourselves a nongovernmental and therefore completely independent laboratory for new concepts and approaches. We try to think from a systematic, interdisciplinary, and long-range point of view. We try to think a few years ahead of governments. Some of the ideas first explored and developed in Malta have found their way to Caracas.

We start from the premise that an ocean regime must encompass the oceans as a whole and as a subsystem of a global system. Marine ecosystems do not correspond to political demarcations, and the ecological/economic infrastructure and the legal suprastructure must be made to fit together.

and are carrying out
We have carried out/a series of regional research projects, exploring the interaction of all uses of ~~marine~~ ^{marine} space and resources in such areas as the Mediterranean, the Caribbean the Arctic Basin, the Pacific, the Indian Ocean, etc. and the legal requirements for their rational management. We also are carrying out research projects on the growing importance of the oceans in energy production and distribution, and on the problems of disarmament and arms control in the oceans. Besides our annual convocations in Malta we have held a number of regional ~~seminars~~ ^{seminars} in Italy, France, Yugoslavia, Jamaica, Canada, Mexico Hawaii/^{Norway} (the next ones). We have four further

We are convinced that the penetration of the industrial revolution into the oceans has made the traditional law of the sea obsolete. Traditional uses of ocean space and resources, fishing, shipping have been radically transformed by new technologies; we are faced furthermore, with an increasing number of totally new and unprecedented uses of the seas, for which at present there is no law: such as ~~the~~ mineral extraction, massive extraction of energy resources from the oceans; the building of artificial islands, superports, storage facilities, dams, isthmuses and other manifestations of macro-engineering which may cause changes in the natural

conditions of large ocean areas and ~~xx~~regional or even global climate: all these uses must be regulated and managed, and this requires new forms of international cooperation and organization, new forms of interaction between the management of national and international ocean space, new forms of integration between science, industry, and politics on the national and international level.

In this we need your cooperation. Join us in our effort to realign the two big processes of change. To increase the awareness of the consequences of the technological revolution at the U.N. Conference on the Law of the Sea. Join us in our program in Malta.

It is clear that scientific/technological change as such, and unaccompanied by appropriate structural and institutional changes, national and international, will serve only to accentuate the problems of the status quo: to make the rich richer and the poor poorer, within nations and among nations. And the world can no longer afford this gap.

It is equally clear that political change not based on sound scientific information and bereft of the instruments of modern technology, is bound to break up, to come to nought. This, unfortunately seems the direction in which the world is moving much of the time. In the oceans, however -- be it be cause the situation there was less compromised and perhaps less well understood or because it happened that the right man was there at the right time -- in the oceans we have this tremendous challenge to create something new but we cannot do it unless we do it together.