

## THE ECONOMICS OF THE COMMON HERITAGE

### *Introduction*

Economic theory is in a state of effervescence, in our age of transition, just as most other theories. Some of the major factors of change that should be mentioned are. technological advances, the emergence of a new science paradigm, the increasing discrepancy between political space (the nation state) and economic space (the world, due to globalization of productive and financial systems), the general move away from narrow specialization towards comprehensive and systemic approaches, the growing importance of environmental and social impacts. These -- and other -- factors are transcending traditional economic theory, no matter whether market-based or socialist. Both Adam Smith and Karl Marx, after all, must be seen today not as prophets of universal truths but as products of a specific time -- the first industrial revolution and the rise of European imperialism -- and a specific culture, that is, European culture. That time is definitely over, and the domination of European cultural values is coming to an end with the demise of the European empires.

Human activities, all (or most) of which have economic implications) extend today to land, sea, air, and outer space and, logically, the new economic thinking should extend to all these spaces. While the theory and practice of the *Service Economy* -- now responsible for about three quarters of the global economy -- is, so to speak, spatially disembodied, the other most advanced branches of the new economic thinking, *Resource Economics* and *Environmental Economics* -- are still in the grip of a traditional land-centred orientation: Their data and case studies focus on agriculture, mining, forestry, including tropical forests.

It is the thesis of this paper that (a) a very large part of the *resources, goods and services* in the next century will be ocean-dependent; and (b) that the particular nature of the ocean environment

magnifies the issues challenging contemporary economic thinking in general. It is quite possible, therefore, that radical innovation in economic thinking will come from “ocean economics” rather than from land-oriented resource or environmental economics. This becomes quite plausible if one thinks that in other (though obviously related) sectors of new thinking, such as international law and governance, the marine sector has played a leading role, just because the ocean is a medium so different from land that it forces us to think differently.

The paper will begin with a brief assessment of the oceans resource potential for the next century; it will then describe some of the issues humankind has to face in the use and management of these resources, and, lastly, the paper will attempt to distill some guidelines for “ocean economics” in the next century.

I.

In other places<sup>1</sup> I have attempted a rough evaluation of the economic potential of ocean-dependent and ocean-related goods and services which I think is somewhat higher than had generally been assumed.<sup>2</sup> *As of today*, the total value of revenues generated by these goods and services appears to be of the order of some eight trillion dollars per year. By far the largest factors are international sea-borne trade

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<sup>1</sup>Borgese, 1996, 1998; reprinted in “Secretary-General: Report to the General Assembly, 1999.

<sup>2</sup>See also *Ocean & Coastal Policy Network News*, published at the University of Delaware by Biliiana-Cicin-Sin and Robert Knecht. NOAA has commissioned a four-year study to calculate the contribution of the marine sector to the US economy. See also “Resources of the Sea, *Sea Technology*, October 1998; and *The Ocean, Our Future*. Report by the Independent World Commission on the Ocean, 1998.



which accounts for over five trillion dollars per year, and tourism, including cruise ship tourism, globally the fastest growing sector of the economy, which accounts for almost half a trillion dollars. At present, a new type of cruise ships is under construction, which will accommodate as many as 65,000 or even 100,000 passengers: floating cities, bound to give to this revenue figure a considerable boost.

The offshore hydrocarbon industry is presently worth about 138 billion dollars and is penetrating deeper and deeper into ocean space. It is indeed likely that oil and, particularly, gas, will be explored in the international sea-bed area. The development of new technologies, converging with that of deep-sea mineral exploration technologies, is encouraging joint, multipurpose exploration, implying innovation in the structure of the industry. Oil companies, in the next century, may also be involved in the exploration and exploitation of methane hydrates, of which enormous reservoirs have been discovered in recent years, both in the permafrost zones of the Arctic and Antarctic and on the deep sea-bed. A consensus has developed that the amount of methane held in the form of gas hydrates worldwide is  $10^{15}$  to  $10^{17}$  cubic metres, and this contains a mass of organic carbon that is perhaps a factor of two larger than that in all known fossil-fuel deposits (coal, oil, and natural gas). The methane is contained in the hydrate itself and even more methane is trapped beneath the Hydrate Stability Zone, at water depths between 500 and 4,000 metres and temperatures between  $2.5^{\circ}\text{C}$  and  $25^{\circ}\text{C}$ . The United States as well as Japan and some other countries have important national programmes for the exploration of this newly discovered resource.

Also to be added in the next century; is renewable energy extracted from ocean currents, tides and waves or thermal gradients (OTEC: Ocean Thermal Energy Conversion, i.e., low-pressure vapour generated by reaction between cold bottom and sun-heated surface waters, powering a turbine) or saline gradients (osmotic pressure generated by reaction of saline and fresh water through membranes). It would be fanciful to attach dollar figures to these future developments, but it has been estimated that

the market for OTEC alone, in the Pacific and Caribbean, will be worth \$18.5 billion a year by the year 2015.

Minerals and metals, such as those to be extracted from the famous manganese nodules of the deep sea-bed, went through a period of depression in the evaluations of industries and governments. While technologies are available to lift them from a depth of 5,000 metres and to extract the useful metals they contain -- nickel, copper, cobalt and manganese -- the process was deemed to be uneconomical and beset with environmental hazards. Production costs were thought to be too high in comparison with those of terrestrial resources, which, besides, are overabundant and under-utilized. There have been structural changes in the demand for these commodities, due to technological advances in recycling, new materials, miniaturization and automation. Or, in broader terms, the shift from economies led by industrial production to the service economy.

Just recently, however, the prospects for ocean mining have brightened again: by the spirit of enterprise of one company, Nautilus, which, in 1996, obtained a licence for the exploration of Sea-floor Massive Sulphides (SMS) from the Government of Papua New Guinea. Some metals will always be needed, even if less than assumed during the years of Malthusian panic about running out of resources. Whatever metals will be needed will possibly be mined from the oceans rather than from land. Sea-bed mining, and, eventually, on-site processing, if properly regulated and conducted, would relieve the pressure of competing land uses, terrestrial habitat destruction and high costs of transportation and infrastructure.

A lot, however, remains to be explored and studied if sea-bed mining is not to do more harm than good. It is also interesting to note that these industries may simply never mature in the context of the presently prevailing market economy. Quite simply, their development is not market-driven.

Living resources presently account for less than \$200 billion per annum, but it is well known



that fisheries, in most parts of the world are in dire straits. Subsidies far exceed revenues at the global level; and most commercially fished species are threatened by overfishing, pollution and habitat destruction. The only growth sectors are aquaculture and the so-called “genetic resources,” i.e., micro-organisms which abound in the oceans and sea-beds.

Aquaculture, presently contributing about 15-20 percent to the global fish and sea-weed production and growing at a rate of 6-8 percent annually, is beginning to cause serious problems of pollution of soils, ground waters and coastal seas as well as social problems in coastal communities. There is obviously nothing wrong with aquaculture as such. Just as agriculture began to replace an economy based on hunting and gathering some ten thousand years ago, aquaculture might eventually replace the hunting and gathering in ocean space which technological development and industrialization have made unsustainable. There is nothing wrong with aquaculture: there is, however, something wrong with the economic system that is driving it, on the basis of the obsolete “bottom line” principle of maximizing short-term financial profits of large, often multinational companies, instead of improving the nutrition and enhancing job creation in local communities; and ignoring the social and environmental needs of contemporary society.

Many of the ocean’s “genetic resources” have unique qualities, such as the heat- and pressure-resistance of the thermophile bacteria of the deep sea-bed, which make them extremely useful for certain bio-industrial and pharmaceutical processes. The revenues generated by these resources alone has been estimated as about \$3 billion annually and they are growing rapidly. Applications for the bioremediation of hazardous waste, or bio-mining applications, are examples of industrial uses on the drawing boards for the next century. Already today, however, they pose serious economic, social, ethical and medical challenges such as the patenting of living organisms or the impact of genetic engineering on food production. In this whole area, too, we seem to have reached a limit foreboding

systems breakdown -- or a threshold towards systems transformation.

Obviously not included in the \$8 trillion value of ocean-based or ocean-dependent or -related goods and services are the ocean's so-called "eco-system services," which indeed are hard to quantify and express in monetary terms. What is the value of the ocean as an essential component of the earth's life-supporting system? Some economists have made interesting attempts to put \$-signs on these services. A group led by Robert Costanza has come up with the figure of some \$30 trillion for 17 categories of "goods and services" -- including protection against storms and floods, nitrogen fixation, or plant-derived pharmaceuticals -- provided by 16 specialized "biomes," such as oceans, estuaries, tropical forests, etc.. The calculation was based on a "witches' brew" of market prices, people's estimated willingness to pay, and the cost of replacing services. Considering the enormity of the ocean and coastal system, and the intensity of its interaction with the atmosphere, weather and climate, it is not surprising that \$21 trillion of that amount was estimated to be contributed by the ocean system.

Whatever the merit of these calculations, it is clear that the economic value of the ocean is enormous -- a lead sector in global economics.

II.

Ocean economics can rely on the "market" only to a limited extent. The greater part of ocean economics is based on a non-property and non-sovereignty reality. Ocean economics must incorporate the economics of resources which are the common heritage of mankind and must be managed but cannot be appropriated. The cultural, ethical as well as institutional implications of this need much further study. The oceans have not only a "resource value" which can be quantified in monetary terms; they have much more important values of a different kind, very difficult or impossible to quantify. The oceans are part of our life support system and ocean economics will have to recognize



the vast preponderance of the non-quantifiable components of the system.

### 1. *Ownership*

A very large portion of economic activities take place, or depend on, areas beyond national jurisdiction, where the closely interrelated concepts of “sovereignty” and “property” or “ownership” are not applicable. Our traditional economic systems, however, whether market-based or centrally planned, are based on the concept of “property” or “ownership,” in the Roman-law sense.

Since the days of Hugo Grotius, the concept of the “freedom of the high seas” has become an intrinsic part of Western culture. (In other cultures, the concept goes back to time immemorial.) What it meant was that the oceans were too immense to be “owned” by anybody and that concepts of “sovereignty” and “ownership” did not apply. Fish, deemed to be inexhaustible, were considered as a “common property resource.” In our time the traditional system of “freedom to fish” in the “global commons” has been eroded by overfishing, pollution and habitat destruction. As we pass from a phase of economics of abundance to one of scarcity, two new options appear to be open. One, much taunted in some parts of European-based cultures, is to introduce a system of “ownership” into the world’s fisheries. This may take e.g. the form of Individual Transferable Quotas” as implemented, e.g., in New Zealand, Iceland and (partly) in Canada. This form of “privatization of fisheries” means that individual fishers or fishing companies are allocated “quotas,” which in many ways, become their “private property.” That is, they may exploit this property at their convenience throughout the seasons. They are also free to sell their quotas or licences, if they so wish and to whomever they wish to sell them.

This system is dear to large industrial companies and strong distant-water fishing states, claiming that it has reduced the entry of “too many fishers chasing too few fish.” It can be, and has been

criticized on several levels. A reduction in the number of fishers is one thing; a reduction of fishing capacity and effort is quite another. The reduction in the number of fishers simply indicates that the poor individual artisanal subsistence fisher, unable to resist the pressure of the large industrial company, sells his ITQ to the big company and joins the ranks of the unemployed or the migration to shanty town. Fishing capacity and effort, far from being reduced, is simply concentrated in the hands of fewer and bigger fishing companies, thus reinforcing the market-driven trend to make the rich richer and the poor poorer. Far from offering solutions to the problems of overfishing, pollution and habitat destruction, the abolition of the “common property resource” principle, the “privatization” of fisheries and the introduction of “ownership” as basis for an efficient market economy thus opens a slew of ethical and social problems. As one witness during the ITQ hearings in Canada put it,

If the vision of fisheries is one of privatization and more control of fisheries resources residing in fewer hands, then the approach of ITQs succeeds. If the goal is to provide a few individuals and companies with exclusive rights of harvest to what is a common resource, ITQs succeed. If the objective is to maximize profits and minimize the benefits to the public from these profits and marginalize coastal communities, then ITQs succeed.

Cliff Atleo, Member of the Nuuchah-nlth Tribal Council  
17 November 1998.<sup>3</sup>

If undesirable from an ethical and social perspective, it may also be unrealistic from a strictly economic perspective.

Thus Dasgupta, a universally highly regarded resource economist, rigorously rejects the thesis that the establishment of “property rights” would be a feasible<sup>4</sup> solution:

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<sup>3</sup>Privatization and Quota Licensing in Canada’s Fisheries. Report of the Standing Senate Committee on Fisheries. First Session, Thirty-Sixth Parliament, December 1998.

<sup>4</sup>P.S. Dasupta and G.M.Heal, *Economic Theory and Exhaustible Resources*. Cambridge: Cambridge University Press, 1979.



A precondition for the establishment of a market is the existence and enforcement of property rights... Now in many cases of externalities it may be impossible, or at any rate difficult, to define property rights, let alone establishing them legally and then enforcing them

And, he points out,

Now, there are many circumstances in which market solutions do not sustain an efficient allocation of resources. Many such situations can be described by saying that certain essential markets do not exist. Sometimes they just happen not to exist for accidental or historical reasons; sometimes there are logical reasons why they cannot exist; sometimes the nature of the physical situation keeps them from existing, or makes them function wrongly if they do exist. It happens that industries producing (or using) renewable and non-renewable resources are especially vulnerable to these difficulties. We then need to see how one might best analyse such situations.

It neither the “freedom to fish” nor the “privatization of the fishery” can solve our problem, the alternative is to extend the principle of the *Common Heritage of Mankind*, applicable under international law at present to the mineral resources of the international sea-bed area, to the ocean’s living resources.

the 1982 United Nations Convention on the Law of the Sea declares these resources to be the Common Heritage of Mankind, which means -- as spelled out in Articles 137, 140, 141, 145. of that Convention, they cannot be appropriated, they must be managed by an international Authority *for the benefit of humankind as a whole*, including future generations, and they are reserved exclusively for peaceful purposes This concept, introduced by the late Arvid Pardo of Malta, thus establishes the basis for an economic system of *non-ownership*, including an ethical dimension (*equity: benefit for humanity as a whole with particular consideration for the needs of the poor*); an environmental dimension conservation; (rights of future generations) and a peace-building dimension (reservation for peaceful purposes). Such a system, replacing the Roman-Law concept of “ownership” with that of

“non-ownership, based on “stewardship,” more familiar to non-Western cultures, could be important for the building of bridges between Western and non-Western cultures -- including economic theory and practice -- now that the domination of Western cultural values is coming to its end.

The extension of the application of the Common Heritage concept to the living resources of the sea was already foreseen in Arvid Pardo’s 1971 proposal for a Ocean Space Draft Treaty<sup>5</sup> “which is based on a unitary approach to the problems of ocean space as a whole” and considers all ocean resources as Common Heritage of Mankind. During UNCLOS III it was the Delegation of the Holy Sea that proposed application of the Common Heritage principle to the living resources. Professor Shigeru Oda of the Delegation of Japan -- now Judge on the International Court of Justice -- made the same proposal. It was resoundingly rejected by fishing States and companies.

When the collapse of the world’s fisheries appeared ineluctable, something was done which, for all practical purposes, even without using the name, moved the fishing industry from a “freedom to fish” regime to a Common Heritage Regime. That was the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 Decdember 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (Straddling Stocks Agreement) of 1995. Under this Agreement, fish must be fished *sustainably*, i.e., they must be conserved for future generations. They must be *managed* on the basis of international agreements -- relying mostly on regional fishery organizations -- for the benefit of mankind as a whole, on the basis of *equity*, and with due consideration of the needs of coastal States. “Reservation for peaceful purposes” is missing from the specifications of this new fishing regime, but since the Convention itself (Article 88) declares the High Seas, (including the Exclusive Economic zones) to be

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<sup>5</sup>Draft Ocean Space Treaty, Document A/Ac.138/53.



reserved for peaceful purposes, it is implicit, although hardly of practical importance, for how could one use fish for purposes of war in any case? What is particularly interesting is the provision requiring “compatibility” between conservation standards and measures in the high seas and those in the EEZ of adjacent coastal States, it being understood that, in the absence of such compatibility, it would be impossible to conserve these resources either in the EEZ or on the high seas.

Ratification and implementation of the Agreement is moving slowly, resisted both by the high-seas fishing States, unwilling to renounce their “freedom to fish,” and coastal States, wary of encroachment on their sovereign rights over the natural resources in their EEZ.

Innovation always meets with resistance, but the crisis of the world fishing industry, induced by the “freedom to fish,” and the ineffectiveness and inequity of introducing an “ownership” regime into the system and “privatizing” the living resources of the sea makes the introduction of a Common Heritage regime inevitable.

The concept of “ownership” in the Roman-law sense (*ius utendi et abutendi*, the right to use and abuse or misuse) is on its way out in any case. Already James Burnham’s *The Managerial Revolution* (1941!) elucidated the essential hollowness of the concept in our time, for what mattered in the modern economy was *management*, not *ownership*, according to his theory. Another important contribution to the further erosion of the importance of “ownership” comes from the emerging Service Economy in the industrialized countries. Its most authoritative spokesman, perhaps, is Italian economist Orio Giarini.<sup>6</sup>

The Service Economy has its origin in the shift, during the second half of the twentieth century,

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<sup>6</sup>E.g., “The Modern Economy as a Service Economy: The Production of Utilization Value,” in Paul Ekins and Manfred Max-Nef (eds.) *Real Life Economics: Understanding Wealth Creation*. London: Routledge, 1992.

from the production of materials to the production of services as the main factor in the creation of real wealth. Not only has there been substantial growth in the traditional “service sector” (or “third sector”), comprising health, education, banking, tourism, etc., but in the industrial production sector itself, service has assumed an unprecedented importance. Research and Development account today for about 50 percent of any high-tech industrial enterprise; planning, maintenance, storage, quality control; marketing; training and re-training; waste management; recycling; and disposal make up the rest. Some industrial companies, including, e.g., Schindler, the elevator manufacturer, have recently forecast that within the next ten years, manufacturing activities will be reduced to 8 per cent of employment!<sup>7</sup> Taking into account these two components, the growth in the “third sector” of the economy, and the growth of the service sector within the industrial enterprise, it is not surprising that Service accounts for 60-80 percent of the global GNP today.

In the service economy the value of a product is not its “exchange value,” i.e. the price at which it is sold on the market; its real value is its “utilization value,” that is, the length of its useful life, which is extended through repair, reconditioning, re-use, and recycling -- through ongoing cooperation between the producer and the consumer (“prosumer”).

Goods which have a “utilization value” rather than an “exchange value” as in classical economics, need not be “owned.” They can be, and often are, leased and managed, in this cooperative relationship prolonging their useful life. “Ownership” does not have the same importance it had in classical economics.

Thus, if we are moving, in the next century, towards an economic system that abandons the

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<sup>7</sup>Progress Newsletter 29, July 1999. Geneva: International Association for the Study of Insurance Economics



Roman-Law concept of “ownership” and replaces it with some form of “non-ownership,” whether in the form of “trusteeship” or “stewardship” or otherwise, then “ocean economics,” confronted with a huge sector in which “ownership” is simply not applicable, may well be the lead sector in the development of the new system.

## 2. *Quantifiability.*

Classical economics comprises only what can be *quantified* and expressed in terms of dollars and cents, or as Giarini put it, what can be “monetarized.” This gives a limited and distorted view of the real wealth of people, of nations, of the world. For real wealth consists of far more than what can be quantified and expressed in monetary terms. It includes environmental resources (air, water, solar energy, *inter alia*); it includes unpaid work (e.g., household and child rearing work); as well as cultural and ethical values: the sum, in other words of natural and man-made goods and services monetarized or not monetarized, in what Giarini calls “Dowry and Patrimony”

At the same time, real wealth consists of *less* than indicated by money-making. Very destructive activities are making heaps of money: Money is made by polluting industries, or by industries that repair pollution damage, but really do not add anything to real wealth creation Huge amounts of money is made by the drug industry -- illegally -- or the weapons industry -- legally -- both of which have the same effect of destroying people. Instead of being added to the money value of real wealth, they obviously should be deducted from it (“deducted value.”).

Economics thus is faced with the problem of summing quantifiable and nonquantifiable factors -- factors preceded by \$signs +/- factors without \$signs, and it should be noted that the proportion between these two categories, which may affect also the way of dealing with them, has been changing throughout history. In pre-modern times, and still today in low-income strata as well as in so-called

“primitive” economies, the non-monetarized sector, outside the “market” tends to be to much larger. Mutual aid in services, unpaid care for the old, unpaid food production for the household; home building, are all outside the “market.” During the last 300 years, in conjunction with the rise of the nation state, trade, competition, and colonialism, money assumed an unprecedented importance, and became the only measure of economic value. This historical linkage may have interesting implications. It may lead us to consider modern economics as an “economics of war.” The growing importance of the “industrial/military complex for both economics and war may reinforce this view.

Assuming that future historians will see the modern era ended with the end of World War II and consider the era in which we are living as post-modern, it may be fair to say that in this post-modern era, particularly under the impact of the rise of environmental awareness, the nonquantifiable sector has gained considerably in importance. The problem of adding “apples” and “oranges” thus becomes more complex.

There are two ways of dealing with the problem. Environmental economics is struggling to quantify and monetarize the value of environmental goods and services and force them into the market system -- both on the value added and the deducted value side. The results are sometimes somewhat bizarre. Take the example of the “tradable emission permits.” You “quantify” a company’s or a country’s right to pollute and assign it a “quota.” This quota becomes its “property” and the basis for a “market” on which this quota can be traded. Thus, if there is a company or a country that does not really use its quota -- particularly if it is a developing country -- well, in that case it can sell its quota to a company or state which needs more than its own pollution quota and which, by paying a price in dollars and cents, thus acquires the right to pollute more. It is claimed that this makes pollution abatement “more flexible” without adding to the total amount of pollution emitted. To the non-economist this sort of number game with nature might seem rather unethical, but then the modern economist will tell him



that economics and ethics have nothing to do with each other.

The second way of dealing with the problem is, first of all, to recognize that it exists, and, secondly, that it is not so much an “economic” problem as it is an ethical one and can be solved only by restoring to “economics” the ethical dimension it had before it became a “value-free science,”

In dealing with the economics of the ocean, we are powerfully driven towards this second alternative. For it would be difficult indeed not to recognize that the world ocean, covering 70 percent of our planet and over 90 percent of the biosphere, is an essential part of our life support system. In the light of the magnitude of this fact, monetary considerations appear puny. All we can appeal to is our ethical obligation to conserve our life support system.

If, leading us into the next century, a development is in course to restore to economics the ethical, philosophical, and social dimensions it once had, then, again, it is likely that “ocean economics” will be a lead sector. Hopefully, this will also enhance the development of a new “economics of peace.”

### *3. Uncertainty*

Recent decades have witnessed a radical shift in the philosophy of science, a “paradigm change.” Since the age of enlightenment, scientists thought that they knew much and were learning more and more so that in the future they would have enough data to be able to model, and make linear projections of, processes and developments. Today we have come to the recognition that the more we know the better we know how little we know; that our knowledge will remain for ever incomplete; that the systems with which we are dealing are exceedingly complex, that the behaviour of complex systems is non-linear and unpredictable; and that *uncertainty* is the name of the game.

This paradigm change in the philosophy of science has affected the science of economics as well. Additional data on additional factors, making systems more complex, will induce chaos rather than

enhancing predictability.

Uncertainty may indeed be caused by lack of information, lack of reliable data, as well as by an overdose of the same. In the marine sciences uncertainty is caused by both. We know too much about too little -- about too small a part of the world ocean.

As applied to the ocean, economics is more dependent on science than in any other sector. Fisheries economics is dependent on marine biology; shipping must rely, among other things, on meteorology; mineral exploration, on marine geology, and volcanology; pollution control, on marine chemistry and physical oceanography, etc. Uncertainties in all of these sciences abound. Interactions between sea-floor, water column, atmosphere, land and rivers are of unfathomable complexity, and only a minuscule portion of the world ocean has actually been explored. Ocean economics thus, to a far greater extent than terrestrial economics, is based on uncertainty. If, impelled by the new scientific paradigm, post-modern economics will have to modify its deterministic models, include uncertainty as an integral factor, and rely less on predictability, ocean economics, again, may be a lead sector.

#### 4. *Risk*

Uncertainty generates *risk*, the greater the uncertainty, the higher the risk., and risk assessment and management has become an essential component of management in all sectors of the economy, obviously with profound implications for the insurance industry.

An impressive literature has evolved during the past 25-30 years, spearheaded by the International Association for the Study of Insurance Economics ("the Geneva Association"). Essays on the economic theory of risk abound, on the risks inherent in natural disasters, e.g., seismic risks for the largest cities in the world; on the limits of insurability of risks, on the changing pattern of



risks, on the risks inherent in climate change; on environment and insurability and the economic relevance of insurance; on uninsurability as a growing problem, etc. As Orio Giarini put it, insurance economics may be playing the pioneering role in the contemporary phase of the industrial revolution that textile economics played during the first phase of this revolution.<sup>8</sup>

The risks involved in ocean activities are of a peculiar nature. Economic activities in the oceans are extremely expensive, due to the hostility of the ocean environment. The cost of oil platforms, tankers, container ships may run into the billions of dollars. Accidents, whether due to human error, or fraud, or natural causes beyond human control, may be few and be further reduced by science-based technological improvements, but when they do occur, the damage caused may be enormous and largely unmeasurable in financial terms. This requires a lot of new thinking in the insurance business, traditionally based on the assumption of risk distribution over a large number of minor accidents causing measurable damage. While shipping has long been a subject for specialized studies of risk assessment,<sup>9</sup> the insurance industry has been slow in turning its attention to the systematic study of the risks inherent in other uses of ocean and coastal space. From the impressive list of publications by the Geneva Association, going back to 1976, it would appear that risks inherent in ocean uses had to await the 'Nineties to be considered, and attention now appears to be focused on meteorology and related studies in physical oceanography basic for understanding, and predicting, storm surges, hurricanes and tsunamis which may wreak uninsurable havoc in small islands and low-lying coastal areas. Such studied

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<sup>8</sup>Orio Giarini and Patrick M. Liedke, *Wie wir arbeiten werden. Der neue Bericht an den Club of Rome mit einem Vorwort von Ernst Ulrich von Weizsaecker*. Hamburg: Hoffmann & Campe, 1997.

<sup>9</sup>Especially by Lloyd's

are now pursued by the Biological Station in Bermuda, in cooperation with a number of insurance companies.

In 1998 the International Ocean Institute entered an agreement with one of the largest re-insurance companies, Swiss Re in Zurich, to make studies on integrating risk assessment and management and disaster warning systems, disaster mitigation and adaptation into what is called integrated ocean and coastal management but which can hardly be called “integrated” if it lacks systematic consideration of the risk factor in each and all of its sub-sectors.

And new areas for possible investigation are continuously evolving. One of the newest should be studies on the risk factor inherent in placing installations on the deep sea floor, including the laying and maintenance of fibre optic cables. An incredible half billion miles of these cables are crossing the deep sea-bed of the Atlantic and Pacific Oceans. Besides traditional hazards, they face one that has only quite recently been discovered, and that is, destabilisation of the sea-floor through collapse of gas hydrate-bearing sedimentary deposits.. When the hydrates break up due to natural causes or human activities, a solid hydrate cement is replaced by a gas-rich, watery fluid allowing sediment mobilization that can result in sea floor collapse, and cause underwater landslides, cable and pipeline breaks, loss of support for drill-pipes resulting in blowouts, and collapse of oil platforms. But perhaps the most important aspect of their potential environmental impact is in their interaction with the atmosphere. Methane is much more effective as a greenhouse gas than carbon dioxide, although the amount presently in the atmosphere is small. The global warming potential of methane is calculated to be 56 times by weight greater than carbon dioxide over a 20 year period after introduction into the atmosphere.. Hydrates risk analysis and R&D in mitigation technologies must therefore be an important part of any methane hydrate development project .as well as of any project for the laying of cables, or of any other installation, on the deep sea floor



Thus, in this particular and highly important dimension of the evolving new economic theories for the next century, the ocean sector certainly has not been the lead sector. The reason, perhaps, is the enormity of the unknown and unquantifiable component involved. It is likely, however, that insurance economics, and, through it, economic theory in general, will benefit greatly from entering this new, immensely complex and challenging field. Beneficiaries, obviously, will also be, and in the first place, coastal communities and ocean industries.

### *Conclusion*

As we have seen, we may divide the economic value of the ocean into two parts: one part is based on human activities, the production of goods and services which can be measured in dollars and cents. And although straining and stressing the market system to the limits, or, in turn, being limited, stifled and perverted by the market system, it still must be considered part of it. The other part is based on the ocean's "ecosystem services" and even the best efforts to assess these services in monetary terms and thus fit them into the market system seem somewhat puny and ineffective in the face of the majesty of the world ocean as part of the earth's life support system. The fact is that this non-quantifiable, non-monetarizable sector of ocean economics, situated beyond the limits of the market system, is very much greater than the monetarizable market sector. More imposingly than terrestrial economics, ocean economics thus is faced with the challenge of integrating environmental and economic factors, monetary and nonmonetary values, seeing the market not as the all-comprehensive basis of the world economy but merely as a part of it -- a wholesome correction to the presently distorted view of marketmania.

So-called realists may discard the whole argument of this essay as totally absurd. Is not the whole splendid edifice of modern economics, with its unparalleled wealth creation, dynamism, freedom and rationality, founded on the concepts and institutions of property, money, quantification, market,

competition, predictability? Are we supposed to move back into stone age by abandoning this system which has conquered the whole world?

This may well be the argument of the “Haves,” the conquerors. It should not be forgotten that the system was built on the sweatshops of the first industrial revolution, creating wealth on the broken backs of misery, and at the end of its roundly 300-year cycle, we may well bomb ourselves back into stone ages and thus destroy the splendid system that had conquered the world.

We do not suggest, further more, that we should *abandon* or *abolish* the system. We suggest that we should *transcend* it -- much like Einstein and Heisenberg transcended Newton, whose theories, however, retained their validity in determined limited circumstances. The market will still be there, but it will not have the all-embracing function we thought it had. Money will still be there, but there will be other measures, other “indicators” of real wealth. We will not “give up” the concepts of sovereignty and ownership, but they have already been transformed and transcended. If we do not want to bomb ourselves back into the stone age, we must transform our economics of war into an economics of peace which must comprise the values of non-Western as well as Western cultures. We see such an economics of peace emerge from a convergence of new Western concepts, such as those of the Service Economy, of Eastern concepts, such as those of Gandhi who, interestingly enough, devoted his last years to a study of economics and the development of his own ideas on this subject, and common concepts of the late 20<sup>th</sup> century, such as those of environmentalism. *The integration of sustainable development and human security* would be a fundamentally important component of an economics of peace.

These were concepts already familiar to Olaf Palme and Jan Tinbergen. The latter wrote “So security



policy has to be integrated into a ‘generalized’ socio-economic policy.”<sup>10</sup> I believe it will be, again, in the marine sector, especially at the regional level, that we may first establish an institutional framework for this necessary integration.<sup>11</sup>

In my latest book *the Oceanic Circle*, I have tried to extrapolate a set of recommendations based on all this material, and although the route of thinking in this essay is somewhat different, those recommendations may still provide a suitable conclusion.

#### ***Ocean perspectives: Economic***

***The impact of the ongoing process of transformation on our economic system is bound to be profound.***

- ◆ ***The new system, emerging from the ocean, the Great Equalizer, and its principle of the Common Heritage of Mankind, would have to respond to the needs of the age of the information revolution and the end of Eurocentrism. It would have to embody, in one way or another, the following concepts:***

**1. *Holistic approach***

***Economics has social, political, environmental, cultural, and ethical dimensions. Its focus must be the human being. Its goal, the welfare of all.***

**2. *Decentralisation, Community-based Co-management***

***The impact of high technology and the principles and methodologies of modern***

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<sup>10</sup>Jan Tinbergen and Dietrich Fischer, *Warfare and Welfare: Integrating Security Policy into Socio-Economic Policy*, Brighton, Sussex: Wheatsheaf Books Ltd. 1987.

<sup>11</sup>See, *inter alia*, UNESCO, *Multaqa*, 1998.

*management converge with the ideas and ideals of the non-Western world views in their emphasis on communitarianism and a decentralized social economy, as espoused by Gandhism. This implies:*

- . resource saving through greater discipline on the part of consumers, improving energy efficiency, and better organization of the production and distribution system;*
- . a reduction in consumption standards through "voluntary simplicity" and self-restraint;*
- . acceptance of substitutions between material and non-material Consumption: fewer goods and more services or less time spent in market-oriented economic activities and more time allocated to non-economic activities and/or small-scale environmentally benign material production for self-consumption;*
- . reducing the demand for intra-urban transportation by redesigning cities;*
- . reducing long distance transportation of materials and goods by better integration of local and regional economies.*

### *3. Equity*

*The goal of economics is not the greatest good for the greatest number -- which might leave 51 percent of the population free to exploit the remaining 49! -- but the welfare of all. Implicit in the above is the basic presumption of equal dignity of and respect for the life and welfare of every individual. Translated into the sphere of economic*



*policy, it entails top priority for meeting the most basic material needs (water, food, shelter, health, education) of everybody*

4. *Intellectual Property*

*Intellectual property rights may have to be reviewed and revised in the context of the economics of the information age and sustainable development*

5. *Uncertainty*

*Decisions on socio-economic policy will have to be made for ever in the light of uncertainty inherent in the system. Uncertainty can be reduced, not eliminated, through applying the precautionary principle and new concepts of risk management as developed by contemporary insurance economists. It can further be reduced by blending insights gained through improved scientific and technological methodologies with those gained through ancient wisdom and experience, in community-based co-management systems.*

6.. *Work*

*Work, as expression of self-development and fulfilment, is a basic human right. Theories of the post-industrial society, and the ideals of other cultures converge in distinguishing “work” from “paid employment” and stressing the importance of “service.” This would imply:*

- Guaranteed minimum paid employment for every one, sufficient to assure the basic necessities of life: shelter, food, health, and education;*

- *Self-employment and “free enterprise” for the free time left by the part-time employment, to increase income and generate savings;*
- *A period of life to be devoted to unpaid service to the community, thus enhancing the common heritage and repaying what the community has provided at an earlier stage of life.*
- *Such a scheme to be realized at the local community level, on the basis of co-management.*

## 7. *Wealth*

*Wealth and welfare is a combination of natural or physical and biological, of man made (cultural tools; goods and services) and of monetarized (capital) phenomena; this holistic view reflects our social, economic and environmental dimensions*

*Wealth is in stock not in flow. It is to be measured by human development indicators, including economic, social, cultural, ethical and environmental indicators.*

*indicators are needed especially for non-marketed and non-marketable goods and services;*

*non-remunerated work, i.e. work not exchanged and work exchanged, but not paid with money, must be included;*

*deducted value, i.e. costs of man-made pollution and over-exploitation of*



*resources, must be taken into consideration; and*

*uncertainties inherent in complex systems have to be taken into account.*

*Indicators of vulnerability and indicators couched within frameworks of probability should systematically be developed.*

#### *Value*

*The value of goods is not their “exchange value” (“market value”) but their “utilisation value.” The longer their duration through inputs, paid or nonpaid, of services such as training, maintenance, repairing, rebuilding, recycling and disposing services, the greater their value.*

#### **9. Ownership**

*The Seas and Oceans and their resources are the Common Heritage of Mankind;*

- . “Resources” means nonliving, living and genetic resources.*
- . Whether they are in areas under national jurisdiction or in the high seas or in or under the International Seabed Area, they must be managed sustainably, keeping in mind the needs of future generations; with special consideration for the needs of poor countries and poor people, aiming at the eradication of poverty; They are reserved for peaceful purposes, peace and security being*

*basic for sustainable development.*

- ◆ *The principle of the Common Heritage of Mankind thus is the foundation of sustainable development, not only in the oceans, but globally. In accordance with the cultures of the vast majority of humankind, its application must be extended from the wealth of the oceans to wealth in general, not to be “owned” by humankind, whether individually or collectively, but to be held in trust, and to be administered on the basis of cooperation between civil society and the institutions of governance, at local, national, regional, and global levels.*

10. *Internal/International Revenues*

*taxation may be shared between municipal, national, regional and global levels of governance, in accordance with the levels of services required.*

- ◆ *Gradually, a development tax might be levied on all commercial uses of the global commons, starting with the oceans;*
  - . *taxes might be levied on activities generating deducted value, converging with the ethical postulate of the prohibition of trade in weapons, drugs, etc.*

11. *Adaptive Nonlinear Network*

*The overall direction of the economy is determined by the interaction of many dispersed units (human beings). The action of any one unit depends on the state and actions of an unlimited number of other units; leading, inevitably to a system of multiple equilibria thereby making impossible the prediction of unique future states.*



- . *the units are not hierarchically arranged and all are free to follow their own way to the goal: the goal is One but the paths are many.*

*The following of this path should lead to an economy which is:*

- . *flexible, adaptive and creative;*
- . *nonexploitative so that assets and income get equitably distributed;*
- . *in harmony with the natural environment;*
- . *self-regulated leading to restraint on unnecessary consumption;*
- . *culturally determined.*

## **12. Nonviolence**

*The socio-economic system for sustainable development is based on nonviolence as applied to ownership, production, consumption, work, , allocation, distribution and in reforming economic systems.*

- . *All disputes are to be settled peacefully through the appropriate mechanisms at all levels of governance.*

## ***Bibliography***

Elisabeth Mann Borgese, *Ocean Governance and the United Nations*, Halifax: Centre for Foreign Policy Studies, Dalhousie University, 1995, 1996.

\_\_\_\_\_, *The Oceanic Circle Governing the Seas as a Global Resource. A Report to the Club of Rome*. Tokyo: United Nations University Press, 1998.

\_\_\_\_\_, *The International Sea-bed Authority: New Tasks*. Malta: IOI Occasional Paper, 1999.

James Burnham, *The Managerial Revolution*, New York: The John Day Company, 1941.

Canada, Standing Senate Committee on Fisheries, *Privatization and Quota Licensing in Canada's Fisheries*. Report of the Standing Senate Committee on Fisheries. First Session, Thirty-Sixth Parliament, December 1998.

P.S. Dasgupta and G.M. Heal, *Economic Theory and Exhaustible Resources*. Cambridge: Cambridge University Press, 1979.

Paul Ekins and Manfred Max-Nef (eds.) *Real Life Economics: Understanding Wealth Creation*. London: Routledge, 1980

Orio Giarini, *Dialogue on Wealth and Welfare: An Alternative View of World Capital Formation*.



New York: Pergamon Press, 1980.

Orio Giarini and Walter Stahel, *The Limits to Certainty*. Dordrecht: Kluwer Academic Publishers, 1989.

Orio Giarini and Patrick M. Liedke, *Wie wir arbeiten werden. Der neue Bericht an den Club of Rome mit einem Vorwort von Ernst Ulrich von Weizsaecker*. Hamburg: Hoffmann & Campe, 1997. English edition, *The Employment Dilemma in the Service Economy*, available at Progres, 18 ch Rieu, 1208 Geneva, Switzerland

Ruben Mendez, *International Public Finance: A New Perspective on Global Relations*. Oxford: Oxford University Press, 1992.

Arvid Pardo, *The Common Heritage*, Malta: Malta University Press, 1974.

Progress Newsletter 29, July 1999. Geneva: International Association for the Study of Insurance Economics

Jan Tinbergen and Dietrich Fischer, *Warfare and Welfare, Integrating Security Policy into Socio-Economic Policy*, Brighton, Sussex: Wheatsheaf Books, 1987.

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