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The Ocean and International Environmental Law: Swimming, Sinking, and Treading Water at the Millennium

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1. Introduction: measuring human progress

Most of the world accepts the year 2000 as a milestone of symbolic significance. But milestones measure only distance. So critics may object to endowing the end of a millennium, or of a century, with any special historic significance denied to the end of any other decade. Yet lengthy eons, neatly rounded off, provide a convenient time-frame for measuring human progress including progress in the management of ocean and coastal areas.

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The year 1000 A.D. was witness, it seems, to a virtually unchanging succession of humdrum daily lives marked by wonder and dread.[1] Human existence was elevated only, if at all, by a sense of mystery. The conceptualization of human accomplishment had barely begun.[2]

Arguably, the modern secular concept of human progress was globalized only a few centuries ago, despite earlier claims to universal values and norms promoted within a number of cultural traditions. International lawyers may be excused for taking some pride in the contribution their discipline has made to the concept and goal of global civilization since the late 16th century. Yet until the new centennial dawn of 1900,[3] the ethos of public international law was chiefly restricted to protection of the principles of reciprocity and mutuality inherent in bilateral arrangements among the nominally equal sovereign states of the Western world. It has been left to the 20th century to articulate the hopes and visions of a truly globalized "world community". Ironically, this extraordinary leap forward was taken in a century disfigured by appalling wars, famines and atrocities, sustaining the tragic myth that the prospect of catastrophe is necessary to fundamental improvements in the human condition.

Two thousand years ago the Roman concept of world community was built upon the general convenience of treating the *ocean* generically as if it belonged to a separate, extra-national, legal order: either the property of no one (*res nullius*) or the common property of all users (*res communis*) [2]. Over the last two millennia most Western universalists looked primarily to the ocean as the best single hope of developing a truly global system of transnational law, built on reason, even if it rested on shared convenience rather than a universal sense of morality. By the end of the second millennium the ocean has been joined by the *environment* as an extremely broad avenue to explore for the advance of global civilization through the application of reason and the concept of *common interest*. Unlike the law of the sea, which evolved

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[1] For a recent account of daily life in England in the year 1000, see [1].

[2] Despite the lack of impressive technological contributions to human improvement at the end of the first millennium, England at least was a greener and pleasanter land by any modern environmental test. Nine out of ten lived "on a simple, wholesome diet that grew sturdy limbs — and very health teeth. It was during the centuries that followed the first millennium that overpopulation and overcrowding started to affect the stature of well-being of western Europeans." [1, p. 9]. So we might do well to avoid the "snobbery of chronology". Civilization since then has not improved in every way. "We certainly have more facts at our disposal. We have more wealth, both personal and national, better technology, and infinitely more skilful ways of preserving and extending our lives. But whether we today display more wisdom or common humanity is an open question, and so when we look back to discover how people coped with the daily difficulties of existence a thousand years ago, we might also consider whether, in all our sophistication, we could meet the challenges of their world with the same fortitude, good humour, and philosophy." [1, p. 201].

[3] The year 1900 is a convenient landmark in the history of international law to the extent it marks (approximately) the high-water mark of what might be called the "transactional" period of development, which preceded the "organizational" period. It was also the year of the Paris Exposition and numerous scientific and intellectual congresses devoted to greeting the "new dawn" of civilization. Many European international lawyers of that era were also advocates of comparative law, which was seen as a cognate discipline designed in part to facilitate the elucidation of general principles common to "civilized" systems of national law. The first congress on comparative law was held in Paris in 1900 in association with the Exposition.

through accommodation with ancient and persistent prerogatives of *special interest*, the new field of international environmental law (IEL) offers the opportunity to evolve essentially on the basis of a globalized vision of world community.[4]

Today, at the dawn of a new millennium, we might feel entitled to a degree of optimism that the current integration or convergence of the law of the sea (with its main emphasis on state entitlements) and international environmental law (with its main emphasis on state responsibilities) will result in a strengthening of the world community's legal framework for protection of the ocean/coastal environment. But the truth seems to be more complicated: we are witness rather to a mixture of "ups" and "downs". At the same time, this field shows signs of "swimming", "sinking", and "treading water".

Evidence of successful "swimming" may include the entry into force and widespread acceptance of the 1982 UN Convention on the Law of the Sea [4] which seems likely to endure as the "constitution of the oceans". Not least, the environmental provisions of the famous Convention, though often generally worded, are unlikely to lose their status as "sacred text". Hopefully, the same will hold true for the carefully crafted procedures for the management of ocean disputes, including conflicts of an environmental nature [5]. But the year 2000 is still too early to assess the utility of these procedural provisions.

Throughout the period of UNCLOS III, and in the following years when the 1982 UN Convention was gathering support, in its revised form, environmental diplomacy was displaying an extraordinary burst of vitality. Inspired and publicized by the two largest of UN-sponsored mega-conferences, the 1972 Stockholm Conference on the Human Environment and the 1992 Rio Earth Summit (UNCED), IEL has grown almost exponentially by virtue of hundreds of negotiated instruments, displaying an unparalleled diversity of legal, quasi-legal, and political commitments incurred by participating states, and indirectly by the institutions of "civil society".[5] Even the international law of human rights, which has generated scores of major treaties and instruments over the last half-century[6] has not matched IEL's record over the last 30 years.

However, "sinking" feelings also seem appropriate in light of environmental battles lost and opportunities overlooked. Environmental degradation of ocean and coastal areas continues: numerous fisheries are overexploited; coral bleaching incidents are rampant, threatening marine biodiversity; toxic chemicals lace all seas, including polar areas; diseases in marine fauna and flora are on the increase; and eutrophication is expanding due to phosphate, nitrate and sediment loadings of marine estuaries.[7]

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[4] For a discussion of community interests, see [3].

[5] Edith Brown Weiss estimates there are over 900 international legal instruments having one or more provisions addressing the environment, see [6].

[6] Human rights instruments comprise 20 universal treaties, more than a dozen regional conventions and scores of soft law instruments [7].

[7] For recent reviews of marine ecosystem threats, see Health Ecological and Economic Dimensions (HEED) of Global Change Program, *Marine Ecosystems: Emerging Diseases as Indicators of Change*, online: ⟨http://heed.unh.edu/heedreport/⟩ (date accessed, 26 June 1999); World Wildlife Fund, *Turning Up the Heat: How Global Warming Threatens Life in the Sea*, online: ⟨http://www.worldwildlife.org/climate/oceans.pdf⟩ (date accessed, 26 June 1999) and [8].

Global conventions are lacking in key areas, including land-based marine pollution, seabed activities, and protection of forests; nor has a legal regime for protecting marine biodiversity of the deep seabed been forged [9,10]. No binding rules govern the exchange of ballast water from ships and associated introduction of alien species and pathogens in offshore zones,[8] and no global liability regime yet covers spills of bunker fuels from ships [11]. Numerous cracks remain in the climate change regime, including minimal emission cut-back commitments by developed countries and the need to work out the operational details of the Kyoto Protocol mechanisms, including emission trading and the clean development mechanism [12]. Global efforts to control hazardous chemicals have been quite weak [13]. A prior informed consent procedure rather than a prohibitory approach has been taken to manage international trade in banned or severely restricted chemicals [14]. Negotiations for a global convention on persistent organic pollutants (POPs) are initially targeting only 12 chemicals, "the dirty dozen".[9] A proactive and highly precautionary approach of only allowing chemicals listed as "safe" on the market is still opposed [16].

"Treading water" seems an apt description of regulatory efforts in other contexts. The global community seems content to stand pat with the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities [17], rather than progress to the next stage of treaty making [18]. Countries are in no hurry to develop global standards for offshore oil and gas activities [19]. The world community has rejected more radical proposals in ocean governance and international environmental law-making, such as creation of an empowered UN Environment Organization [20] or appointment of an ocean guardian [21].

This paper examines seven challenging issues in the international environmental law field,[10] which at the very least promise to make for a "hard swim" as countries and citizens face the next millennium. Those challenges include: (1) coping with the proliferation of negotiated environmental instruments; (2) overcoming political opposition to environmental commitments; (3) clarifying the jurisprudential underpinnings of international environmental law; (4) sorting out the balance among environmental ethics, science and the rule of law; (5) fleshing out and implementing the principles of sustainable development; (6) addressing practical problems of implementing international responsibilities; and (7) visioning paths of ocean governance for the future.

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[8] IMO is continuing work on the development of mandatory regulations on ballast water management. However, the Marine Environment Protection Committee has not reached agreement on various issues such as the categories of vessels to be covered and the extent of ocean areas subject to controls. Therefore, convening of an international conference for text adoption is not planned in the beinnium 2000–2001. See Report of the Secretary-General, Oceans and the law of the sea. UN GA 54th sess., UN Doc. A/54/429 (1999), par.420.

[9] For a review of the first session of the Intergovernmental Negotiating Committee for an Internationally Legally Binding Instrument on Certain Persistent Organic Pollutants (POPs) held from June 29 to July 3, 1998, see [15].

[10] This paper does not specifically address the need to integrate the various branches of international law related to environmental protection, including trade law and human rights law. For a discussion of the challenge, see [22].

2. Coping with the proliferation of negotiated environmental instruments

Depending on the generosity of one's definition of a "negotiated instrument", the output of environmental diplomacy at the inter-state level since 1970 may be reckoned at over 800. Admittedly, a large and growing proportion of these instruments fall outside the traditionally narrow category of international agreements of "treaty character" [23]. This characteristic of environmental "treaty-making" — heterogeneity — has forced legal theorists, with widely varying degrees of enthusiasm, to adopt the late 20th century concepts of "soft law" instruments and quasi-legal commitments [24]. As discussed below, the preponderance of soft, informal, non-binding, ostensibly non-adjudicable (or even unenforceable) commitments generated by IEL diplomacy raises important jurisprudential questions. But initially even more fundamental issues arise from the proliferation of these instruments.

Above all, the practical question of monetary cost must be addressed. To put the matter in perspective, it might be useful to consider international agreements as falling into one — and usually not more than one — of four general categories: distributive,[11] demonstrative,[12] administrative,[13] and resolutive.[14] Normally, only those of the distributive family, or more exactly those of the commercial/economic subset, seem amenable to calculation of the potential economic costs and benefits associated with them.[15] It is difficult, if not impossible, to quantify the economic costs and benefits associated with non-distributive instruments of the demonstrative, administrative and resolutive kinds. But many environmental agreements, and especially the most ambitious, are *hybrid*, in the sense that they encompass most or all of the four functions. Indeed the cross-functional orientation of environmental instruments marks them out as unique among all the major categories of "treaty-making" in the modern, post-1970 era.[16] It is this cross-functional uniqueness that makes it especially difficult to cost the tasks of implementation and compliance associated with the outcome of IEL diplomacy. Yet, however difficult to quantify, the costs are enormous, likely much higher than for any other general category.[17]

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[11] Distributive agreements have been defined as "those primarily concerned with the distribution or redistribution of resources", such as those dealing with trade, aid, and cultural and scientific exchange [25].

[12] Demonstrative instruments, fundamentally defined, are "those designed, in general emotive or aspirational language, to demonstrate or dramatize the parties' commitment to shared goals and values and friendly relations." [25, pp. 114–5].

[13] Administrative arrangements, similarly treated, are "those primarily concerned with the establishment and maintenance of interstate services, reflected in such issue areas as consular, banking, aviation, shipping, railway, postal, and other communication services" [25, p. 114].

[14] Resolutive agreements are "those devoted essentially to the resolution of serious legal issues, such as boundary delimitation and nationality issues, which are amenable to 'final' resolution and not merely treatment" [25].

[15] In looking back at the years of implementation of most trade and other economic agreements, it would be possible for economists to calculate the value of goods and services made subject to treaty regulation. The same exercise might be extended to ancillary agreements in such areas as intellectual property, investment, shipping, and commercial arbitration.

[16] For a treatment of environment law as hybrid in this cross-sectoral sense, "See [26, 32]."

[17] On the problem of financing the implementation of international environmental treaties and existing approaches, see [7, pp. 1458–1502].

In practice throughout the 1990s, the problem of compliance cost has become an increasingly serious concern for negotiators of global/environmental treaties and similar, strenuously negotiated, treaty-like instruments, which are intended to create expectations of compliance, in some degree, even in the absence of strictly binding obligations and the prospect of "enforcement" in an operational sense. The recent response has been to envisage a *gradation of responsibility* in accordance with the participant state's capacity and its eligibility for international assistance, which may be available for capacity-building purposes. It remains to be seen what degree of operational reality can be brought to the "common but differentiated" approach to the implementation problem in the IEL field [27]. Those disposed to be pessimistic about the consequences of ambitiously expensive treaty-making for the developing and least developed nations, many of them now wracked by economic set-backs, may wonder if the international community is not becoming overwhelmed by the sheer volume of IEL commitments generated in the last three decades of the 20th century.

On the other hand, to those prepared to indulge in closely monitored optimism, the flourishing of IEL diplomacy in recent decades might be seen as a challenge to diplomatic, political, or social ingenuity. The concept of "stakeholders' responsibility" has been invoked as a serious, though admittedly idealistic, approach to the financing of major global undertakings involving enormous costs.[18] The wider the range of stakeholder interests and concerns envisaged, the more widely the cost of implementation can be spread. Such an approach has been advocated for an effective, systematic, preventive approach to recurring regional environmental disasters such as the land and forest burnings in Southeast Asia, which give rise to the "seasonal haze" phenomenon and the health and environmental hazards related to it [28].

The "polluter pays" principle has an important role in the development of IEL, mostly in bilateral situations where identifiable corporate "culprits" can be forced to carry most of the cost burden on the ethical ground of culpability.[19] However, complex environmental commitments that require restructuring of industries, economies, and even societies, cannot be financed entirely by culpable enterprises or agencies. In such circumstances, simple morality may have to give way to a more complicated concept of community responsibility, and the "community" of stakeholder interests and concerns may have to be very broadly, if not globally, conceived.[20]

The current proliferation of environmental instruments, if continued at the present rate, may reach a level of diminishing returns, where the currency of expectation will be debased by the frequency of reference to the goals which they promote. There is no

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[18] An example of a broad range of actors being encouraged to finance technological and management responses to an IEL challenge is found in the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities where a long list of suggested funding sources is attached.

[19] The polluter pays principle, originally proposed by the OECD Council in 1972, is often broadened to include the notion of user pays and still faces many challenges in implementation including the need to develop greener accounting systems for valuing ecological services and effects. See [7, pp. 382–5].

[20] The common concern of humankind principle partly captures the evolution where both biodiversity protection and climate change are considered to adversely affect all humanity and to require actions in the long-term interests of the world community. See [7, pp. 343–5].

denying the impact of environmentalism in numerous cultures, at all levels of society. Yet in many other countries the political leadership seems to believe it is sufficient to be seen to accede to the goals of IEL through international participation, or through signature or even occasional ratification. Environmentalists in these countries look in vain for an operationally serious commitment to substantial, or at least reasonable, compliance on the basis of politically or economically significant reforms at the national level. As IEL instruments escalate, it becomes increasingly difficult to establish priorities as a matter of national strategy, especially in developing and least developed nations, and easier to denigrate the "impositions" of the international community. In short, the mounting volume of such instruments, mostly in non-treaty form, may result in the lowering of the political credibility of IEL diplomacy in the eyes of tough-minded decision-makers and their economically hard-pressed constituents, even if they feel obliged to acknowledge the legitimacy of environmental goals at the level of idealism or rhetoric.

3. Overcoming political opposition to environmental commitment

In the three years preceding the 1972 Stockholm Conference it proved politically impossible to persuade most of the developing country governments that environmental commitment was not a further barrier to rapid economic development. Proposals to use the Stockholm arena as a treaty-making opportunity had to be abandoned. Environmentalists were left only with the hope that a world conference of unprecedented magnitude would contribute to the gradual raising of environmental consciousness, and legal reformists with the hope that the norms endorsed by the delegations would find their way into the corpus of customary, rather than conventional, international law.[21]

About 30 years later, one looks back in admiration at the amount of diplomatic energy and ingenuity expended since the Stockholm Conference on the creation of an ethical, and politically acceptable, environmental *modus vivendi* between the developed and developing worlds in such diverse contexts as nature conservation, regulation of nuclear energy, protection of threatened or endangered species and habitat areas, fishery conservation and management, pollution prevention and control, and the control of hazardous substances. Success in negotiating so many instruments, many on issues that would have seemed too controversial during the North–South debates of the late 1960s, may be attributed to a wide variety of factors: general recognition of the failure of most natural resource management regimes; fear of nuclear, chemical, and other hazards; acknowledgment that sound development strategy requires balance among long-, medium-, and short-term considerations, under the rubric of sustainability; discovery that framework and other non-binding

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[21] It was argued, for example, that the Stockholm Declaration on the Human Environment consisted of emergent norms of customary international law [29]. Similar hopes were entertained for the draft principles on marine pollution prevention and control, see [30].

forms of "treaty-making" offer a useful, but non-threatening, collective goal for IEL diplomacy; acceptance of consensus and other practical, time-saving techniques to facilitate and accelerate global conference negotiation processes; and experimentation with differential concepts designed to soften the rigidities of the traditional state-equality doctrine, such as the "common but differentiated" approach to certain ambitious and costly environmental conventions [7, pp. 358–60].

However, research of the third decade of the IEL era, focussing on problems of implementation and compliance [31], has shown how much resistance there still is to the kinds of reform required to bring the regulatory systems of most non-developed nations into conformity with globally negotiated standards of environmental responsibility. In varying degrees, their reluctance to conform reflects suspicion that developed (mostly Western) governments, in driving the evolving IEL system, are not entirely motivated by selfless concerns about the state of the world environment. The truth is that most basic environmental concerns are too closely linked to economic interests to dispel the fear of many developing countries that the tightening of their environmental standards, in conformity with ambitious global instruments, would raise the costs of national development and place them in a state of comparative disadvantage in the increasingly globalized market-place. Despite the many apparent successes of IEL diplomacy over the last 30 years, the Stockholm fears of the South were not so far below the surface at the end of the 1990s.

One of the most troubling questions is whether anti-capitalist (anti-market or anti-Western) politicians in certain non-developed countries will succeed in influencing others to discredit IEL in general as a cynical strategy "imposed" on their faltering economies. Third world fears of the "international community" may be even more widespread than the speeches of nationalist politicians reflect. Part of third world resentment is, more or less explicitly, directed against the hegemony of the United States, the single great power, with its almost irresistible influence on many of the most powerful global organizations. In Asia especially, the recent economic recession seems to have stiffened the resolve of some developing countries not to be bullied by external interests, nor swept away by external, nominally global, environmental concerns with cost implications.[22]

"Conditionality", the practice of imposing environmental, human rights, and other conditions on loans and grants by global institutions such as IMF and the World Bank, is as much a political weapon as a policy of benevolence in the increasingly tough-minded world of development assistance.[23] It is clear, however, that revelations

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[22] In particular, Dr. Mahathir, the nationalist prime minister of Malaysia, has served as a lightning rod, attracting the wrath of the Western press by his outspoken criticisms of Western impositions on developing economies. The recent reverses of developing regions like Southeast Asia have emboldened other third world leaders to warn their electorates of the price that may have to be paid, if they capitulate to all reformist demands made by Western powers. Regions such as Southeast Asia do, of course, follow global trends in most IEL sectors with their own collective policy commitments, usually expressed in non-binding instruments, but failure to implement conscientiously or effectively at the national level may be ascribed to (often unacknowledged) reservations about the economic fairness of such demands upon them, see [32].

[23] For a discussion of the role of international financial institutions in environmental protection see [7, pp. 1458–89].

of large-scale, and apparently endemic, corruption, collusion and nepotism in many of these resentful and IEL-resistant states have virtually destroyed any hope of reversion to the softer-hearted policies of the 1970s and 1980s. In the next decade, third world critics of "conditionality" will have to show high standards of public morality at home to be widely accepted as entitled to the prerogative of moral outrage.

Perhaps more difficult is the question whether the global, Brundtland-inspired concept of "sustainability" has jelled sufficiently to provide a solid rationale for long-term environmental commitments that involve a considerable sacrifice of short-term developmental gains.[24] Many academic specialists have taken the position that the case for sustainability, as an operationally meaningful, overriding goal of socio-economic development, has yet to be made, at least at the level of intellectual rigour demanded by the relevant disciplines.[25] Is equilibrium an illusion? Commonsense might suggest that the debate boils down to a choice of time-frame for sensible planning. Extremists arguing for infinite (or indefinite) resource renewability, without knowledge of future science and technology, should not expect to carry the day. Scare-mongering, on the other hand, might be defensible, if it seems to be the only way of bringing about a massive reduction of human numbers in an increasingly overcrowded planet. Where global catastrophe is a real possibility, rationality and restraint may prove to be an inadequate response.

4. Clarifying the jurisprudential underpinnings of IEL

In the infancy period of modern international law — in its first two centuries of growth — there was a rather evenly contested struggle between two deeply divided schools of jurisprudence: the naturalists and the positivists. The natural law school held out a vision of an emergent legal system growing out of a stock of universally valid principles based on reason, transcending political systems and cultural traditions. The positive law school rooted international law in the firmer clay of state practice, and especially in the evidence of formal consent, which was the prerogative of sovereignty-holders to grant or withhold in their transactional, mostly bilateral, relationships with their collateral counterparts.[26] The 19th century saw a gradual, but eventually decisive, shift in favour of the positivist model of international law, so that by 1900 it appeared clear that the naturalists had been dislodged from the pragmatic mainstream and obliged to defend themselves against charges of utopianism [36].

But international law has always been a reflector of the world of diplomacy, resting on political foundations, and the 1900–2000 period has seen enormous changes in the structure, compositions, and tempo of inter-state diplomacy. The establishment of the League of Nations and the United Nations in the first half of the 20th century paved

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[24] For a review of the numerous transitions urged under the rubric of sustainable development including demographic, energy, resource, economic and political transitions, see [33].

[25] See e.g. the critical discussion in [34].

[26] For a review of the intellectual ascendancy of positivism, see [35].

the way for the formation of numerous international organizations and agencies, creating thousands of arenas and sub-arenas for global and regional diplomacy over virtually the entire spectrum of public life. By the mid-20th century the old system of classical diplomacy, involving only a small elite of professional diplomats with expertise in confidential and mostly bilateral transactions, had largely given way to the more broadly interactive and more open processes of *conference* diplomacy.

In several ways this transformation in the structure and dynamic of modern (post World War II) diplomacy has undermined the premises of the positivist school of international law. Not least, the charters and covenants, which have been drawn up as "sacred texts" of the (now) massively organized world community, have elevated naturalist norms and prescriptions, buttressed by signatures, ratifications and other evidences of formal state consent, so as to restore something like the 18th century balance between the two famous schools of jurisprudence. Moreover, the force of numbers of member or participant states, negotiating together under so many organizational auspices, has exposed the fragility of the traditional positivist analogy between treaty and contract.[27] The introduction of adoption by consensus as a procedural requirement of contemporary global diplomacy has contributed further to the weakening of state sovereignty prerogative expressed preemptively through the denial of formal consent.[28] Above all, the chief purpose in many sectors of global, and even regional, conference diplomacy is often to generate *commitments* among all the participants in the process rather than to create *obligations* on the part of those sovereignty-holders that choose to become parties through the subsequent grant of formal state consent. Admittedly, the generation of commitment in the first phase of legal development, through conference diplomacy, does not necessarily displace the need for, or deny the value of, subsequent formal consent, but the formalistic distinction between the two is more relevant to the juridical task of adjudication of disputes than to the operational tasks of implementation and compliance-inducement.[29]

Perhaps in no other sector of international law do these changes have more jurisprudential impact than in the area of IEL, not only because of the frequency of resort to global conference diplomacy for the setting of world community environmental norms, but also because IEL adds exclusively to the burden of state responsibility, unlike most other major "treaty-making" contexts (such as law of the sea), which are equally, or almost equally, concerned with the conferment of entitlements.[30] In short, IEL has become a juridical combat zone, attracting the tank-force of environmentalist delegations, backed up by legions of "irregulars" representing the "transnational ethical community", but slowed down, if not halted, outside the diplomatic arena, by home-based positivists opposed to the radicalism of the entire enterprise of "world community development", through natural law prescriptions.

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[27] The analogy has been under challenge for at least 70 years. See [23, pp. 47–50] and [25]. For a discussion of the multiparty and multiagency complexities in many treaty negotiations, see [21] at 47.

[28] For a discussion of the use of consensus procedures at UNCLOS III, see [37].

[29] For a review of compliance-inducement strategies, see [38].

[30] For a review of the broadening concept of state responsibility, see [39].

Even if some readers believe this argument is put too baldly, there can surely be no doubt that the IEL phenomenon, and especially the "soft law" emergence, has reduced the ascendancy of the positivist school in contemporary international law. In the year 2000 it seems highly unlikely that we are on the brink of a massive reversal of current trends in "world community" governance. Environmental concern is very unlikely to diminish; state systems will become more, not less, accountable to the "transnational ethical community"; the trend to diversification of globally negotiated instruments will continue through the early decades of the 21st century; and sovereignty-related concepts, which form the infrastructure of the positivist model of international law, will have to yield to less statist, more communitarian, constructs [40].

New challenges will arise. Faced with an apparent divergence between hard law and soft law norms and instruments, will governments involved in transboundary environmental disputes be encouraged to resort to adjudication as a mode of settlement, trusting to judicial ingenuity to find a synthesis between the two modes of juridical development? Or will they see such disputes as more suitable for political or non-adjudicative treatment within regional organizations or through mediators and conciliation commissions?[31] Will the threatening, winner-take-all, ethos of litigation drive most non-developed countries away from the adjudicative mode of settlement in the case of environmental issues with potentially enormous cost implications? Will the adjudications that do arise in the IEL field tilt the balance in favour of hard law norms and considerations, possibly alienating much of the transnational ethical community that puts stock in the "sacred" soft law of IEL? Will the codified law of treaties, bedrock of the positivist school, have to be revised in order to reflect the new realities of "treaty-making" in the world community, especially in the context of IEL?[32]

5. Sorting out the balance among environmental ethics, science and the rule of law

Many writers on the growth of environmentalism have drawn attention to its spiritual or quasi-religious character, although historically at least the nature conservation sector of the environmental movement of the second half of the 20th century is derived from humanism rather than organized religion.[33] Saving the planet from destruction does not rely on metaphysics or mysticism, but it tends to generate a missionary fervour and energy that may be compared with the past and present behaviour of proselytizers of the great religions. Intense conviction and commitment

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[31] For example, in the case of Southeast Asia, where the widespread, systematic burning of lands and forests in Indonesia and elsewhere creates extremely serious air pollution problems throughout the region, ASEAN has been forced to accept problem-solving responsibility, even at the risk of infringing its established policy of non-interference. No one suggests that this transboundary environmental problem is amendable to adjudication. For an overview of this problem, see [41].

[32] On the role of world conferences, including environmental conferences, in international legal development, see [42].

[33] The World Conservation Union (IUCN) was founded by the famous biologist and humanist, Sir Julian Huxley, during his tenure as the first Secretary-General of UNESCO in the years immediately following the Second World War. Humanist ethic can perhaps also be detected in the life and works of other early ecologists such as John Muir and Gifford Pinchot, see [43].

to the prescribed set of values — and beliefs that seem necessary to protect these values — may result in what can be likened to a collective mind-set, a formidable, world-wide coalition of extremely well-intentioned, like-minded enthusiasts with potentially enormous political weight in a growing number of political cultures.

At the core of the world environment movement is a very sizeable elite of determined, well-educated, mostly middle-class, ethicists. As humanists, most of them draw upon science and project a faith in human progress, but as ethicists with a program of action in mind many are inclined to use science selectively rather than "objectively" or neutrally in the tradition of open inquiry. The "hard core" ethicist mind-set among environmentalists has resulted in extreme policies (and sometimes extremist practices) in a number of issue contexts: driftnet fishing, nuclear control, whaling, and the dumping of hazardous wastes, to mention only a few.[34] Usually, as noted above, such issues tend to result in a confrontation between continuing a (revised) policy of regulation and replacing it with a policy of prohibition. More often than not, the policy of prohibition has won out.

In some situations prohibition may be the best course, at least in the short term, in circumstances where it seems a shock must be administered to an industrial sector that seems impervious to even a stringent system of regulatory controls. In some cases structural reform may be the only effective remedy, and a reasoned case might be made for it. But there are other, equally ethical, often even better informed, specialists in environmental policy and resource management who reject the ideology of radicalism inherent in the prohibitionist school of contemporary environmentalism. Some prohibitionists, unfortunately, in their determination to stamp out all environmental evils, have chosen also to denigrate the mainstream of environmental scientists. The result is that a gulf has opened up between many of the best-informed scientists, on the one hand, and some of the largest, best endowed, and most politically influential groups of environmental activists, on the other hand.[35] Through effective lobbying, emotional appeals to electorates, and other modes of political pressure — methods alleged to be necessary to counter long-established and well-organized industrial lobbies — environmental activists have succeeded in discrediting professionally scrupulous research and impugning the integrity of scientists, if their findings do not support the goals and viewpoints of the activists. In a number of cases, external political pressures have forced government agencies to suppress the findings of their own, in-house scientists, without evaluation of the merits of their research [46].

The demoralization of the scientific community is a prospect that threatens the healthy, fact-based, development of environmental policy and resource management around the world. Moreover, the downgrading of scientific evidence also poses a threat to the legal and managerial integrity of existing regulatory regimes that depend on the observance of agreed-upon reporting procedures.[36] Distorted

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[34] For a critique of the decision to ban ocean disposal of radioactive wastes in the ocean, see [44].

[35] On the inherent tensions between science and policy involving impartiality and disinterestedness on the side and strategic behaviour and interest realization on the other, see [45].

[36] For a review of some of the reporting procedures and problems of actual reporting under IEL agreements, see [47].

information was placed before the UN General Assembly in order to carry the day in promoting a resolution to ban all large-scale drift-nets regardless of the actual threat to wildlife populations [48]. The International Whaling Commission has been "influenced" by anti-whaling activists, and its long-established practices for scientific investigation and reporting overruled in a manner arguably dismissive of legal procedure [49–51].

From these sobering reflections, a number of important questions arise. Will adversarial ethicists, acting mostly outside the inter-state system, tend to strengthen or weaken IEL in the operational arena? To the extent that "civil society" extremists meet with resistance on the part of government bureaucracies and industrial interests, will IEL of the 21st century evolve along two divergent tracks, the populist-radical and the reformist-coalitionist? Can the centre hold?

6. Fleshing out and implementing the principles of sustainable development

Perhaps the most important outcome of the Rio Conference was the new emphasis on principled decision-making at the international, regional, national and local levels. In the past international law had largely focused on jurisdictional rights and taken an almost "hands off" approach to interfering with national sovereignty including rights to exploit natural resources. Through the Rio Declaration on Environment and Development and Agenda 21[37] UNCED articulated numerous soft law principles that promise to guide future law and policy reforms. Those principles, among others, include integration, precaution, pollution prevention, intergenerational equity, polluter pays, public participation, community-based management, indigenous rights and women in development [53,54].

One of the greatest challenges will be to clarify the practical implications and ensure legal implementation of the precautionary principle or approach [55,56]. Virtually no informed opinion denies the need for caution in the use of the "human" environment and the resources of the planet, given the continuing growth of world population. Accordingly, no respectable opinion challenges the need for precautionary measures in contexts where misuse or overuse may have reached a potentially dangerous level. As in the case of the "sustainability" debate, the "precautionary" controversy comes down to the degree of concern, alarmist to prudent, that should be reflected in the norms of IEL.

In a number of contexts, such as whaling, fishery management, and hazardous substances, the issue is whether to continue to repose one's faith in regulation, despite the unimpressive record of many regulatory regimes, or to resort to the simpler, and ethically more satisfying, alternative of outright prohibition. This controversy might be characterized as a conflict between the rationality of the scientific community, on the one hand, and popular ethics based on intuition, on the other: between the optimism of the late 19th century, which witnessed the birth of regulatory systems

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[37] The documents are reprinted in [52].

dependent on scientific evidence, and the pessimism arising from *fin de siecle* despair at human greed or folly, which is once again fashionable at the end of the 20th century. Regulation requires patience, faith in research, and the will to experiment; prohibition repudiates expertise, trusts only experience, and takes no prisoners.

The best example of a global ocean management regime undergoing the "conversion of precaution" is the London Convention 1972 and its 1996 Protocol [57]. While the original Convention adopted an assimilative capacity approach to ocean dumping through "black list" and "grey list" restrictions allowing most materials to be disposed at sea subject to a permit requirement, the Protocol adopts the precautionary approach through "reverse listing" whereby only wastes listed on a "safe list" will be approved for ocean disposal and even then subject to waste audits.[38]

The precautionary principle will likely require revisiting other maritime environmental standards and regulatory approaches in the future. For example, the vessel-source pollution control standards under MARPOL largely follow a "pollution by dilution" and distance-from-land approach.[39] Those rather archaic and simplistic standards will likely come under increasing question.[40]

7. Addressing practical problems of implementing international responsibilities[41]

Clear and secure financing may be one essential component ensuring national implementation of international sustainable development obligations. Training and employing resource managers, development and transfer of environmentally sound technologies, and undertaking law reform initiatives may be dependent upon adequate financing.

A consistent shortcoming of the Rio Conventions, Agenda 21 and the follow-up programs of action has been the lack of firm and adequate financial commitments, particularly by developed countries [62]. In Agenda 21 negotiations, developed countries were not even willing to commit themselves to the UN goal of committing 0.7% of GNP for official development assistance (ODA) by the year 2000 (Chapter 33, para. 33.15 of Agenda 21). While the Secretariat of the Conference estimated 125 billion dollars would be required annually from the international community to assist developing countries in implementing Agenda 21 (Chapter 33, para. 33.20 of Agenda 21), the level of funding has fallen far short. The Global Environment Facility (GEF),

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[38] Wastes/materials allowed to be disposed of include: dredged material; sewage sludge; fish wastes; vessels and platforms; inert inorganic material; organic material of natural origin; and bulky items primarily comprised of iron, steel, concrete and similarly unharmful materials.

[39] The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 is reprinted in [58,59].

[40] The International Maritime Organization, while aware of the need to incorporate the precautionary approach, has been slow to clarify the operational implications. Through Resolution MEPC. 67(37) of September 15, 1995 the Marine Environment Protection Committee adopted Guidelines on Incorporation of the Precautionary Approach in the Context of Specific IMO Activities, but the Guidelines were embraced on an interim basis until further experience with application is gained; also see [60].

[41] This subsection is largely adopted from [61].

the key financing mechanism for assisting implementation of Agenda 21 and the conventions on climate change and biological diversity, has not lived up to funding expectations. Over US 2 billion dollars was committed by participating governments over the 1995 – 1998 period which is far below Agenda 21 projections [63].

The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities provides no funding mechanism and no financial targets. The Programme recognizes in general that financing for national and regional programs of action should come from each country's own public and private sectors. While urging the Global Environment Facility to finance activities related to protection of the marine environment from land-based activities, the Programme stops short of asking the GEF to create a separate funding window beyond the four existing funding areas of climate change, biological diversity, ozone layer depletion and international waters. Rather than ensuring funding, the Global Programme of Action includes an illustrative list (in an Annex) of possible external sources of funding (for a critique, see [17]). The Secretary-General's Report on Oceans and Seas to the Seventh Session of the Commission on Sustainable Development in 1999 noted that funding remains a major barrier to implementation of the GPA [64].

Progress in implementing the Programme of Action for the Sustainable Development of Small Island Developing States has also suffered from inadequate donor support and continuing financial needs in following-up the Small Island Developing State Programme. For example, bilateral donor support to small island developing states was found to have declined substantially by 34% from the 1988–1990 period to the 1991–1994 period [65]. The international community has been urged to provide financial assistance for increasing shipping safety through such measures as purchase of modern ships and construction of port reception facilities for ship wastes. Assistance in acquiring more modern vessels has been reported as critical in light of the statistic that some 70% of the merchant fleet of small island developing states is 15 yr old and over [66].

At a meeting of representatives of donors and small island developing states in February 1999, State representatives again emphasized the practical problems of implementation:

> [P]rogress in implementation … has been hampered by a number of factors, most importantly, lack of financial support from the international community, inadequate human resources with appropriate training, inadequate institutional capacity, inadequate capacity for the enforcement of environmental legislation and regulations and inadequate investment resources [67].

The Wider Caribbean Initiative on Ship Generated Waste (WCISW), a project funded by the Global Environment Facility and administered by the World Bank to promote implementation of MARPOL 73/78 in the Wider Caribbean Region (WCR), has shed light on reasons, besides financial, for limited ratification of conventions by countries. Among 29 countries of the WCR only 16 had ratified the Convention and its mandatory Annexes as of July 1995. Lack of trained personnel, low political priority given to maritime legislation and scarcity in legal drafting resources were listed as contributing factors to the slow pace of ratification [68].

Various innovative international financial mechanisms have been suggested to assist countries in meeting sustainable development obligations, but the suggested mechanisms have yet to be followed at the global level. A carbon tax levied on fossil fuel use and based on carbon content has been suggested which might be earmarked for reducing greenhouse emissions and assisting countries to adapt to sea level rise in particular. A tax on airline transportation, possibly based on fuel consumption or emissions of airline fleets, has also been raised. A tax on foreign exchange transactions (the Tobin tax) has been suggested to finance sustainable development activities. It is estimated that a tax of less than 0.5% levied on private foreign exchange trades and collected by national governments could generate about 150 billion dollars per year.[42] User fees for ocean uses such as high seas fishing, ocean dumping and maritime transport have also been advocated [70].

A common taxation approach is often suggested. National governments would agree to collect fees and pass along contributions to an international funding mechanism. However, national user fees and pollution fees are also possible as well as resort to regional trust funds [7, pp. 42–44].

Practical difficulties in addressing compliance with and enforcement of international environmental agreements also remain [71]. Monitoring vast offshore areas is a financial and practical challenge even for the wealthiest of states. Enforcement of conservation obligations on the high seas has been particularly problematic where "flag state" jurisdiction has largely prevailed [72,73]. A proposed solution of a new International Marine Monitoring and Coordination Agency with broad inspection and investigation powers [74] seems unlikely given state concerns over jurisdiction and perhaps preferences to deal with enforcement at the regional level.

8. Visioning the paths of oceans governance for the future

The end of the road has not yet been reached in sustainable oceans governance at the international level. Fragmentation in addressing environmental crises has been prevalent with separate treaty regimes for ozone depletion, climate change, biodiversity and maritime transport. Soft law approaches prevail for addressing land-based pollution/activities and the problems of small island developing states.

The Independent World Commission on the Oceans in its 1998 Report [75] suggested a number of possible innovations. Avoiding recommendations for powerful new institutions mandated and provided with authority to manage the oceans in peaceful and equitable ways, the Commission offered less extreme options. Those options included, among others: forming regional commissions for sustainable development where they presently do not exist to involve representatives from ministries of finance/development and local levels to monitor progress in sustainable development; convening of a United Nations Conference on Ocean Affairs to raise the profile of ocean governance issues; and establishing an Independent World Ocean Forum

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[42] For a review of the proposals, see [69].

involving civil society and all stakeholders in comprehensive reviews of ocean issues every three or four years [75, pp. 153–161].

The UN Commission on Sustainable Development, reviewing oceans and seas at the 7th Session in 1999, adopted cautious recommendations on improving cooperation and coordination in the maritime area. The Commission recommended that the General Assembly establish an open-ended informal consultative process each year for a week to promote discussion and consideration of ocean issues. How imput from representatives from major groups will be best achieved was left open with the possibility of organizing discussion panels suggested [76].

9. Conclusions

These seven challenges may seem so formidable as to leave the reader with a "sinking" feeling. At the end of the 19th century, unlike the 18th, it was fashionable, at least in the artistic/literary community, to indulge in pessimism, or even despair, as a reaction to materialism, industrial blight, vested interests, and other perceived ills. But despair, in the year 1900 coexisted with buoyancy in the scientific community, which had reason to celebrate many evidences of intellectual progress and to anticipate huge advances in professional research in a new age of civilization to be based essentially on expertise. Now, on the brink of the 21st century, it is fashionable to challenge the primacy of professional (elite) knowledge- or, more accurately, of professional judgment based on technical, sectorized knowledge. We are moving now from an age of specialized knowledge to an age of freely available, raw or semi-professional, information.

This, perhaps the dominant social trend in the early decades of the 21st century, suggests we shall encounter a continuing growth in the "transnational ethical community", in its environmental as well as its human rights components. Increasingly, we believe, governments and inter-governmental organizations will find their legitimacy questioned at least in these two contexts, by citizens and citizen groups armed with masses of information, much of it perhaps of imperfect reliability but assuming, for political purposes, the functional equivalence of fact. The volume of information and the number of believers will have more influence on environmental policy-making than ever before, possibly enough to win most of the battles with scientific and other technical elites.

We believe that a general belief in *systemic failure* is already evident and will provide the dominant motif in a growing number of environmental issue areas. Popular environmental prescriptions will become more radical, creating strains within the framework of IEL whose guardianship will still remain in the hands of a relatively conservative, and mostly positivist, majority or "mainstream". Natural law, we suspect, will continue to labour in its struggle with positivism in the judicial domain, but will find new allies on the outside, in the "transnational ethical community".

Whether jurisprudential changes and new coalitions will be enough to allow the human species to avoid sinking beneath powerful currents of consumerism, over-consumption and population growth remains to be seen.

Acknowledgements

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