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The Marine Transportation of Hazardous and Dangerous Goods in the Law of the Sea - An Emerging Regime

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I. Introduction

We live in an era of widespread communal law-making. Exclusive decision-making, restricted to a handful of powerful actors whose transactions monopolized the formation of international norms, rules and procedures of global consequence, has gradually given way to inclusive decision-making, or communal law-making, characterized by broad participation of asymmetrical actors with divergent ideologies, cultures and economic interests, and consequent contradictory agendas for a global public order. Asymmetrical interaction, in turn, has nurtured a movement for a new international economic and legal order which proposes a new value system as a substitute for the old oligarchical structure of the international community.

We also live in an era of extensive and intensive interdependence. The fate of one nation is inextricably linked with the fate of other nations. Asymmetry and divergence, however, do not necessarily negate inclusive community interests. Interdependence has forced upon decision-makers the realization that public order requires a degree of convergence of interests. The inherent unity of the human environment and the necessity of unimpeded international communication are two principal areas around which national interests converge. Convergence of interests in specific areas has facilitated the adoption of the problem-oriented approach in communal decision-making, with faith being placed in international organization and regime-building.

The transportation of hazardous and dangerous goods by road, rail, inland waterways, air and sea and also multimodally is a subject characterized by both interdependence and convergence of interests. The international community has been seized of this problem from many directions. It involves a wide range of actors and multidisciplinary challenges. It is submitted that a complex regime is in the making.

II. Problem, Interests and Context

Characterizing that part of the problem relating to the marine
transportation of hazardous and dangerous goods is not an easy task, partly because of the diversity of the goods in question. Some 50 per cent of all marine transported cargo, whether it is solid, liquid or gaseous, falls within the parameters of the problem. Whether the reference is to hazardous cargo, dangerous goods or harmful substances, the problem


2. The reference in this paper is to hazardous and dangerous goods. In a report by the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) on the environmental hazards of harmful substances carried by ships, requested by the IMCO Sub-Committee on Marine Pollution, four considerations were utilized for the development of hazard profiles of such substances: 1) damage to living resources; 2) hazards to human health; 3) reduction of amenities; and 4) interference with other uses of the sea. The human health hazard was further subdivided into: 1) highly hazardous; 2) moderately hazardous; 3) slightly hazardous; 4) practically non-hazardous; and, 5) non-hazardous. Damage in terms of toxicity to living resources was similarly subdivided. The degrees of hazard by water-borne solutions were described as follows:

**Hazardous** — Contact leads to severe irritation (pain and burns) of the skin and mucous membranes and injury to the eyes on short contact. The vapour may cause similar injuries and damage to the lungs even at low concentrations. Substances may be strongly allergenic. Absorption of substance through the skin may lead to damage to internal organs. There is potential for delayed or persistent toxicity.

**Slightly hazardous** — Contact likely to lead to mild skin hazardous irritation (reddening with or without slight pain) of a temporary nature. Vapour likely to cause temporary mild irritation to eyes or mucous membranes to a degree that subjects find unpleasant. Injury to internal organs is unlikely.

**Not hazardous** — Substances which on short exposure are unlikely to lead to irritation, allergy or local injury. Substances which are not absorbed to any significant extent through the skin. Substances which evaporate rapidly, where the substance and the vapour do not cause irritation to the skin, eyes or mucous membranes or lungs. Note: the effects of prolonged or repeated contacts have not been considered.

MARPOL 1973/78 identifies vessel-carried polluting substances as follows: 1) oil; 2) noxious liquid substances carried in bulk; 3) harmful substances carried in packages, portable tanks, freight containers, or road or rail tank wagons, etc.; 4) sewage from ships; and 5) garbage from ships.

Although “dangerous goods” exists as a legal category, it has been questioned whether hazardous cargo legally exists. See D. Jackson, “Hazardous cargo — does it legally exist?”, Hazardous Cargo Bulletin 24-26 (March 1982).

Chapter VII, Regulation 2 of the International Convention for the Safety of Life at Sea 1974 (SOLAS 1974), which is followed by the International Maritime Dangerous Goods Code (IMDG Code), indicates and classifies rather than defines dangerous goods:

Dangerous goods shall be divided into the following classes:
- Class 1 — Explosives
- Class 2 — Gases: compressed, liquefied or dissolved under pressure
- Class 3 — Inflammable liquids
- Class 4.1 — Inflammable solids
- Class 4.2 — Inflammable solids, or substances, liable to spontaneous combustion
- Class 4.3 — Inflammable solids, or substances, which in contact with water emit in-flammable gases
- Class 5.1 — Oxidizing substances
- Class 5.2 — Organic peroxides
- Class 6.1 — Poisonous (toxic) substances
- Class 6.2 — Infectious substances
- Class 7 — Radioactive substances
- Class 8 — Corrosives
- Class 9 — Miscellaneous dangerous substances, that is any other substance which experience has shown, or may show, to be of such a dangerous character that the provisions of this Chapter should apply to it


Harmful substance is defined in MARPOL 1973/78. Article 2(2) of the convention provides:

“Harmful substance” means any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea, and includes any substance subject to control by the present convention.

In Annex II, Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk, Regulation 1(6), noxious liquid substance refers to means or substances designated in the list of substances in Appendix II of the annex or as provisionally assessed in pursuance to Regulation 3(4). Regulation 3 classifies noxious liquid substances for the purposes of the annex as:

Category A — Noxious liquid substances which, if discharged into the sea from tank cleaning or deballasting operations, would present a major hazard to either marine resources or human health or cause serious harm to amenities or other legitimate uses of the sea and therefore justify the application of stringent anti-pollution measures.

Category B — Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify the application of special anti-pollution measures.

Category C — Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a minor hazard to either marine resources or human health or cause minor harm to amenities or other legitimate uses of the sea and therefore require special operational conditions.
concerns the management of goods which by their very nature, or in certain circumstances, may potentially impair human welfare, vessel and cargo safety, certain marine uses, and the health of the ocean and coastal environment. Their carriage on board may necessitate specific measures relating to procedures for packing and handling, loading and discharge, personnel training and vessel operations in addition to vessel conformity with certain equipment and construction standards. New chemicals are continuously being produced and transported by sea so that additional information may be needed about their nature, properties and hazards in order that they may be packed, handled, loaded, and unloaded safely. Technical data needs to be consistently, uniformly and widely disseminated.

Hazardous and dangerous goods are now inevitably accompanied by regulation, whether international or national. Thus, information on regulations ideally should accompany technical data. However, it is also the case that nations do not always keep their ranks for the sake of uniform regulation in responding to the problem, with the possible consequence that international navigation in zones of national jurisdiction may be hampered.

At least four broad ranges of interests are involved in this activity. First, the international community is interested at least in the unimpeded movement of international trade and the protection and preservation of the global marine environment. Second, individual states have specific interests: the flag state has jurisdiction over vessels flying its flag; the coastal state has sovereignty over the territorial sea, jurisdiction over exclusive fisheries and economic zones and is concerned over the well-being of its coastal communities and industries; the port state, in whose harbour rogue vessels may take refuge, also has jurisdiction over such vessels in certain circumstances. Third, special interest groups are involved: the shippers are interested in the safety of their cargo; the shipowners are interested in the safety and unimpeded movement of their

**Category D** - Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a recognizable hazard to either marine resources or human health or cause minimal harm to amenities or other legitimate uses of the sea and therefore require some attention in operational conditions.

The 1973 Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil defines substances other than oil in Article 1(2) as:

(a) those substances enumerated in a list which shall be established by an appropriate body designated by the Organization and which shall be annexed to the present Protocol, and

(b) those other substances which are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

vessels; the insurers of vessels and cargoes are concerned because of their ultimate financial responsibility; the seamen's unions are interested in the welfare of their members among the crew. Fourth, certain international organizations, particularly intergovernmental, such as the International Maritime Organization (IMO), the United Nations Environment Programme (UNEP), the International Atomic Energy Agency (IAEA) and the International Labour Organization (ILO), have an interest in this activity arising from their mandate. Further, in the event of an accident the circle of interested parties may expand to include a wider range of interests.

The problem is intricate and highly technical. It involves private and public interests. The shipping industry is continuously facing economic, technological and management challenges. Communal decision-making processes have been operating in the context of environmentalism, coastal state expansionism and demands for a New International Economic Order (NIEO) with repercussions on shipping. Environmentalism "as a concept, as a mood, as a perspective — but especially as a cause" has permeated the communal conscience since the 1960s. From an initial emphasis on nuclear issues, concern was expressed over threats to the environment resulting from regular human activities, such as industrial, agricultural and urban and vessel-source pollution. Unfortunately, this general concern was soon overshadowed by the specific concern over oil pollution in the wake of the Torrey Canyon incident despite the general recognition of the fact that the major threat

5. For instance, the following non-governmental organizations and associations are included: International Association of Independent Tanker Owners (INTERTANKO); International Cargo Handling Co-ordination Association (ICHCA); International Chamber of Shipping (ICS); International Shipping Federation (ISF); Oil Companies International Marine Forum (OCIMF); Society of Gas Tanker and Terminal Operators (SIGHTO); European Council of Chemical Manufacturers' Federation (CEFIC); International Association of Ports and Harbours (IAPH); International Federation of Shipmasters' Associations (IFSMA); International Shipowners' Association (INSA); International Union of Marine Insurance (IUMI); Latin America Shipowners' Association (ALAMAR); International Maritime Committee (IMC/CMI); Permanent International Association on Navigation Congresses (PIANC); International Seamen's Union (ISU). To these, one should add important actors such as classification societies (e.g., American Bureau of Shipping; Det Norske Veritas; Nippon Kajikkyokai), insurers (e.g., Lloyd's) and national organizations (e.g., General Council of British Shipping).

6. Other intergovernmental organizations have expressed interest, albeit an indirect one, such as the World Health Organization (WHO), Food and Agricultural Organization (FAO); United Nations Educational Scientific and Cultural Organization (UNESCO), and World Meteorological Organization (WMO).

7. For instance, certain industries (e.g., salvage) and other marine users could be involved directly.

to the marine environment was land-based. The Stockholm Conference on the Human Environment in 1971 did redress the balance in favour of the generic concern but subsequent events during the Third United Nations Conference on the Law of the Sea (UNCLOS III) again highlighted the specific concern over the "key issue" of vessel-source pollution particularly after the Amoco Cadiz catastrophe. What eventually emerged from UNCLOS III in relation to vessel-source pollution was a fairly detailed arrangement which was negotiated with oil pollution in mind, but which will apply to other kinds of vessel-source pollution.

Territorial and functional coastal state expansionism seawards has also influenced communal decision-making on this problem. Communal responses have had to deal with the coastal-state appropriation of maritime areas for resource, marine environment and security purposes. By 1960 it was clear that a trend for a 12-nautical-mile territorial sea in lieu of the traditional three-nautical-mile limit was in motion. Except for the community right of innocent passage, the coastal state was exercising sovereignty over straits that were previously subject to the freedoms of the high seas. The erosion of the freedoms of the high seas was further accentuated with the emergence of the concept of the 200-nautical-mile

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11. In his report to the Plenary during the Seventh Session of UNCLOS III in 1978 the Third Committee chairman stated:

On Part XII the negotiations were concentrated on key issues relating to vessel-source pollution. We had to take into consideration some new developments in the field of marine pollution control and the Amoco Cadiz disaster, which has increased the awareness and concern of the magnitude of possible hazards and the need to improve preventive measures by strengthening both the standard setting procedure and the enforcement measures.

During the deliberations there was an earnest effort to keep a viable balance between the ecological considerations and the legitimate demands of expanding international navigation, between national legislation and enforcement measures on the one hand and the international rules, standards and regulations on the other, between coastal and flag-state jurisdiction, between the interests of developed maritime powers and developing countries.

exclusive economic zone (EEZ) in the early 1970s, although the regime of this zone is functional in nature. Without prejudice to the freedom of navigation, the coastal state in its EEZ has jurisdiction for the protection and preservation of the marine environment. UNCLOS III law-making negotiations were continuously faced with the need to ensure a balance between coastal state rights and the community freedom of navigation.\footnote{At the outset of UNCLOS III, delegates realized the need to reconcile national rights with community rights, pollution control with international navigation. See the opening statements in the Third Committee during the Second Session of UNCLOS III in 1974. Third United Nations Conference on the Law of the Sea, Official Records, Volume 2: Summary Records of Meetings — Second Session: Caracas, 20 June - 29 August 1974 (United Nations: New York, 1975) at 307-335.}

The demand by developing countries for a new international economic order has also had its influence on shipping particularly in the arena of the United Nations Conference on Trade and Development (UNCTAD). Insofar as vessel-source pollution is concerned, communal law-making during UNCLOS III has had to take into consideration the situation of developing countries wanting to develop national ocean-going fleets. These developing countries were concerned that rigid rules governing vessel-source pollution might discourage the development of their shipping industries.\footnote{See for instance the statements made during the 6th meeting of the Third Committee of UNCLOS III during the Second Session, by Chile, Brazil, Barbados and India. Official Records, id., at 330-334. The Chilean delegate was concerned that indiscriminate application of general rules “without taking account of the level of development of individual countries, might hinder their progress.” “Any standards adopted, particularly those relating to ship design, should take account of the capabilities of the developing countries, which should not be required to meet the same standards as did the developed countries — which, in the final analysis, had caused the existing pollution.” Id., at 330-331. In the same vein, “Barbados, as a developing country, could not be party to standards so high that they impeded its industrial development or that of other States of the Third World.” Id., at 332. The implementation of MARPOL 73/78 means premature scrapping of many tankers and an eventual rise in cost for new ships and freight rates. It was reported in 1982 that “many developing countries would rather direct any additional expenditures towards improvement of port facilities and crew training standards.” Hazardous Cargo Bulletin 9 (March 1982).} It was felt that some of these countries’ fleets were composed of sub-standard vessels formerly belonging to developed states and which now would be subjected to higher national and international standards established by these states.\footnote{This was the South Korean delegation in 1976. Ironically, a decade since, South Korea is today a global pace-setter in shipbuilding. Third United Nations Conference on the Law of the Sea, Official Records, Volume 6: Summary Records of Meetings and Documents — Fifth Session: New York, 2 August - 17 September 1976. (United Nations: New York, 1976), at 109.}
Indeed, many developing countries also experience legislative drafting difficulties in carrying out their responsibilities of implementation of international regulations.¹⁵

III. Communal Responses

There are two extreme decision-making responses to the solution or management of a problem. The first is holistic, in the sense that a problem is looked at as a whole, with all its parts. In the German sense of *Problematische*, the multiple issues composing a problem are dealt with in their complex interrelationship and in context. The second approach may be said to be reductionist, in the sense that a problem is dissected according to its component issues. The issue-oriented perspective enables the problem-solver or manager to reduce an issue to its most basic elements. Although both the holistic and reductionist extremes may be functionalist in approach, both invite dangers. Because of its dimensions, the holistic approach may easily become unwieldy since there may be no limit to the number of issues and their complex interrelationships in a given problem. On the other hand, the reductionist approach may become so narrow that the real nature of the problem and its context can easily be lost sight of.

There are also alternative levels of problem management which may involve different actors. On a private level, a problem relating to a particular industry may be left to that industry and related organized interests to manage. However, as soon as other interests in addition to industry interests are affected by the problem, the public level, governmental and intergovernmental, becomes involved.¹⁶ A governmental response to a problem may be unilateral. When the problem in question concerns other interests in addition to those of the responding state, unilateral action may have the effect of aggravating the difficulties of the problem. In these instances, a communal response, which may be

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¹⁵. From an economic and commercial perspective, UNCTAD has provided a consultancy service to developing countries in maritime legislation, particularly in liner conference regulation, carriage of goods, marine insurance, multimodal transport, general average and maritime fraud. For a penetrating survey of UNCTAD's work see M.J. Shah, "Model Maritime Legislation for Developing Countries: The UNCTAD Experience", (1983), 4 Ocean Yearbook 140-149. IMO's technical assistance to developing countries is coordinated by the Technical Cooperation Committee. IMO has also developed an interest in training. See "IMO and the training of maritime personnel," (4) *IMO News* 12-13 (1985).

regional or global depending on the extent of the problem, may have the best possible chances for effective problem management.

The types of decision-making responses to a particular problem are also varied in that they include policy, law institutions and regimes. The policy response consists of either a spontaneous or planned decision on a course of conduct which aims at facilitating an actor's management or resolution of a problem. The legal response is prescriptive in that rules are enacted and enforced by an authoritative decision-maker to manage or resolve present or future problems. Sometimes isolated policy and law responses prove to be inadequate in situations where a problem is ongoing and requires a complex management structure which may include a delegation of authority. In these instances, an organization or arrangement is set up as an institutional response. It is possible, of course, to conceive of a decision-making response in terms of any combination of the above responses. Occasionally, a problem entails such a high degree of interdependence between concerned actors due to its complexity and permanent nature, that a regime is required for its management. Regimes have been defined as “principles, norms, rules, and decision-making procedures around which actor expectations converge in a given issue-area.” Whether a given regime is spontaneous, negotiated or imposed, its raison d'être is a problem or sets of problems that require a combined prescriptive and institutional approach as a management response.

IV. The Law of the Sea Convention Framework

To the layman, the law of the sea is synonymous with the United Nations Convention on the Law of the Sea (LOS Convention), opened for

18. Oran Young sees regimes, or social institutions, as spontaneous, negotiated or imposed orders. Spontaneous orders “are distinguished by the fact that they do not involve conscious coordination among participants, do not require explicit consent on the part of subjects or prospective subjects, and are highly resistant to efforts at social engineering.” Negotiated orders “are characterized by conscious efforts to agree on their major provisions, explicit consent on the part of individual participants, and formal expression of the results.” Imposed orders “differ from spontaneous orders in the sense that they are fostered deliberately by dominant powers on consortia of dominant actors.” O. Young, “Regime Dynamics: The Rise and Fall of International Regimes” (1982), 36(2) International Organization 277-297. See also, by the same author, Resource Regimes, Natural Resources and Social Institutions (University of California Press: Berkeley, 1982).
signature at Montego Bay in 1982.\textsuperscript{19} In reality, the law of the sea (or public international maritime law), consists of considerable customary and extensive conventional law, and the largest treaty of them all is only \textit{in part} a framework. There are more than 40 global law of the sea treaties in the law of peace.\textsuperscript{20} To these must be added the law of war conventions on maritime neutrality and warfare. Further, in addition to the global conventions, there is now a large number of regional multilateral agreements on the law of the sea. The Mediterranean Sea alone is subject to five additional regional instruments.

Most law of the sea treaties precede the LOS Convention, which is only in part a consolidation of the law of the sea.\textsuperscript{21} Consequently, it should not be surprising that the LOS Convention deals with the marine transportation of hazardous and dangerous goods mostly by implication and in the context of the protection and preservation of the marine environment. What the LOS Convention directly deals with is the traditional freedom of navigation through zones of national jurisdiction and on the high seas.

To trace and understand the emerging regime of the marine transportation of hazardous and dangerous goods one must look not only at other treaties and practices that preceded or have emerged concurrently with the LOS Convention, but also at other non-governmental processes and outcomes. In practice, the lawyer has been unable to deal effectively with the technical aspects of the subject so that international regulations and guidelines are often the work of people with backgrounds in chemistry, nautical engineering, ship surveying and ship management.

V. A\textit{The Emerging Regime}

1. \textit{Principles, Issues and Functions}

Since the 1960s the regime has seen its growth by way of incremental communal responses in terms of principles and norms, rules and procedures.\textsuperscript{22} The guiding principle or overall goal may be said to be the
The standard varies from one regime component to another but the common feature of all its applications is uniformity of acceptable safe practices without overdue restrictions.

It is suggested that in a post-UNCLOS III era, the regime is undergoing consolidation through national implementation of international rules and wider membership in its component instruments. There are principles and rules that are still in a state of flux, particularly in the context of liability and compensation, due to the negotiation processes inherent in the regime. Even once the main regime principles and norms, rules and procedures are generally accepted, the dynamic nature of this social institution will necessitate continuous adaptation to technological developments and new substances falling within its purview.

Several issues form the core of the regime. It has been seen that the inherent danger of the goods in question or, if not inherently dangerous, their hazardous character in certain situations, gives rise to safety considerations in relation to man, cargo and vessel. A vessel carrying dangerous or hazardous goods may pose a threat to the marine environment if dumping is practised, or if it is involved in an accident in which that cargo is spilled into the sea. Consequently, international standards are required for safety and pollution purposes. Such standards can be effective only with state participation, particularly through shared law-making and law-enforcement functions among flag, coastal and port states. In certain exceptional situations of maritime casualties, a coastal state exercising self-help may take extraordinary measures to deal with actual or threatening damage to its interests. The increased jurisdiction of a state over foreign flag vessels necessitates the minimization of impediments to international navigation. Further, special consideration is required by developing states for fleet development purposes and in environmental law-making and enforcement.

In its management of the problem, the regime performs several vital functions. First, it serves as a permanent clearing-house for information which is currently generated and distributed asymmetrically. This information may relate to several things, such as: data on the nature, properties and handling procedures of goods; data on the construction and equipment of vessels with reference to the goods that they will transport; information on measures to ensure human safety; information

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23. The information aspect of regimes is discussed by R.O. Keohane, “The Demand for International Regimes” (1982), 36(2) International Organization 325-355 at 343 et seq.
on the impact of noxious substances on the marine environment; the publication of national rules. Knowledge is the pivot point of the regime.24

Second, the regime serves to establish international standards for problem management at all stages of the process — cargo handling, vessel construction and operations, and personnel training — to ensure human, cargo and vessel safety, and the protection and preservation of the marine environment. By promoting international standards, the regime in theory obviates the need for unilateral national standard-setting. By observing international standards, states would promote uniformity of regulation so as to better protect the marine environment and related interests while at the same time facilitating international navigation and trade.

Third, in accordance with the cooperative ethic of the new law of the sea, the regime serves to facilitate cooperative interaction among actors at both the governmental and non-governmental levels. By providing institutions and procedures for communal decision-making, the regime encourages even the smallest of actors to participate in the process.

Fourth, although this is the least-developed function, the regime serves as a means through which injured parties may seek redress for damages sustained.

2. Norms

The closely interrelated regime norms reflect the multiple-issue character of the problem of hazardous and dangerous goods transported by sea. Principles and norms serve the function of giving the regime a sense of direction. It is suggested that the following norms possess sufficient generality so as to command general acceptance: 1) Human safety must be safeguarded;25 2) The coastal and marine environment must be

24. Ernst Haas defines knowledge as “the sum of technical information and of theories about that information which commands sufficient consensus at a given time among interested actors to serve as a guide to public policy designed to achieve some social goal.” E. Haas, “Why Collaborate? Issue — Linkage and International Regimes” (1980), 32 World Politics 357, at 367-368.


Human safety can hardly be restricted to seafarers’ safety. Principle 7 of the Stockholm Declaration on the Human Environment requires states “to take all possible steps to prevent
protected;\textsuperscript{26} 3) International navigation must not be impeded unnecessarily;\textsuperscript{27} 4) The polluter must pay;\textsuperscript{28} 5) The injured party must be compensated;\textsuperscript{29} 6) States must cooperate;\textsuperscript{30} 7) Developing countries must

pollution of the seas by substances that are liable to create hazards to \textit{(inter alia)} human health . . .

26. The Stockholm Declaration on the Human Environment consolidated the norm of environment protection and preservation by taking a broad view of the human environment. Specifically, Principle 7 requires states to protect living resources and marine life. LOS Convention Article 192 stipulates the general obligation of states to protect and preserve the marine environment. The environment protection ethic permeates all zones of national jurisdiction and the marine areas beyond. The protection and preservation of the marine environment as a concept and norm on a global scale is further supported by the Geneva Convention on the High Seas 1958 and the nuclear and marine pollution conventions of the 1960s and 1970s. On a regional scale, the norm finds support in UNEP's Regional Seas Programme and other regional agreements for the protection of the marine environment in Europe and elsewhere.

27. Freedom of navigation is a long-established principle in international customary law. It is entrenched in conventional law in the 1958 Geneva Conventions on the Territorial Sea and Contiguous Zone, High Seas and Continental Shelf. For the texts of these conventions, see I. Brownlie, \textit{Basic Documents in International Law} 3rd (reprinted) edition (Clarendon: Oxford, 1985), at 87-107, 117-121. The LOS Convention also restates this fundamental principle of the law of the sea but subjects it to new conditions in the old, but extended, and new zones of national jurisdiction.

28. That the polluter pays does not simply mean that the polluter is punished through a fine or some other penalty; it also means that he pays for the damage which his polluting activities cause to others. See The International Convention for the Prevention of Pollution of the Sea by Oil 1954 (OILPOL 1954), (reproduced in Singh, \textit{supra}, note 2, Volume 3, at 2242-2254), MARPOL 1973/78 and the LOS Convention. That the polluter pays, but specifically for oil pollution damage arises from the International Convention on Civil Liability for Oil Pollution Damage 1969. Article 3 provides that "the owner of a ship at the time of an incident, or where the incident consists of a series of occurrences at the time of the first such occurrence, shall be liable for any pollution damage caused by oil which has escaped or been discharged from the ship as a result of the incident." Singh, \textit{supra}, note 2, Volume 3, at 2469. The shipowner is provided with several defences and his liability is limited (Article 5). The shipowner's liability is also limited in the private maritime law convention, Convention on Limitation of Liability for Maritime Claims 1976 (Singh, \textit{id.}, Volume 4, at 2978-2988). The Draft Convention on Liability and Compensation in Conjunction with the Carriage of Noxious and Hazardous Substances by Sea (HNS) draft convention aims at expanding liability from oil pollution to hazardous and noxious substances damage. Problems persist on the nature and extent of liability sharing between shipowner and cargo interests.

State responsibility entails that a state is responsible for damage inflicted on other states from activities within its jurisdiction and control. This concept is entrenched in the LOS Convention Article 235. The recent pollution of the Rhine caused by an accident at a Swiss chemical plant in Switzerland shows the vitality of the norm that the polluter pays. Switzerland quickly accepted the norm as the basis for the settlement of claims for damages in connection with the pollution incident.

29. This norm partly follows from the previous one. Liability 1969 provides for claims for compensation. This convention is supplemented by the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1971 (FUND 1971). Compensation and indemnification is governed by Article 4. Singh, \textit{supra}, note 2, Volume 3, at 2502-2503. Industry's schemes, TOVALOP and CRISTAL, also related to oil pollution damage, further support the norm that the injured party must be compensated. The LOS Convention articulates this norm in Article 235.

30. Principle 24 of the Stockholm Declaration on the Human Environment states:
be assisted; the international community and interested parties must be informed. Regime rules may be seen as reflecting these norms and in turn translate them into specific rights, obligations, duties, responsibilities, standards and practices.

3. Rules

Regime rules do not have their source in one mega-instrument despite their setting of international standards. Indeed, the rules of this regime are often issue-oriented and have emerged from issue-related practices and communal law-making as in the case of pollution prevention. Further, it is also the case that much regulation has emerged in response to specific perceived threats. Communal law-making has often been seized of the dangerous goods problem only as part of other problems and issues.

International matters concerning the protection and improvement of the environment should be handled in a co-operative spirit by all countries, big or small, on an equal footing. Co-operation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States.

This important policy statement reflects conventional rules preceding the Declaration and more importantly, it is reflected as a norm in subsequent conventions. In particular, the LOS Convention is imbued with the norm of cooperative interaction. In Part XII on the Protection and Preservation of the Marine Environment, Article 197 articulates the norm as follows:

States shall co-operate on a global basis and, as appropriate, on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.

31. That developing countries should be assisted by the more developed states in their development is a fundamental principle of the concept of the NIEO. In the protection and preservation of the marine environment, LOS Convention Part XII Section 3 is devoted to scientific and technical assistance to, and preferential treatment for, developing countries. See Articles 202-203.

32. This means that states, whether directly or through international organizations, are required to provide certain kinds of information either in general or in specific situations. For instance, the following conventions require states to publicize the relevant national laws and regulations: SOLAS 1974, Article 3; MARPOL 73/78, Article 2. Examples of specific situations requiring the release of information include the following: notification by a state of imminent or actual damage likely to affect other states, in LOS Convention, Article 1989; report by a port state that a vessel in its port does not conform to the standards of Merchant Shipping 1976 to the flag state and ILO, in Merchant Shipping 1976, Article 4. Recently, IMO's Marine Environment Protection Committee adopted a comprehensive incident reporting system relating to harmful substances carried in bulk or packaged form. See "Pollution Reporting," Hazardous Cargo Bulletin 7-9 (April 1986).

33. For instance, the following IMO codes relate to specific issues: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code); International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

34. This may be due to the fact that hazardous and dangerous goods have implications on
Rules may be said to have their source in hard law and soft law, and also in industry practices. It may be said that most hard law, which emerged in the decade following *Torrey Canyon*, is aimed at vessel source pollution and its impact on the marine environment, followed by human safety. Hard law is not necessarily an isolated level of regime rules. Indeed, hard law and soft law may interrelate closely in the formation of regime rules.

Not all regime rules have their source in treaty-making with the consequent rigor attached to law. Many regime rules are in the form of guidelines from governmental and non-governmental bodies. Although regime rules may be set in international instruments or guidelines, they normally require municipal implementation to render them effective, which in turn implies national legislation. It will be seen below that industry too is an active contributor to the formation of regime rules.

Although not necessarily having the same standing as codes and guidelines in state practice, there are a large number of resolutions emanating from intergovernmental organizations which either recommend practices or suggest interpretations of conventional provisions. Contributed primarily by IMO, IAEA and ILO, these...
resolutions have the function of facilitating the uniform implementation of hard law.\footnote{40}

4. Decision-Makers and Procedures

Decision-making functions are shared by a multiplicity of actors at both the prescriptive and enforcement levels, globally and regionally. The prescriptive level concerns both the establishment of principles and norms on the one hand, and rules on the other, and involves different actors to different extents. The multilateral diplomatic arena has proven to be central to the creation of principles and norms in an era of communal law-making. Ensuring the participation of a broad range of disparate actors, the multilateral diplomatic conference encourages nations to place their faith in a system notionally based on the equality of states, in which even the smallest of nations can have an input. The outcome of these conferences is not always a legal instrument, but may consist of important policy statements which may reflect the \textit{animus communitatis}. Whereas the outcome of UNCLOS III was a convention of global purport, the Stockholm Conference on the Human Environment produced a far-reaching communal policy statement that influenced subsequent global and regional law-making conferences.

Intergovernmental organizations, have proven to be principal actors at the centre of the regime of hazardous and dangerous goods by being facilitators of numerous legal instruments and policy statements.\footnote{41} As the leading multilateral diplomatic arena of this regime, IMO is directly involved in the formation of most of the hard and soft law.\footnote{42} By distributing its work between the Maritime Safety Committee, the Marine Environment Protection Committee, the Technical Cooperation

\footnote{40} This may not always be the case. It has been stated that IMO's Maritime Safety Committee's recommendations “often provided little incentive for their transposition into a regulatory system for all but the more advanced maritime states.” Gold, supra, note 1, at 186.\footnote{41} Intergovernmental organizations do not only convene intergovernmental conferences that produce conventions and resolutions, but also serve as a forum for communication, cooperation and information dissemination. GESAMP continues to be involved in assessing the pollution hazards of new substances. Another body that should be mentioned is the Economic and Social Council's (ECOSOC) UN Committee of Experts on the Transport of Dangerous Goods, which is responsible for the Orange Book consisting of minimum requirements for the transportation of dangerous goods by all modes first set out in 1956.\footnote{42} Article 1(a) of IMO's constitution establishes the following purpose:

\textit{To provide machinery for co-operation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and the prevention and control of marine pollution from ships; and to deal with legal matters related to the purposes set out in this Article.}

Committee and the Legal Committee, IMO's work is nothing short of prolific.\textsuperscript{43}

IMO has also collaborated with UNEP in the latter's Regional Seas Programme.\textsuperscript{44} A relatively new intergovernmental organization, UNEP is responsible for many regional initiatives that include the formation of rules and procedures for the curbing of dumping and vessel-source pollution.\textsuperscript{45}

Insofar as vessels carrying nuclear wastes are concerned, the IAEA on its own and in collaboration with IMO has played an important role in establishing safety standards for vessels carrying such materials.\textsuperscript{46} The health and welfare of seamen in relation to hazardous and dangerous goods has also been promoted by the ILO.\textsuperscript{47}

A number of non-governmental international organizations that represent or reflect specific industry interests make regular inputs into the regime by suggesting guidelines or providing for an exchange of information. Further, for a comprehensive picture of industry's input into the regime, national classification societies and certain national shipping organizations should also be considered.

Whatever input multilateral diplomatic arenas, international or national organizations and industry may have in a given regime, ultimate authority lies with the government of the state. Government is endowed with sovereign law-making powers not only over its terrestrial and maritime jurisdictions, but beyond these also over aircraft and vessels flying its flag. Government may grant or withhold its consent to an international instrument. If it consents to a treaty, that treaty is not


\textsuperscript{44} In the Mediterranean region, IMO has established the Regional Oil Combating Centre in Malta with UNEP collaboration in 1976. The centre is administered by IMO. It is now proposed that the Centre's mandate be extended to include other harmful substances.

\textsuperscript{45} \textit{See: Achievements and Planned Development of UNEP's Regional Seas Programme and comparable programmes sponsored by other bodies. UNEP Regional Seas Reports and Studies No. 1} (UNEP, 1982).

\textsuperscript{46} The International Legal Conference on Maritime Carriage of Nuclear Substances of 1971, resulting in the Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material 1971, was convened by IMO (then IMCO), IAEA and the European Nuclear Energy Agency of the Organization for Economic Cooperation and Development (OECD).

\textsuperscript{47} The ILO's conventions and related resolutions are reproduced in Singh, supra, note 2.
national law until it is 'implemented.' Government is thus a crucial intermediary between communal law-making and the problem of hazardous and dangerous goods. Consequently, treaties invariably require states to take measures or legislate on specific issues.48

Unlike the prescriptive level, decision-making at the enforcement level is the realm of industry and states. The importance of industry in this function should not be underestimated. It is industry (shipper, shipowner, shipbuilder, insurer) that renders international regulation effective or otherwise.49 Until the Torrey Canyon incident, the marine transportation of oil was very much industry-regulated in the absence of international regulations. The IMDG Code is originally a compilation of industry practices and its continued updating requires industry cooperation. Very often industry responds directly by adapting its practices to international instruments and guidelines, thus preceding national legislative and enforcement measures.50

Consistently with its power of legislative initiative arising from its sovereignty, the state (especially the coastal state) is the ultimate enforcer of most regime rules. Actual enforcement power is not symmetrical. Economic, technological and manpower abilities are possessed by relatively few states.

In the environmental dimension of the regime, the international community has placed its faith in a triad of flag, coastal and port states for the enforcement of rules relating to vessel-source pollution instead of the traditional flag state quasi-monopoly. The problems associated with this concept of shared enforcement will be discussed below.

VI. State Functions: Environmental Aspects

"States have the obligation to protect and preserve the marine

48. This requirement may be explicit or implicit. State parties may be implicitly required to take measures or enact laws and regulations pursuant to a treaty as part of the process of implementation of that instrument. State parties may be also explicitly required to take measures or enact laws and regulations in treaty provisions. For instance, LOS Convention Article 210 requires states to adopt laws and regulations to control dumping. Merchant Shipping 1976 Article 2 requires states not only to enact laws and regulations on safety standards and social security for seamen, but also to "exercise effective jurisdiction or control" for these purposes over its flag vessels. In this convention, it seems that states are required to promote dialogue between shipowners' and seamen's organizations.
49. For instance, the implementation of MARPOL 73/78, Annex II requires industry cooperation. See "Annex II on the horizon," Hazardous Cargo Bulletin 17-19 (June 1986). The ICS/ISF Code of Good Management Practice in Safe Ship Operation is an industry initiative to provide a management framework for ships taking into account international regulations. See Joyce, supra, note 38.
50. "It is recognized by the industry that unless it can demonstrate its willingness to fulfill its responsibilities, then the pressure for more and more regulations will continue to increase." Id., at 12.
environment." So stipulates the regime's environmental norm in Article 192, one of the shortest provisions of the LOS Convention. States are required to take individual and joint measures, and to harmonize their policies in minimizing the release of toxic, harmful and noxious substances into the marine environment. Measures include "pollution from vessels, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, preventing intentional and unintentional discharges, and regulating the design, construction, equipment, operation and manning of vessels" (Article 194). These general obligations are further reinforced by OILPOL 1954, DUMPING 1972 and MARPOL 1973/78.

Whether in their prescriptive or enforcement dimension, the state's functions are subjected to a cooperative ethic vis-à-vis competent international organizations and other states that are directly affected.

1. Law-Making

To that obligation one may add that states also have a right to protect and preserve the marine environment off their coasts and in their maritime zones. In order to perform their right and fulfill their obligation, the scope of the states' legislative and enforcement functions have been considerably broadened in the LOS Convention.

The legislative function of the coastal state has expanded to a great extent at the expense of the flag state. Until relatively recently, the flag state had, with a few exceptions, exclusive jurisdiction over vessels flying its flag. A series of events provided a formidable case for increased coastal state jurisdiction over foreign vessels. This increased jurisdiction purports to be not only reactive, i.e., as a reaction to a catastrophe, but also preventive so that vessels are affected in their normal operations.

Naturally, the flag state still has primary jurisdiction over its flag vessels but its duties in the Convention on the High Seas 1958 have been

51. See LOS Convention Articles 197, 199-202, 235-236.
52. The right of protection may be said to arise from the jurisdiction conferred on the coastal state in LOS Convention Article 56(b) (ii) in the EEZ and the conventional and customary norm of self-help, which appears also in Article 221 of the Convention.
53. Namely, the following: the ocean enclosure movement, particularly after the failure of the Second United Nations Conference on the Law of the Sea (UNCLOS II) in 1960; the growing public recognition since World War II of the fragility of the marine environment and certain coastal ecosystems; growing intentional oily discharges into the marine environment; large oil spills resulting from accidents taking place on the high seas but affecting coastal states since the late 1960s; the inability of open registry coastal states to exercise effective jurisdiction and control over their flag vessels.
54. In the LOS Convention vessels may be subjected to: "routeing systems" (Article 211(1)); supply information to a coastal state on their destination (Articles 211(2) and 220(3); inspection in port (Article 218(1)); detention and compulsory "repairs" (Article 219).
expanded considerably in the LOS Convention. In addition to enacting pollution laws and regulations for its vessels, it is required to take several measures (including those to secure the master’s and officers’ observance of international regulations on marine pollution) conforming to “generally accepted international regulations, procedures and practices and to take any steps which may be necessary to secure their observance”. Other states may still report to the flag state that it has not exercised proper ‘jurisdiction and control’ in regard to a ship. In these cases, the flag state is obliged to investigate the report and take any measures that are necessary.

The coastal state has a limited but significant jurisdiction over foreign vessels in its maritime zones. It has absolute sovereignty over internal waters but its jurisdiction over foreign vessels is not absolute. It has sovereignty (subject to the innocent passage of foreign vessels) in archipelagic waters and in the territorial sea. In international straits it also has sovereignty, subject to transit passage of foreign vessels. The legislative prerogative over innocent passage inter alia relates to “the safety of navigation and the regulation of maritime traffic” and “the preservation of the environment of the coastal state and the prevention, reduction and control of pollution thereof.” The coastal state’s prerogative is not unfettered:

Such laws and regulations shall not apply to the design, construction, manning or equipment of foreign ships unless they are giving effect to generally accepted international rules or standards. (Article 21)

Further, its legislation must not “impose requirements on foreign ships which have the practical effect of denying or impairing the right of innocent passage” (Articles 24 and 211). However, certain vessels may

55. Under the 1958 Geneva Convention, the flag state has generic environmental and safety responsibilities. Under Article 10, it is required to take measures according to international standards to ensure safety at sea inter alia with regard to manning and labour conditions, and the construction, equipment and seaworthiness of ships. Like all other states, it is also required to legislate against oil discharges from ships (Article 24) and to take measures against the dumping of radioactive wastes (Article 25). These obligations are not spelled out in any detail.

56. Article 94(4)(c) and (5), LOS Convention. Article 94 spells out specific obligations and responsibilities of the flag state. Article 211(2) re-states the generic obligation as follows:

States shall adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry.

Such laws and regulations shall at least have the same effect as that of generally accepted international rules and standards established through the competent international organization or general diplomatic conference.

57. This means that the primary jurisdiction of the flag state over its flag vessels has to be respected. The coastal state is required to publicize and communicate to the competent international organization any requirements (i.e., regulatory) to be met by vessels entering its ports or internal waters, for marine environment protection. Neighbouring coastal states may enter into cooperative arrangements for this purpose.
be required to navigate through specified sea-lanes established by the coastal state for the safety of navigation after taking into account IMO recommendations. The coastal state is also required to publicize its legislation, sea lanes and traffic separation schemes. Similar legislative rights accompany transit passage through straits.

Coastal state jurisdiction over the EEZ and continental shelf is merely functional but includes the protection and preservation of the marine environment. In the territorial sea and in these functional zones, the coastal state has authority to control dumping. In the EEZ it again has legislative powers over vessel-source pollution but is required to give effect to communal law-making responses. Even in the case of ecologically sensitive areas, the adoption of additional legislation by the coastal state is subject to consultations with other actors.

2. Law Enforcement

Like the law-making function, the law-enforcement function is not monopolized by one state. In the case of dumping, enforcement is the prerogative of the flag state, the coastal state in whose maritime zone dumping occurs, and the state where the loading of wastes takes place. As regards vessel-source pollution, the flag and coastal states share enforcement with the state in whose port a rogue ship takes refuge. However, primary enforcement responsibility lies with the flag state.

The flag state is under an obligation to ensure that its vessels comply with international rules and standards and to provide for their effective enforcement wherever violations by flag vessels occur. Being both preventive and reactive, the flag state's legislation must prescribe sanctions which are severe enough to discourage deviancy.

Since its jurisdiction is engaged solely by reason of the voluntary presence of the delinquent ship in its port, the port state's enforcement prerogative is primarily investigative and secondarily adjudicative. In

58. LOS Convention Article 22(2) stipulates:
In particular, tankers, nuclear-powered ships and ships carrying nuclear and other inherently dangerous or noxious substances or materials may be required to confine their passage to such sea lanes.

59. Port-state control is not merely environmental in nature but is also related to human and navigation safety. Port-state control actually performs the function of weeding sub-standard ships. The European Memorandum on Port State Jurisdiction performs this function. Port state control is also the subject of IMO resolutions, such as Resolution A. 325 (IX) adopted on 12 November 1975, entitled Recommendation Concerning Regulations for Machinery and Electrical Installations in Passenger and Cargo Ships, published in Singh, supra, note 2, Volume 2, at 1257-1263.

60. LOS Convention Article 218(1). According to Article 219, a vessel determined by the port state to be unseaworthy according to international rules and standards (thus posing a threat to the marine environment) may be prevented from sailing by administrative measures. Its movement is restricted to the nearest repair yard, and upon completion of the necessary repairs is permitted to sail.
addition to taking its own initiative in investigations of violation discharges, the port state's prerogative of investigation may also be engaged by the flag state, the coastal state in whose maritime zones (internal waters, territorial sea and EEZ) the discharge violation occurs, or any other state whose maritime zones have suffered the consequences or are threatened by a discharge violation. The port state may institute proceedings following the investigation but the coastal state in whose maritime zones the violation occurred may request their suspension. If this happens, the case's evidence, records and posted bond are transmitted to the requesting state. At this point, the LOS Convention is silent on the question of whether the accused (vessel or master) remains in the port state. It is open to conjecture as to how monetary penalties or other sanctions "in the case of a wilful and serious act of pollution in the territorial sea" are to be enforced.  

61. Although the LOS Convention specifically refers to monetary penalties, Article 230(2) further suggests, by implication, imprisonment as sanction in the case of wilful and serious pollution of the territorial sea. This suggests that law-making and enforcement in relation to pollution may also be penal in nature. "Wilful and serious act" suggests the need to prove a mens rea in addition to the establishment of the actus reus. The subject in question could well be the master since the vessel, a legal persona, has no mens.

62. Extradition proceedings are engaged in criminal offences. Consequently, the first question that needs to be addressed is: Are pollution offences criminal offences under the law of the jurisdictions concerned (port state and coastal state)? Second, if the answer to the first question is positive, is the offence in question a criminal offence in both jurisdictions (i.e., double criminality)? If the answer is positive, third, is there an extradition agreement between the two jurisdictions specifying that offence as an extraditable offence? If the answer is positive, then extradition proceedings may be commenced. In the absence of an agreement, there is no duty to extradite. Consequently, the requesting flag or coastal state have, at the most, a right to a transfer of proceedings from the port state to their jurisdiction. The flag or coastal state may then proceed on a trial in absentia. However, despite the transfer of the posted bond, the port state's assistance may still be required for the enforcement of sanction (as an outcome of flag or coastal state proceedings) if the delinquent vessel is still in detention in its port. The problem that is engaged here is that of the port state becoming the port of enforcement of foreign judgments. 

The coastal state is also restricted in the enforcement of rules relating to discharge violations in its maritime zones by reason of the requirement that the rogue vessel voluntarily be in one of its ports. Whether it decides to undertake physical inspection of, institute proceedings against, or detain the rogue vessel, the coastal state’s enforcement measures seem to depend on the good will of that vessel.\textsuperscript{63} Conceivably, it may be argued that a rogue vessel has no port of haven and that it would still be subject to port state jurisdiction. This is the scenario of the perfect world in which all coastal states have either ratified and implemented the LOS Convention or are subject to regional conventions having the same ends. Further, subject to certain exceptions, the flag state may still pre-empt the coastal state’s jurisdiction over rogue vessels.\textsuperscript{64}

There are exceptional situations where the coastal state is not constrained by the regime’s procedures in the exercise of self-help, such as in the case of maritime casualties taking place beyond the territorial sea but adversely affecting the interests of that state.\textsuperscript{65} Emerging in the Intervention 1969\textsuperscript{66} convention in the wake of the \textit{Torrey Canyon}

\textsuperscript{63} In a world where a preponderant number of coastal states are party to and implement the LOS Convention, the master of a rogue vessel might realize that there is no port of refuge and thus voluntarily turn his vessel in. In the summer of 1986, Canada had an instructive lesson on the master’s goodwill in a fisheries saga when its Coast Guard hot-pursued two Spanish trawlers half-way across the Atlantic. The two trawlers had been detected fishing illegally in the eastern coast’s EEZ and had been requested to turn themselves in when the masters of both vessels decided to make a run. The masters gave up the run some 350 miles off the Azores after the Canadian Coast Guard boarded one of the trawlers in motion.

\textsuperscript{64} LOS Convention Article 228(1): this pre-emption right persists unless coastal state proceedings relate to a case of major damage to the coastal state or the flag state in question has repeatedly disregarded its obligation to enforce effectively the applicable international rules and standards in respect of violations committed by its vessels.

\textsuperscript{65} LOS Convention Article 221:

1. Nothing in this provision shall prejudice the right of states, pursuant to international law, both customary and conventional, to take and enforce measures beyond the territorial sea proportionate to the actual or threatened damage to protect their coastline or related interests, including fishing, from pollution or threat of pollution following upon a maritime casualty or acts relating to such a casualty, which may reasonably be expected to result in major harmful consequences.

2. For the purposes of this article, “maritime casualty” means a collision of vessels, stranding or other incident of navigation, or other occurrence on board a vessel or external to it resulting in material damage or imminent threat of material damage to a vessel or cargo.

\textsuperscript{66} Intervention 1969, Article 1(1) states:

Parties to the present Convention may take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences.

“Related interests” are defined as coastal state interests affected, such as:

(a) maritime coastal, port or estuarine activities, including fisheries activities, constituting an essential means of livelihood of the persons concerned;
disaster, the self-help concept embodied there was extended in the Intervention Protocol 1973 to include substances other than oil.\textsuperscript{67} The LOS Convention intervention provision is wide enough to include any substance. The only constraint on the coastal state in the exercise of this exceptional power is that its action must be proportionate to the actual or threatened damage.\textsuperscript{68}

3. \textit{Assessment}

It thus appears that although the national legislative and enforcement arm in relation to environment protection from vessel-source pollution has been lengthened and strengthened, the scope of unilateral action independent of regime rules has been contained. The pervasiveness of the cooperative ethic in the LOS Convention suggests a preference for broad communal responses in problem management even though initiatives may be taken by individual actors.\textsuperscript{69} The responsible national initiative becomes coordinated rather than arbitrary. This is not to say that national arbitrariness has been eliminated altogether. It follows, however, that unilateralism finds little place at the expense of the community interests of responsible international navigation and a healthy marine environment.

VII. \textit{Conclusions: Challenges Facing the Emerging Regime}

The workability of the emerging regime is dependent on several factors,
particularly extensive participation of the many actors involved and its ability to change and adapt to changes in its operational environment.

It has been reported that over 40 states have now adopted the IMDG Code. Although this figure constitutes one fourth of the international community and one third of all coastal states, it is encouraging because it includes the leading maritime powers. Similarly, the large membership of IMO, which includes three quarters of the international community, ensures broad representation in communal law-making. Beyond participation lies of course the question of effectiveness of regime rules.

Support for hard law is dependent to some extent on the process which makes its rules operative. Since many regime rules are treaty-based, they are subject to treaty-law restrictions such as the principle of consent and related rules. A treaty does not bind a state without the latter's consent, which is usually expressed through ratification or accession. If a state consents but makes a reservation, then part of the treaty is inoperative vis-à-vis that state. If it merely attaches a declaration, then it places its own interpretation on a provision. The principle of consent and the right to make reservations and declarations also apply to protocols and amendments. Even when a state consents and becomes a party to a treaty, through denunciation it may withdraw from that treaty. Some

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70. According to a recent IMO review of the status of implementation, inter alia, of its codes, the following was reported on the IMDG code: full adoption — 37 states; full or partial adoption being considered — 8 states. Hazardous Cargo Bulletin 8 (February 1986).

71. By fall 1986, IMO's state membership was at 129.


73. A state's consent to be bound by a treaty may be expressed in several ways. See Articles 11-17 of the Vienna Convention on the Law of Treaties 1963, which entered into force on 27 January 1980, in Brownlie, supra, note 27, at 354-357. See also Article 18 which obliges a state not to defeat the object and purpose of a treaty prior to its entry into force if it consented to it.

74. This right of reservation has been used often in the law of the sea treaties. For the texts of reservations to the law-of-the-sea treaties, see de Cesari, supra, note 20. In some instances reservations may not be permitted, as in the case of the LOS Convention Article 309.

75. LOS Convention Article 310 allows states to make declarations and statements on signature, ratification or accession “however phrased or named, with a view, inter alia, to the harmonization of its laws and regulations” with the convention so long as they do not “purport to exclude or to modify the legal effect” of the convention vis-à-vis that state. The distinction between declaration and reservation may not always be agreed upon. The declarations on signature and ratification of the LOS Convention by the Phillipines (reproduced in (1) Law of the Sea Bulletin 14-16 (September 1983) and (4) Law of the Sea Bulletin 20-21 (February 1985)) were regarded as reservations and objected to by the Byelorussian Soviet Socialist Republic, Czechoslovakia, Ukrainian Soviet Socialist Republic and the Union of Soviet Socialist Republics ((6) Law of the Sea Bulletin 9-15 (October 1985)), and Bulgaria ((7) Law of the Sea Bulletin 7-8 (April 1986)).

76. Where allowed, usually a treaty provides a time limit within which a party may denounce it. See also Article 56, Vienna Convention on the Law of Treaties.
treaties provide options such as those allowing a ratifying state to exclude part of the treaty or choose between alternative rules, with the consequence that subscription to regime rules is not always wide.\textsuperscript{77}

On the other hand, non-treaty regime rules are not subject to law of treaty processes with the consequence that between their adoption in an arena such as IMO and their national implementatiation, only municipal adoption processes are involved.\textsuperscript{78} Without being tied to the rigours of treaty law, many governments have placed their faith in IMO's technical committees and the guidelines and codes that they produce and update. This confidence expressed by actors in soft law-making processes may well be considered the strength of the emerging regime.\textsuperscript{79}

Less encouraging are attempts at hard law-making in accordance with a specific norm. In pursuit of the concept of responsibility and liability and eventual compensation in connection with the maritime carriage of hazardous and noxious substances, IMO's HNS draft convention is temporarily shelved.\textsuperscript{80} Difficulties have arisen with the adoption of rules consonant with the norm, particularly with the scope of the rules, the relationship between established rules and suggested new rules, and the liability of actors. The ability of a regime to work effectively is dependent on the response of rule-and procedure-making to norm emergence. Regimes are dynamic social institutions with an osmotic relationship to their environment. Accordingly, even established rules and procedures have to respond to changes in the regime's environment.\textsuperscript{81}

\textsuperscript{77} See, eg., MARPOL 1973/78, Article 14, which allows states not to accept any or all of Annexes III, IV and V of the convention. The following countries have expressed this right: Bahamas (III, IV and V); China (III, IV and V); 1338 Israel (III, IV and V); Liberia (III, IV and V); Netherlands (III, IV and V); Norway (IV); USSR (III, IV and V); United Kingdom (III, IV and V); United States (III, IV and V). See de Cesari, supra, note 20, at 297-298.

\textsuperscript{78} Some IMO codes are either applied through national regulations or on a voluntary basis. Some states do not go so far as to apply the codes but require certain ships to possess a certificate consonant with the codes. The following codes' record is as follows: Bulk Chemicals Code (26 states), Gas Carrier Code (20 states), Existing Ships Gas Carrier Code (15 states).

\textsuperscript{79} Soft law in terms of codes, guidelines and technical resolutions is recommendatory and not mandatory. Soft law-making does not require the formal organization of diplomatic conferences and the conclusion of formal legal instruments. Further, soft law is made and unmade much faster than hard law thus giving it versatility and adaptability. Soft law-making involves technical elites more easily than hard law-making, which is normally the realm of the diplomatic elites.

\textsuperscript{80} IMO's Legal Committee decided at its 56th Session in April 1987 to postpone deliberations on the HNS draft convention to its 58th Session in 1987. See "Backburner for HNS," Hazardous Cargo Bulletin 9 (May 1986).

\textsuperscript{81} With the entry into force of MARPOL 1973/78 in 1983, OILPOL 1954 was superseded by the former vis-à-vis contracting parties. Similarly, SOLAS 1974 superseded SOLAS 1960. The LOS Convention, which is not yet in force, will supersede the 1958 Geneva Conventions.
Liability 1969, Intervention 1969, Dumping 1972, MARPOL 1973/78 and SOLAS 1974 have had subsequent protocols or amendments. The IMDG Code and other guidelines are also dynamic rules that are kept up to date with technological and safety developments by designated bodies.

To be truly effective regime responses need to reach beyond mere participation by the actors involved. Participants are required to implement and enforce the regime. For instance, the adoption of vessel and equipment construction and manning standards have enforcement implications for all actors. However, regime implementation and enforcement is easier said than done, for, as noted earlier, the asymmetrical distribution of technical capabilities among actors may give rise to limited or partial responses. It may thus be concluded that since participation needs to be not only extensive but also intensive for regime effectiveness, the development of the capabilities of the less able actors should be given priority.

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83. In force in 1975, Liability 1969 has had two protocols in 1976 and 1984. Whereas the former entered into force in 1981, the latter protocol is not yet in force.

84. In force in 1975, Intervention 1969 has had one protocol in 1973, which entered into force in 1983.

85. In force in 1978, FUND 1971 has had two protocols in 1976 and 1984, neither of which is yet in force.

86. In force in 1975, Dumping 1972 has had amendments in 1978 (to the convention text and annexes) and 1980. With the exception of the 1978 amendments to the convention text, the two sets of amendments entered into force in 1979 and 1981, respectively.


89. The IMDG Code is kept up to date by the Sub-Committee on Dangerous Goods. A series of amendments which affect, inter alia, stowage and segregation requirements, are expected to be finalized in April 1987. Further, through agreement between IMO’s Maritime Safety Committee and Maritime Environment Protection Committee, the IMDG Code’s safety character will be re-oriented so as to include pollution aspects. Eventual amendments, which will include the implementation of MARPOL 1973/78 Annex III, are expected to be presented by the Sub-Committee to the two Committees in 1987/88 ((3) IMO News 12 (1986)). Implementation of the IMDG Code is not without problems of a linguistic, technological and multimodal nature. See “Targetting implementation,” Hazardous Cargo Bulletin 3-5 (July/August 1985).