BOOK REVIEWS
CHRONIQUE BIBLIOGRAPHIQUE

David Freestone and Ton IJlstra, eds, *The North Sea: Perspectivcs on Regional Environmental Co-operation.* London: Graham & Trotman/ Martinns Nijhoff, 1990 Pp. xxi, 356 [$170.00]. Reviewed hy Donat Pharand*

The North Sea: Perspectives on Regional Environmental Co-operation[1] is a special issue of the International Journal of Estuarine and Coastal Law and consists of some twenty-six contributions by thirty-two authors. More than half of the contributors are legal advisers or professors of international law (including the editors) and the rest are specialists in the fields of political science, geography, biology, geology, hydrography and chemistry. This great variety of expertise reflects the view of the editors "that what is needed is an holistic view of the protection of the quality of the North Sea environment."[2] Until this book was put together, the bulk of the literature on the North Sea environment in the last decade was scientific rather than legal or political. This is evident from the thirteen-page bibliography.[3]

In spite of the global and regional conventions for the protection of the marine environment and the decrease in the quantity of polluting substances entering the North Sea, it is still degrading. The *Oslo Convention on the Prevention of Marine Pollution by Dumping from Ships and Aircraft* of 1971, the *London Convention on the Prevention of Marine Pollution by the Dumping of Waste and Other Matter* of 1972[4] and the *Paris Convention for the Prevention of Marine Pollution from Land-Based Sources* of 1974[5] have not proved sufficient

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[1]D. Freestone & T. IJlstra, eds, *The North Sea: Perspectives on Regional Environmental Co-operation* (London: Graham & Trotnam / Martinus Nijhoff, 1990) [hereinafter *The North Sea*].

[2]*Ibid.* at 331.

[3]*Ibid.* at 332.

[4]*Oslo Convention on the Prevention of Marine Pollution by Dumping from Ships and Aircraft*, 1971, UKTS 119 (1975), Cmnd. 6228; 11 ILM 262 (1972) [hereinafter *Oslo Convention*]; and, *London Convention on the Prevention of Marine Pollution by the Dumping of Waste and Other Matter*, 1972, UKTS 43 (1976) Cmnd. 6486; 1046 UNTS 120; 11 ILM 1291 (1972) [hereinafter *London Convention*].

[5]*Paris Convention for the Prevention of Marine Pollution from Land-Based Sources*, 1974, UKTS (1978), Cmnd. 7251; 13 ILM 352 (1974) [hereinafter *Paris Convention*].

to protect the North Sea adequately. However, the Oslo Commission on dumping and the Paris Commission on land-based pollution did provide forums for the development of co-operation among the coastal States of the North-East Atlantic. Additional political impetus was nonetheless needed to make further progress and the West German Government took the initiative, in 1983, to invite the other seven coastal States of the North Sea to an Interuational Conference on the Protection of the North Sea[6] (I.N.S.C.) at the ministerial level. The first Conference took place in Bremen in 1984, a second one was held in London in 1987 and a third was held in The Hague in March 1991.

This book studies the accomplishments of the two Conferences already held at the time of writing and addresses the problems yet to be solved. The twenty-six contributions, each one forming the subject of a chapter, are logically grouped into three parts, the headings of which appropriately indicating the main focus of each part. Those headings are: (1) the International North Sea Conferences in Perspective; (2) Perspectives on Existing Frameworks; and (3) Outstanding Issues. The book ends with conclusions and comments by the two editors.

It is, of course, impossible for the present review to cover in detail all of the contributions, some of which are highly technical in nature, but an attempt will be made to give the readers of this journal an idea of the nature and scope of the topics discussed. This review will also comment occasionally on the approaches followed by the authors and on the validity of the theses put forward.

Part 1 "The International North Sea Conferences in Perspective"

Part 1 consists of seven chapters[7] analyzing three basic issues: the legal nature of the Conferences and of the resulting Declarations; the national implementation of the Declarations; and, the means to enhance scientific knowledge of the North Sea. Although all of the contributions are well researched and clearly presented, most of them would have been considerably easier to understand if the two Declarations being discussed had been reproduced as an annex.

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[6]*Supra*, note 1 at 5.

[7]P. Ehlers, "The History of the International North Sea Conferences" in *The North Sea*, *supra*, note 1, 3; Y. van der Mensbrugghe, "Legal Status of International North Sea Conference Declarations" in *The North Sea*, *supra*, note 1, 15; L. Gündling, "The Status in International Law of the Principle of Precautionary Action" in *The North Sea*, *supra*, note 1, 23; F. de Jong, "The Second International North Sea Conference on the Protection of the North Sea: National Implementation" in *The North Sea*, *supra*, note 1, 31; J. Gibson & R.R. Churchill, "Problems of Implementation of the North Sea Declarations: A Case Study of the United Kingdom" in *The North Sea*, *supra*, note 1, 47; N.V. Jones, "The North Sea Environment: Features and Problems" in *The North Sea*, *supra*, note 1, 66; and, P. Reid, "The Work of the North Sea Task Force" in *The North Sea*, *supra*, note 1, 80.

This is particularly the case for the first three contributions. Fortunately, the bibliography contains the necessary references to find the *Declarations*.

On the nature and scope of the Conferences, it must first be mentioned that they group the Ministers responsible for the protection of the North Sea from the eight countries concerned[8] as well as the Member of the Commission of the European Communities responsible for the protection of the environment. Ministerial Declarations were agreed upon after each conference and it is necessary to state briefly the essence of the last Declaration to better understand the present review. The London Declaration of 1987[9] decided to "reaffirm the principles of the use of Environmental Quality Objectives and Uniform Emission Standards approaches set out in the Breman Declaration."[10] These basic approaches were four in number and have continued to guide the North Sea countries. They are: emissions should normally be limited at source; such limitations should be imposed for safety reasons, if the state of knowledge is insufficient; a periodical review should be made of emission standards and quality objectives; and, there should be adequate environmental monitoring for both approaches. The idea of combining these two approaches, based on emission standards and environmental quality, is that a more "precautionary approach to dangerous substance will be established."[11] For instance, it is agreed to reduce emission of polluting substances "even where there is no scientific evidence to prove a causal link between emission and effects ("the principle of precautionary action")."[12] The London Declaration also provides for participating States to take measures relating to inputs of nutrients via the atmosphere, dumping and incineration at sea, pollution from ships and offshore installations, discharges and disposal of radioactive wastes, airborne surveillance and enhancement of scientific knowledge.

Because of the important substantive content and far reaching consequences of those Ministerial Declarations, the question naturally arises as to their legal status. Yves van der Mensbrugghe devotes all of his chapter[13] to this issue and concludes that clearly "they are not legally binding instruments,"[14] while admitting that

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[8]Belgium, Denmark, France, Federal Republic of Germany, Netherlands, Norway, Sweden and United Kingdom.

[9]Second International Conference on the Protection of the North Sea, London, 24-25 November 1987, Ministerial Declaration, issued by the Department of the Environment of the United Kingdom, April 1988 [hereinafter *London Declaration*].

[10]*Ibid.*, art. xv.

[11]*Ibid.*, art. xv.

[12]*Ibid.*, art. xvi.

[13]Van der Mensbrugghe, *supra*, note 7.

[14]*Ibid.* at 21.

> they certainly have a legal significance in so far as they announce an action which will (it is hoped) be cast in legal terms, later and elsewhere, at the appropriate levels, international, European or national.[15]

This reviewer agrees with the conclusion. In the end, it is a question of finding the necessary intention on the part of the participating States to be legally bound. In the case of the above Declarations, the language used throughout points to a political commitment to act in order to attain certain objectives.

With this general issue of the legal nature of the Declarations arises a more specific question as to the legal status of the so-called "principle of precautionary action" mentioned in the Declarations. This latter question is studied by Lothar Gündling,[16] who tells us that "[t]he principle of precautionary action played a considerable role in the debate on the appropriate protection policy for the North Sea."[17] He states that recognition of this principle was "a major negotiation goal of the Federal Republic of Germany,"[18] where it is considered "one of the most important principles of environmental policy."[19] According to Gündling, this principle is a

> stringent form of preventive environmental policy. It is more than repair of damage or prevention of risks. ...[20]
>
> This means that precautionary action must be taken to ensure that the loading capacity of the environment is not exhausted, and it also requires action even if risks are not yet certain but only probable, or, even less, not excluded.[21]

Any Canadian interested in the protection of the fragile marine environment of the Arctic cannot help but be in favour of such a precautionary approach to avoid irreparable harm to that environment. Gündling concludes, however, that

> [b]oth the status and the content of the principle of precautionary action are still surrounded by uncertainties. Therefore, it is essential that the North Sea states reach agreement on this basic principle of environmental policy.[22]

This view of the necessity to further define the precautionary principle is shared by Folkert de Jong,[23] a biologist, who addresses the problem of national implementation of the London Declaration and states that it is "more a reduction principle than a precaution principle."[24] He believes that it has been so poorly defined that "the North Sea Conferences have not really altered the existing pol-

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[15]*Ibid.*
[16]Gündling, *supra*, note 7.
[17]*Ibid.*
[18]*Ibid.*
[19]*Ibid.*
[20]*Ibid.* at 26.
[21]*Ibid.*
[22]*Ibid.* at 30.
[23]De Jong, *supra*, note 7.
[24]*Ibid.* at 44.

icies."[25] De Jong reviews the implementation procedures and measures of all of the North Sea countries, except France for which no information was available, as well as of the European Community. His general conclusion is that "[i]n most cases only plans have been produced by Governments, often based on rough estimates."[26] More specifically, with respect to "dangerous substances,"[27] he believes that "[g]overnments will ... have to negotiate with industries to achieve the necessary reduction figures,"[28] because of the non-legally binding character of the London Declaration. He anticipates that

> despite a certain speeding up of implementation and a possible improvement of enforcement ... the action reduction of the pollution of fresh and salt water systems will be totally insufficient.[29]

He suggests, as a step in the right direction, that the Third Conference in the Hague "set the basis for a fundamental policy change by clearly defining and elaborating the Precautionary Principle."[30]

The problems of implementation of the North Sea Declarations with respect to the United Kingdom specifically, are addressed by John Gibson and Robin R. Churchill[31] of the Cardiff Law School. They concentrate their attention on two areas: dangerous substances and dumping. They point out that although the London Declaration provides for emission standards to be based on the "best available technology,"[32] the United Kingdom intends to use the standard of "best available technology not entailing excessive cost."[33] As for dumping, they conclude that "it is not yet possible to arrive at any final judgement as to how far the United Kingdom has complied with the London Declaration's provisions on dumping."[34]

The next chapter consists of a detailed scientific description of the North Sea environment, its features and problems, by Neville Jones,[35] a biologist at the University of Hull. He states that "the North Sea is a complicated system of interacting processes which is being affected by man at both the local and large-scale levels"[36] and concludes that "the system is showing signs of stress."[37]

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[25]*Ibid.* at 46.
[26]*Ibid.* at 43.
[27]*Ibid.* at 44.
[28]*Ibid.*
[29]*Ibid.* at 45-46.
[30]*Ibid.* at 46.
[31]Gibson & Churchill, *supra*, note 7.
[32]*Ibid.* at 55.
[33]*Ibid.*
[34]*Ibid.* at 64.
[35]Jones, *supra*, note 7.
[36]*Ibid.* at 78.
[37]*Ibid.* at 79.

The last chapter of Part 1, by Philip Reid[38] of the U.K.'s Department of the Environment, is on "the Work of the North Sea Task Force" recommended in the *London Declaration*.[39] The purpose of the Task Force is to organize a co-ordinated program of research and monitoring of the North Sea and it is composed of delegates from the eight coastal States, the Commission of the European Community, the International Council for the Exploration of the Seas, the Oslo Commission and the Paris Commission. The Task Force will prepare a new Quality Status Report, using data based on internationally comparable methodologies, and will address the related questions of monitoring, modelling and research. At the moment, each country has its own North Sea program with its own scientific emphases and approaches. This Task Force "provides a means to ensure the eventual harmonization and co-ordination of these different approaches."[40]

It is obvious from this first part of the book that the North Sea Conferences have been successful enough to envisage the establishment of a more formal system of co-operation. But, first, it is important to determine what relevant institutions exist already. This is the object of the second part.

Part 2 "Perspectives on Existing Frameworks"

Part 2 examines institutions and legal instruments which could perhaps serve as models or points of departure for a new or re-modelled mechanism for the protection of the North Sea. This Part consists of some eleven chapters,[41] reviewing the present role of six institutions and programs and studying five major problems.

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[38]Reid, *supra*, note 7.

[39]Art. xv.

[40]Reid, *supra*, note 7.

[41]P. Hayward, "The Oslo and Paris Commissions" in *The North Sea*, *supra*, note 1, 91; J.-L. Prat, "The Role and Activities of the European Communities in the Protection and the Preservation of the Marine Environment of the North Sea" in *The North Sea*, *supra*, note 1, 101; J. Wettestad & S. Andresen, "The Rhine Action Programme: A Turning Point in the Protection of the North Sea?" in *The North Sea*, *supra*, note 1, 123; S. Boehmer-Christiansen, "Environmental Quality Objectives versus Uniform Emission Standards" in *The North Sea*, *supra*, note 1, 139; I.J. Vennekens-Capkova, "Dangerous Substances: Chameleons in Water Policy" in *The North Sea*, *supra*, note 1, 150; V. Sebek, "The North Sea and the Concept of Special Areas" in *The North Sea*, *supra*, note 1, 157; J.F. Kemp & A.F.M. De Bievre, "A Regional Vessel Traffic Service for the North Sea" in *The North Sea*, *supra*, note 1, 167; G. Kasoulides, "Paris Memorandum of Understanding: A Regional Regime of Enforcement" in *The North Sea*, *supra*, note 1, 180; E. Somers, "The Role of the Courts in the Enforcement of Environmental Rules" in *The North Sea*, *supra*, note 1, 193; and, K. van der Zwiep, "The Wadden Sea: A Yardstick for a Clean North Sea" in *The North Sea*, *supra*, note 1, 201.

The institutions and programs are: the Oslo and Paris Commissions;[42] the Commission of the European Community;[43] the Rhine Action Programme;[44] the Port State Control Committee;[45] the regular court system of each country;[46] and, the Wadden Sea program.[47] The definite impression gained from these studies is that an institution specifically for the North Sea is desirable, in spite of the necessity for continued and close co-operation with existing mechanisms. The role of the Oslo and Paris Commissions is limited to the control of dumping at sea and their membership is wider, of course, than the North Sea States. The Commission of the European Community plays a very important role in the protection of the marine environment of the North Sea and its water quality, but Norway and Sweden are not members. In addition, the integration of the North Sea in the Community would necessitate a regionalization of European Community policy for the protection of the marine environment and, as pointed out by Jean-Luc Prat, "stricter Community measures for the North Sea might not be accepted by certain Member States."[48] The Port State Control Committee, created in 1982[49] and composed of fourteen member States (including the eight North Sea countries) is only a co-operative regime of enforcement (although it has worked surprisingly well) and is limited to the control of ship-source pollution. Important as that source is in the North Sea, it is far from being the main one.

The Rhine Action Programme and the Wadden Sea Program offer important models on which to build. The Rhine being one of the major polluters of the North Sea, the adoption of a special action program in 1987 is doubly beneficial. The implementation of the program, through the International Rhine Commission, is working out well and it is stated that "the approach of the [Rhine Action Programme] has already been regarded as a model approach for action programmes for other rivers flowing into the North Sea."[50] As for the Wadden Sea, formed by a belt of island and sandbanks, north east of the Netherlands and bordered also by Denmark and Germany, it is intimately linked to the North Sea and forms a single ecosystem with it. Indeed, it is considered "a measuring gauge for the quality of the North Sea."[51] The three bordering States

[42]Hayward, *ibid.*

[43]Prat, *supra*, note 41.

[44]Wettestada & Andresen, *supra*, note 41.

[45]Kasoulides, *supra*, note 41.

[46]Somers, *supra*, note 41.

[47]Van der Zwiep, *supra*, note 41.

[48]Prat, *supra*, note 41 at 109.

[49]"Proposal for a Council Directive Concerning the Enforcement, in Respect of Shipping Using Community Ports, of International Standards for Shipping Safety and Pollution Prevention," COM (80) 360, known as the Paris Memorandum of Understanding. See Kasoulides, *supra*, note 41 at 181.

[50]Wettestad & Andresen, *supra*, note 41 at 133.

[51]Van der Zwiep, *supra*, note 41 at 207.

have adopted a special program in 1982, for the protection of this biologically rich wetland area, and have achieved a high degree of co-operation in its joint management. This evolution, it is perceived, "could well stand as a model and form a basis for further intensification of North Sea administration."[52]

The role of national courts in the enforcement of international rules for the protection of the marine environment generally, and the North Sea in particular, is necessarily limited. The bulk of judicial enforcement is still with the flag State (as Canada has realized on numerous occasions), even under the provisions of the United Nations *Convention on the Law of the Sea* of 1982.[53] As remarked by Eddy Somers, enforcement jurisdiction of international standards has not received the priority treatment it deserves. He expresses the disappointing opinion that "it can even be doubtful whether states do want courts to play an important role within the enforcement system."[54]

The five specific issues dealt with in Part 2 are: the role of science in North Sea Policy;[55] the relationship between quality objectives and emission standards;[56] the control of dangerous substances;[57] the concept of special area for the North Sea;[58] and, a regional vessel traffic service for the North Sea.[59]

On the role of science in policy-making in the North Sea, a systematic analysis is made by Jorgen Wettestad and Steinar Andresen, who identify a certain number of conditions for effective interaction between science and policy. Although they recognize that a good beginning has been made, they conclude that several institutional deficiencies can be identified: co-ordination of research and monitoring is flawed; the awareness of the importance of a clear distinction between science and politics is too low; policy-makers and scientists speak different languages and translation is sparse; and, the media lack the necessary expertise to involve the public in a rational way.[60]

This is a strong indictment, but the authors do provide some evidence to support it. This reviewer agrees that a high degree of interaction between science and policy-making is essential for taking adequate measures to protect the marine environment, at both the international and national levels. Canadian scientists, diplomats and policy-makers could certainly learn from this North Sea experience, particularly with respect to the Arctic environment.

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[52]*Ibid.* at 212.

[53]U.N. Doc. A/Conf. 62/122 with Corr. 3 and Corr. 8; reprinted in (1982) 21 I.L.M. 1261 [hereinafter *Law of the Sea*].

[54]Somers, *supra*, note 41 at 200.

[55]Prat, *supra*, note 41 at 111.

[56]Boehmer-Christiansen, *supra*, note 41.

[57]Vennekens-Capkova, *supra*, note 41.

[58]Sebek, *supra*, note 41.

[59]Kemp & De Bievre, *supra*, note 41.

[60]Wettestad & Andresen, *supra*, note 41 at 121-22.

The relative emphasis to be given to environmental quality objectives and uniform emission standards is the difficult problem studied by Sonja Boehmer-Christiansen. Certain countries, like Britain, have traditionally preferred the first method of environmental control because it is more flexible, in that it puts the emphasis on scientific argumentation and evidence.[61] Others, like the Federal Republic of Germany, prefer the certainty of "legally binding emission standards supplemented by restrictions on total quantities which may be discharged over a specific period of time."[62] Boehmer-Christiansen's conclusion is that both methods of control are necessary and that "these numerical measures (emission standards) will have to become better related to EGO and to environmental impacts."[63]

On the related question of how to control the impact of dangerous substances, Jitka Vennekens-Capkova explains how the existing black list (prohibited substances), grey list (restricted substances) and red list (23 of the most dangerous substances) led to the North Sea Priority List which is being proposed for adoption by the Third Conference. If the Priority List is approved, the principle of precautionary action discussed earlier will be applied. This means that no scientific evidence will be necessary to show a causal link between emission and damage.

On the proposal of making the North Sea a "special area" under MARPOL (like the Baltic, the Mediterranean and other semi-enclosed seas), Viktor Sebek is not convinced that the North Sea would be really improved since the worse threat is land-based rather than ship-source pollution.[64] He offers a number of alternative solutions, such as a Convention on the North Sea Protected Areas, which would include protection against all forms of pollution in areas requiring special protection.[65] Sebek is right in reminding us of the seriousness of land-based sources, which account for about 75% of marine pollution.

John F. Kemp and Aline de Bievre examine the question of "A Regional Vessel Traffic Service for the North Sea." The authors explain the roles which the service could fulfill, such as the reduction of risks of collision and grounding, as well as the enforcement of relevant regulations. At the moment, the Guidelines issued by the International Maritime Organization

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[61]Boehmer-Christiansen, *supra*, note 41 at 143.

[62]*Ibid.* at 145.

[63]*Ibid.* at 149.

[64]Sebek, *supra*, note 41. MARPOL refers to *Convention for the Prevention of Pollution from Ships*, 2 November, 1973, reprinted in (1973) 12 I.L.M. 1319 (the Convention and its Annex I entered into force in 1983; Annexes II and V in 1987 and 1989 respectively; Annexes III and IV are not yet in force [hereinafter *MARPOL Convention*].

[65]Sebek, *ibid.* at 165.

> urge Vessel Traffic Services authorities not to give binding directives to ships and to operate VTS on a voluntary basis outside territorial waters and port areas or their approaches.[66]

This is understandable since, in the law of the sea, traffic separation schemes may be prescribed only in territorial waters and archipelagic waters. This limitation on the rights of the coastal State is the reason why Canada's NORDREG[67] system in the Arctic was not made compulsory when adopted. However, the system could now be made mandatory since the waters of the Canadian Arctic Archipelago acquired the status of internal waters with the establishment of straight baselines in 1985.[68] Kemp and de Bievre suggest establishment of a form of regional Vessel Traffic Services system, within which coastal States would provide an information service for traffic in their own sectors of the North Sea. Ships would report their presence at all entrances to the North Sea, their expected route and their estimated positions periodically during transit.[69] There are, at the moment, traffic separation schemes in the North Sea,[70] but the recommended Vessel Traffic Service would be complementary to those sea lanes. Such a service appears to be well warranted, given the present great number of collisions[71] and groundings.[72]

Part 3 "Outstanding Issues"

Part 3 addresses seven questions, some specific and others general, all of which relate in some way to the protection of the North Sea.[73] Because of the mixed nature of some of those issues, it is impossible to group them logically

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[66]Kemp & de Bievre, *supra*, note 41 at 177.

[67]For a description of this voluntary traffic system, see Transport Canada (Coast Guard) *Offshore Vessel Traffic Management Systems, Operations Standards, NORDREG Canada* (Ottawa: Queen's Printer, 1979).

[68]See *Territorial Sea Geographical Coordinates (Area 7) Order*, SOR/85-872. For an explanation of the straight baseline system enclosing the waters of the Canadian Artic Archipelago and making them internal waters of Canada, see D. Pharand, *Canada's Arctic Waters in International Law* (Cambridge: Cambridge University Press, 1988) at 133-84.

[69]Kemp & de Bievre, *supra*, note 41 at 178.

[70]*Supra*, note 1 at 351, figure B.

[71]Kemp & de Bievre, *supra*, note 41 at 169.

[72]*Ibid.* at 170.

[73]E. Franckx, "Maritime Boundaries and Regional Cooperation" in *The North Sea, supra*, note 1, 215; U. Jenisch, "The Exclusive Economic Zone as an Instrument for Environmental Management in the North Sea Area" in *The North Sea, supra*, note 1, 228; G. Peet & S. Gubbay, "Marine Protected Areas in the North Sea" in *The North Sea, supra*, note 1, 241; P. Birnie, "Problems Concerning Conservation of Wildlife Including Marine Mammals in the North Sea" in *The North Sea, supra*, note 1, 252; D. Symes, "North Sea Fisheries: Trends and Management Issues" in *The North Sea, supra*, note 1, 271; S. Davidson, "Atmospheric Depositions" in *The North Sea, supra*, note 1, 288; J. Woodliffe, "Radiological Discharges" in *The North Sea, supra*, note 1, 300; and, H.D. Smith, "Sea Use Management and Planning in the North Sea" in *The North Sea, supra*, note 1, 313.

in two or three categories for the present purposes, so the contributions will be reviewed separately in the order in which they appear.

In chapter 19, Dr. Erik Franckx[74] of the Free University of Brussels, begins by stating that "regional co-operation is best served by settled maritime boundaries in a particular region."[75] Franckx makes a comparative study between the Baltic Sea, where virtually all maritime boundaries have been settled by negotiation, and the North Sea, where three territorial sea delimitations and three continental shelf ones remain outstanding. He concludes that the Baltic Sea, in spite of being surrounded by States of divergent political and economic systems could serve as a model for the success of direct negotiations for the settlement of the outstanding maritime boundaries in the North Sea.[76] This could well be, but with the presently growing jurisprudence providing a more precise content of the applicable law and the tradition of North Sea countries generally for third party settlement, it could also be that they would prefer to choose arbitration or adjudication for their remaining delimitations.

In chapter 20, Uwe Jenisch[77] studies the exclusive economic zone (E.E.Z.) as an instrument for environmental protection. Only France and Norway have established an E.E.Z. in the North Sea but, since the Netherlands has had this question put on the agenda of the Third Conference, Jenisch examines the possibility of an E.E.Z. regime (which would cover about 75% of the North Sea) offering additional environmental control. It is true that coastal States would have a greater degree of control over dumping and ship-source pollution, both from the point of view of regulation and of enforcement, but Jenisch warns against entertaining too high expectations. He concludes that "North Sea States would benefit only to a minor extent by acquiring broader E.E.Z. competences"[78] and they would not provide an overall solution. This is true, but Jenisch is right in adding that an E.E.Z. would have the advantage of not only providing

> a uniform umbrella regime for the progressive development of rules and standards for the North Sea as a model region, but also enhance the prospects of an anticipated entry into force of the LOSC.[79]

This would, indeed, constitute a most important collateral benefit.

Chapter 21, on "Marine Protected Areas in the North Sea," is written jointly by a lawyer, Gerard Peet, and a marine biologist, Susan Gubbay.[80]

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[74]Franckx, *ibid.*
[75]*Ibid.* at 215.
[76]*Ibid.* at 226.
[77]Jenisch, *supra*, note 73.
[78]*Ibid.* at 239-40.
[79]*Ibid.* at 240.
[80]Peet & Gubbay, *supra*, note 73.

Although there is a certain degree of overlap with chapter 14 on special areas, it is minimal. Peet and Gubbay review the protected areas already established by North Sea countries, but remind us that such areas are necessarily within their own territorial sea where they have exclusive jurisdiction. They conclude that

> marine protected areas are a viable option for conservation of the marine environment provided that they are considered within an overall framework which provides guidance in coastal and sea use management.[81]

In chapter 22, devoted to the conservation of wildlife in the North Sea, Patricia Birnie begins by pointing to the absence of a wildlife dimension in the North Sea Conferences thus far.[82] After a review of the various threats to the North Sea wildlife (such as the common seal, pilot whale, dolphin and small cetaceans), Birnie reviews the applicable conventions and concludes that "both at the international and regional level, it is neither an integrated nor an holistic regime for protection."[83] Her suggestion that "this is a question that should urgently be addressed by the Third INS Conference"[84] appears to be very sound.

Chapter 23 consists of a study of the trends and management issues in the North Sea fisheries by David Symes.[85] In his detailed statistical review of catch trends since the early sixties, Symes states that "the most outstanding feature of the past 25 years has been the dramatic rise in the industrial fisheries to a point where they now account for over half the total catch."[86] In spite of the decline in the North Sea's resource base, Symes maintains that

> management has been reduced to a series of essentially short-term options to protect the market and maintain the industry rather than the pursuit of a conservation strategy ... .[87]

He believes that

> some improvement can be achieved by reducing fishing effort to allow a higher proportion of the recruitment year classes to escape risk of capture and so enhance the reproductive capacity of the stock.[88]

However, Symes sees no evidence of such beneficial management. On the contrary, "the politics of compromise have led to a management policy geared towards maintaining the status quo."[89] In these circumstances, Canada should

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[81] *Ibid.* at 251.
[82] Birnie, *supra*, note 73.
[83] *Ibid.* at 269.
[84] *Ibid.* at 270.
[85] Symes, *supra*, note 73.
[86] *Ibid.* at 275.
[87] *Ibid.* at 282.
[88] *Ibid.* at 286.
[89] *Ibid.*

not be too surprised to have so much difficulty in having the European Community accept the recommendations of the Scientific Council of the North Atlantic Fisheries Commission with respect to quotas to be taken off the east coast.

Chapter 24, "On Atmospheric Depositions," by Scott Davidson,[90] is a very welcome contribution, since it is only in recent years that atmospheric depositions are recognized as constituting an important source of marine pollution. There is some rudimentary international law on the matter, but it is merely a beginning and it is encouraging to know that the European Community has issued directives to reduce emissions from motor vehicles and industry. As pointed out by Davidson in his conclusion,

> since most atmospheric pollution originates from land-based sources, it is only appropriate that the EC should take the necessary measures to curtail some of the less acceptable practices of its industrial Member States.[91]

He suggests, however, that "the EC should advert specifically to the impact which our pollution has on the marine environment of the North Sea."[92] There is no doubt that it is preferable to directly address the region concerned. In the same way, it will be necessary for the countries around the Arctic Ocean to address the atmospheric pollution, which has been evident in that region for the last decade at least.

In chapter 25, "On Radiological Discharges," John Woodliffe[93] traces the main sources of radioactivity in the marine environment, particularly the low-level radioactivity effluents emanating from the thirty or more nuclear power stations and other nuclear industries in countries around the North Sea. A start on this problem was made in the London Declaration in which the Participants declared

> their intention to respect the relevant recommendations of the competent international organizations and to this end to apply the best available technology to minimize and, as appropriate, eliminate any pollution caused by radioactive discharges from all nuclear industries, including reprocessing plants, into the marine environment.[94]

Also, the European Community and the Paris Commission have both been involved, and some decrease in the level of discharges has been obtained. However, much remains to be done and Woodliffe concludes that

> there is considerable room for greater co-ordination and harmonization of the works of the European Community and the various organizations and other bodies

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[90]Davidson, *supra*, note 73.
[91]*Ibid.* at 298.
[92]*Ibid.*
[93]Woodliffe, *supra*, note 73.
[94]*London Declaration*, art. 39.

> who are concerned with the subject of radioactive discharges to the marine environment.[95]

The final chapter of the book is by H.D. Smith.[96] He directs his attention to the fundamental problem of sea-use management and planning in the North Sea. The increasing intensity of various uses in the North Sea over the last twenty-five years has naturally led to considerable problems of management and planning, pointing to the need for integrated approaches for the solution. Smith concludes that

> an overall management system is already taking shape which reflects the sum total of use-interactions and environmental impacts, and thus overall European regional development patterns in relation to the North Sea.[97]

He believes that the evolving system contains what he sees as the two key elements for effectiveness: first, the management of uses in the coastal areas (particularly estuaries and rivers), with emphasis on avoiding use conflicts; and second, the management beyond coastal waters with emphasis on water quality objectives and involving the wider European context.

In a concluding chapter called "Final Perspectives," David Freestone and Ton IJlstra, the editors, draw conclusions from the various contributions.[98] On the whole, those conclusions have already been covered in this review, but their view on a possible future institution for the North Sea should be mentioned. They would favour a North Sea Treaty, suggested by the European Parliament, only

> if it represented a net increase in the competences and powers available to existing institutions. At the very least this would entail the parties acknowledging the significance of land-based sources of pollution and accepting the need for very strict measures in that field.[99]

Whilst agreeing with the editors, this reviewer believes that a North Sea Treaty system, with its own implementation machinery, would facilitate greatly the needed holistic approach for the protection of the North Sea. A similar treaty system for the Arctic Ocean has been recommended for some time in Canada.[100]

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[95]*Supra*, note 73 at 312.

[96]Smith, *supra*, note 73.

[97]*Ibid.* at 324.

[98]*The North Sea*, *supra*, note 1.

[99]*Ibid.* at 331.

[100]See in particular the following: "The Report of a Working Group of the National Capital Branch of the Canadian Institute of International Affairs" in *The North and Canada's International Relations* (Ottawa: Canadian Arctic Resources Committee, 1988); and, D. Pharand, "Les problèmes de droit international de l'Arctique" (1989) 20 Études internationales 131 at 161-63. The recommendation to establish an Arctic Region Council has been reiterated recently by a second working group of the Canadian Institute of International Affairs in *The Arctic Environment and Canada's International Relations* (Ottawa: Canadian Arctic Resources Committee, 1991) at 68-70.

Not only would a treaty permit a co-ordinated approach but, unlike ministerial declarations, a treaty would give legally binding effect to the political will.

Collective works are generally of rather uneven quality, particularly when many contributors are involved. However, the high quality of this book is reflected in virtually all of the contributions. It should be compulsory reading for anyone interested in promoting environmental co-operation, in general, and for the protection of a regional or semi-enclosed sea in particular.

See also an Appendix to the latter publication, "Draft Arctic Treaty: An Arctic Region Council" by the present reviewer (*supra* at A1-A10).

Günther Handl et Rohert E. Lutz, éd., *Transferring Hazardous Technologies and Substances. The International Legal Challenge.* Londres, Graham & Trotman/Martinus Nijhoff, 1989. Pp. viii, 275 [115,00$]. Commenté par Chantal Lamarre*

Cet ouvrage[1] est constitué de textes rédigés par des conférenciers ayant participé au colloque d'avril 1985 intitulé « International Transfer of Hazardous Technologies and Substances : *Caveat Emptor* or State Responsibility ? The Case of Bhopal, India » lequel fut organisé par le groupe de travail de l'American International Environnemental Law Interest Group of the American Society of International Law[2]. Cet amalgame d'études sur le transfert de technologies et de substances dangereuses, vise principalement à déterminer l'encadrement international de la prévention et de la minimisation des dommages pouvant être provoqués par la dangerosité inhérente de ces technologies et substances.

D'une façon générale, cet ouvrage est très bien documenté et la majorité des auteurs tirent leurs sources d'information à même les documents émanents d'organisations et d'organismes internationaux.

Les auteurs développent des idées et des sujets qui ne sont pas nécessairement nouveaux mais ayant un intérêt certain en matière de compréhension du droit international de l'environnement.[3] Le plan de l'ouvrage, présenté en trois parties et subdivisé par les différents thèmes des textes publiés, est également intéressant puisqu'il permet au lecteur d'apprivoiser ou de se remémorer graduellement les notions fondamentales du droit international public en général et du droit international de l'environnement plus particulièrement.

Conformément à cette approche, la nature et l'étendue du problème que soulève la survenance de catastrophes environnementales sont cernées à l'aide d'éléments factuels[4] et de droit[5].

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[1] G. Handl et R.E. Lutz, éd., *Transferring Hazardous Technologies and Substances — The International Legal Challenge* Londres, Graham & Trotman / Martinus Nijhoff, 1989 [ci-après *Transferring Hazardous Technologies*].

[2] *Ibid.* à la p. vii.

[3] À notre connaissance, c'est le premier ouvrage qui traite aussi exhaustivement de la coopération des États, de la détermination de la responsabilité et de la réparation des dommages causés par une catastrophe environnementale.

[4] V.P. Nanda et B.C. Bailey, « Nature and scope of the problem » dans *Transferring Hazardous Technologies, supra*, note 1 aux pp. 3-19.

[5] *Ibid.* aux pp. 19-36.

Le premier de ces textes détermine la nature et l'étendue du problème du transfert des technologies et substances dangereuses[6]. Les auteurs[7] établissent premièrement les différents faits ayant trait aux catastrophes environnementales de Seveso, Bhopal, Tchernobyl et Basel[8]. Suite aux résumés de ces événements, les auteurs notent qu'il existe des pertes et des dommages plus considérables lors de la catastrophe de Bhopal en Inde, alors que les pertes étaient beaucoup plus limitées lors de l'incident de Seveso, Italie.

Ces observations permettent de constater que tous les États qui importent des technologies et substances dangereuses sont assujettis à de multiples problèmes inhérents à la dangerosité de tels produits, mais les auteurs soulignent judicieusement :

> developing states that import these technologies or substances often face especially difficult problems due to an increased potential for risk, as many lack effective health, safety and environmental standards and systems[9].

Dans cet esprit, les États de la communauté internationale se doivent de coopérer afin de créer des instruments permettant d'éviter que les États en voie de développement ne soient les « poubelles » des États industrialisés.

Il devient alors impératif de créer des règles et des normes internationales afin de prévenir et de minimiser les dommages causés par de telles catastrophes environnementales. Aussi, le deuxième texte[10] de cet ouvrage se penche-t-il sur la perspective de l'établissement d'un ordre juridique en matière de transfert de substances et de technologies dangereuses. Grâce à ce texte, le lecteur bénéficie d'une excellente introduction quant aux différentes études qui suivent ce texte et qui constituent l'essentiel du sujet de l'ouvrage[11].

L'ensemble de la discussion sur l'élaboration d'un processus international adéquat quant à la prévention et à la minimisation des dommages présente de nombreuses technicités et permet d'approfondir la réflexion sur le type de normes et de règles dont la communauté internationale devrait se doter en matière de protection de l'environnement afin de régir le domaine du transfert de technologies et de substances dangereuses[12].

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[6]*Supra*, note 4, 3.

[7]V.P. Nanda, professeur et directeur, International Legal Studies Program, University of Denver. College of Law ; et, B.C. Bailey, avocat, Denver, CO.

[8]Ces catastrophes sont respectivement survenues en Italie, en Inde, en U.R.S.S et en Suisse.

[9]*Supra*, note 4 à la p. 19.

[10]G. Handl et R.E. Lutz, « The Transboundary Trade in Hazardous Technologies and Substances from a Policy Perspective » dans *Transferring Hazardous Technologies, supra*, note 1, 40.

[11]Deuxième partie : « Towards an Adequate International Framework for Prevention and Minimization of Harm », dans *Transferring Hazardous Technologies, supra*, note 1 à la p. 63 et s.

[12]*Ibid.*

Il est dommage cependant de constater certaines répétitions dès le troisième chapitre de l'ouvrage[13]. En effet, l'élaboration des pricipaux éléments de discussion faite par l'auteur Lothar Gündling reprennent sensiblement les mêmes faits et idées qui avaient été préalablement développés par V.P. Nanda et C. Bailey[14], alors qu'ils procédaient à l'introduction du sujet. À ce propos, n'y aurait-il pas eu lieu de fondre les textes afin d'éviter cette lourdeur ? Par contre, les observations faites par Gündling présentent un intérêt certain quant à la compréhension du lecteur eu égard à l'existence et au fondement d'une obligation légale internationale relative à la consultation préalable entre l'État importateur et l'État exportateur ainsi que l'obligation qui incombe à ce dernier de donner un avis préalable d'exportation de technologies ou de produits dangereux[15].

Dans ce processus d'élaboration d'un ordre juridique international, il sera certes indispensable de reconnaître sur le plan international la nécessité d'imposer des études d'impacts sur l'environnement lorsqu'il s'agit de procéder à un transfert de technologies ou de substances dangereuses[16]. La reconnaissance par les États d'une telle obligation permettrait d'acquérir des standards égaux et équivalents qu'il s'agisse de procéder à cette étude sur le territoire de l'État exportateur ou encore sur le territoire de l'État importateur où les substances dangereuses sont destinées à être produites ou entreposées. Ce qui amène David A. Wirth[17] à conclure :

> The consequences of activities that pose risks to public health and the environment are no less severe merely because the technology involved is intended for foreign shores[18].

Inévitablement la question fondamentale est alors soulevée puisque dans le but d'en arriver à un tel résultat d'uniformité sur le plan de la prévention des catastrophes, la communauté internationale doit choisir un instrument adéquat pour l'établissement de certaines normes et règles internationales. Dans un premier temps, un auteur observe que malgré la préoccupation croissante des États de procéder à un meilleur contrôle local des technologies et substances dangereuses, l'absence de consensus est fréquemment observée eu égard à l'élaboration de règles internationales spécifiques en cette matière[19]. Cette situation devra nécessairement converger vers une procédure de contrôle administrée par des

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[13]L. Gündling, « Prior Notification and Consultation » dans *Transferring Hazardous Technologies*, *supra*, note 1, 65.

[14]*Supra*, note 4 à la p. 3.

[15]D.A. Wirth, « International Technology Transfer and Environmental Impact Assessment » dans *Transferring Hazardous Wastes*, *supra*, note 1, 90 à la p. 82.

[16]*Ibid.*

[17]Senior Project Attorney, Natural Resources Defense Council Inc., Washington, D.C.

[18]*Supra*, note 15 à la p. 105.

[19]G. Handl, « Internationalization of Hazard Management in Recipient Countries : Accident Preparedness and Response » dans *Transferring Hazardous Technologies*, *supra*, note 1, 106 à la p. 128.

institutions ou organismes internationaux puisque inévitablement, la protection de l'environnement constitue une question d'intérêt international[20]. En matière de transfert de technologies et de substances dangereuses, il ne faut pas perdre de vue qu'il s'agit également de transactions commerciales où sont engagées de nombreuses entreprises multinationales et où des facteurs sociaux, économiques, politiques et légaux se côtoient. À ce sujet, le texte de Robert E. Lutz et George D. Aron[21] présente un grand intérêt en faisant entrer en jeu ces différents facteurs, et surtout en analysant adéquatement la nature et la valeur légale des plans d'action et des lignes directrices élaborés par différentes organisations et institutions internationales[22]. Le volet qui suscita le plus grand intérêt quant à nous est celui où la discussion porte sur la responsabilité qui incombe tant à l'État exportateur[23] qu'à l'État importateur[24]. En effet, la communauté internationale s'est abondamment penchée sur le processus adéquat de prévention des catastrophes environnementales sans toutefois s'attarder véritablement à la responsabilité attribuable à un État particulier ou encore à un regroupement d'États lorsque survient de telles catastrophes. Accessoirement à cette dernière interrogation, il semble que peu de recherches aient été conduites afin de résoudre la question de la réparation adéquate des dommages causés par ces catastrophes environnementales[25]. C'est d'ailleurs à ce dernier aspect que se consacre la troisième partie de l'ouvrage[26].

Eu égard à la responsabilité de l'État exportateur, l'auteur Michael Bothe[27] dresse un bref tableau de la tendance générale qu'il observe sur le plan international, à savoir l'attribution d'une responsabilité à l'État exportateur de technologies et de substances dangereuses. Il pose deux questions principales[28] : l'une à l'effet de déterminer s'il existe une règle de droit international coutumier spécifique à l'exportation et l'autre concernant l'applicabilité de principes généraux de droit en conformité avec l'alinéa 38(1)(c) des Statuts de la Cour Internationale de Justice[29].

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[20]Notons que cette conclusion s'inspire des observations faites eu égard à la coopération des États dans l'échange d'information lorsque survient une catastrophe environnementale (*ibid.* aux pp. 115-24).

[21]« Codes of Conduct and Other International Instrnments » dans *Transferring Hazardous Technologies*, *supra*, note 1, 129.

[22]*Ibid.* à la p. 151 et s.

[23]M. Bothe, « The Responsibility of Exporting States » dans *Transferring Hazardous Technologies*, *supra*, note 1, 158.

[24]H.H. Koh, « The Responsibility of the Importer State » dans *Transferring Hazardous Technologies*, *supra*, note 1, 170.

[25]R. Gautier, « La réparation des dommages catastrophiques — XIII Journées d'études juridiques Jean Dabin » (1989) 66 R. de D. Int. et D.Comp. 195 à la page 197.

[26]« Restoration and Compensation » dans *Transferring Hazardous Technologies*, *supra*, note 1 à la p. 199 et s.

[27]Professeur à Johann Wolfgang Goethe — Universität, Faculté de droit, Frankfort/Main.

[28]*Supra*, note 23 à la p. 160.

[29]*Statut de la Cour internationale de Justice*, (1945) 7 R.T.C. 49.

En ce qui a trait à l'existence d'une règle de droit international coutumier, Bothe conclu qu'il existe à tout le moins une obligation pour l'État exportateur d'informer l'État importateur des dangers potentiels inhérents à l'importation de substances dangereuses et ce, dans le but de réduire les risques encourus par les personnes humaines et l'environnement sur le territoire de l'État importateur. Cependant, certaines observations sont nécessaires à ce stade-ci. En effet, le principe de l'acceptation préalable de l'État importateur est internationalement reconnu uniquement lorsqu'il s'agit du déplacement transfrontière de déchets dangereux. Deuxièmement, un tel principe n'impose une obligation qu'à l'État exportateur sans qu'une obligation corollaire de réponse ne soit imposée à l'État importateur. Finalement, la seule obligation consiste à divulguer l'information nécessaire sans qu'il ne soit imposé à l'État exportateur aucune obligation quant à l'adoption de législations internes particulières régissant cette matière[30].

Quant à la question de l'existence de principes généraux de droit, l'auteur souligne que certaines normes internes reconnues par plusieurs États peuvent constituer un principe général de droit au sens de l'alinéa 38(1)(c) de la CIJ[31] si celles-ci offrent déjà des solutions normatives pour des situations semblables qui surviennent à l'intérieur de la juridiction de l'État. À ce titre, l'auteur cite l'exemple de la responsabilité du fabricant[32] laquelle vise essentiellement la protection du consommateur et le désir d'offrir une certaine équité dans la répartition des risques. Cet auteur note également une tendance à l'effet de responsabiliser l'État où se situe le siège social de la maison mère d'une corporation lorsque cette corporation ou une de ses filiales cause des dommages environnementaux à l'État importateur. Ce constat rejoint en quelque sorte le concept de pollueur-payeur. Cette détermination de la responsabilité des États ne vise en fait que l'élaboration d'une protection adéquate de l'environnement.[33]

Quant à la détermination de la responsabilité de l'État importateur celle-ci est souvent complexe puisqu'elle exige l'analyse de différentes sources de droit dont le droit international public au niveau des règles de droit international coutumier qu'au niveau des traités multilatéraux que bilatéraux auquels tant les États exportateurs qu'importateurs sont parties ; les lois internes de l'État exportateur et importateur régissant le transfert de technologies et de substances dangereuses ; et les contrats privés gouvernant ce type de transfert[34]. Toutefois, l'harmonisation de ces différentes sources permettra invraisemblablement la

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[30]*Supra*, note 23 à la p. 162.

[31]*Ibid.* aux pp. 160, 164.

[32]Au Québec, voir les principes relatifs au lien de causalité entre la faute et le dommage, et au fardeau de la preuve quant à la responsabilité du fabricant, art. 1053 *C.c.B.-C.* ; J.-L. Baudouin, *La responsabilité civile délictuelle*, 3e éd., Cowansville, Qué., Yvon Blais, 1990 aux pp. 200-202, paras. 367-73 (et la jurisprudence citée) : « Il suffit simplement que la preuve rapportée rende probable l'existence d'un lien direct » (*supra* à la p. 202, para. 373).

[33]*Supra*, note 23 aux pp. 168-69.

[34]*Ibid.* à la p. 173 et s.

création de règles de droit international pouvant influencer la pratique des États importateurs[35]. La coopération des États devient alors un élément essentiel de tout le processus relatif à l'élaboration d'un régime légal ayant pour but ultime la prévention et la minimisation des dommages en matière de transfert de technologies et de substances dangereuses.

Cette collaboration est d'autant plus nécessaire lorsqu'il s'agit de définir le mode de réparation et de compensation des dommages qui surviennent à la suite de catastrophes environnementales. Que l'on songe à l'aménagement d'un « régime d'assurance sans faute »[36] ou encore d'un « fonds international d'indemnisation »[37], la préoccupation demeure la même, soit celle d'offrir une indemnité compensatoire aux personnes victimes de catastrophes environnementales. Une telle démarche s'impose lorsque l'on observe que la seule catastrophe de Bhopal (Inde) a fait plus de 200 000 victimes[38].

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[35]*Ibid.* à la p. 174 et s.

[36]S.C. McCaffrey, « Expediting the Provision of Compensation to Accident Victims » dans *Transferring Hazardous Technologies, supra*, note 1, 199.

[37]D.B. Magraw, « International Legal Remedies » dans *Transferring Hazardous Technologies, supra*, note 1, 240.

[38]*Supra*, note 4 aux pp. 7-8.

Linda Starke, *Signs of Hope: Working Towards Our Common Future.* Oxford: Oxford University Press, 1990. Pp. ix, 192 [$15.00]. Reviewed by Nicola Pain*

The destruction of the environment both within individual countries and in areas common to all nations has become a major issue in many countries and at the international level in the second half of the 1980s. The substantial and potentially catastrophic global problems faced by the world in general with ozone depletion, global warming, acid rain, deforestation and increasing atmospheric and marine pollution, to name a few, has created considerable concern amongst many countries at both government and individual citizen level. Some environmentalists and scientists, such as Dr. Paul Ehrlich of Stanford University and Dr. David Suzuki of C.B.C.'s "The Nature of Things" have said that unless such problems are dealt with in an effective way in the next ten years the destruction resulting from them will prove extremely harmful. The United Nations responded to this concern in several ways and one of these was to establish the World Commission on Environment and Development.

In 1987 *Our Common Future*,[1] produced by the World Commission on Environment and Development (W.C.E.D.) chaired by Gro Harlem Brundtland, was published and received world-wide attention. The *Brundtland Report* was broad in its analysis and sweeping in its recommendations about the need for change in relation to the environment and development. *Signs of Hope*[2] was published three years after the *Brundtland Report* and attempts to review progress made since that report's publication. The author works at the Centre for Our Common Future which was set up in 1988 to provide a focal point through which the interest and momentum generated by the *Brundtland Report* could be maintained.[3]

The major recommendations in the *Brundtland Report* are summarised in *Signs of Hope* in eight categories: revive growth, change the quality of growth, conserve and enhance the resource base, ensure a sustainable level of population, re-orient technology and manage risks, integrate environment and economics in decision-making, reform international economic relations and strengthen

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[1]The World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987) [hereinafter *Brundtland Report*].

[2]L. Starke, *Signs of Hope: Working Towards Our Common Future* (Oxford: Oxford University Press, 1990) [hereinafter *Signs of Hope*].

[3]In Appendix 1 to *Signs of Hope*, *ibid.* at 175, the history, aims and activities of the Centre for Our Common Future are set out.

international co-operation.[4] These objectives have been summed up in what is the key recommendation of the *Brundtland Report*, implementing a society based on sustainable development.[5] In order for those changes to be implemented there needs to be a major re-thinking of how the environment is regarded. The challenge for governments and communities around the world has been to work out ways of applying those broad recommendations in a practical way at local, national, regional and global levels.

Such major changes obviously cannot take place overnight. In *Signs of Hope*, Linda Starke has done a very good job of relating some of the actions which have resulted from initiatives taken in response to the *Brundtland Report*. It is clear that the *Bruntland Report* has spurred unprecedented action in some areas by national governments as well as Non-Governmental Organizations (N.G.O.). So much action has taken place that it would be very difficult to document all of it and the book is intended as a "snapshot" of some of the important initiatives. The book therefore focuses on the "agents for change" if these new ways of thinking are to emerge and be used as the basis for implementation of the report's recommendations. It does not focus on a particular issue in each chapter but rather looks at signs of change in political and economic decision-making processes and those who influence these processes. Two chapters focus on the efforts made by politicians and governments at the international and national levels to accept and develop these new ways of thinking.[6] One chapter focuses on the key role played by private groups in influencing decisions made about development and the environment.[7] This growing influence is described as "the most striking signs of hope for our common future."[8] One chapter looks at some of the initiatives taken by industry to incorporate the recommendations of the *Brundtland Report*.[9] Another chapter considers the crucial role the media can play in influencing the decisions of both governments and individuals in relation to the environment.[10] The book stresses that the changes documented are insufficient. For example, in relation to changes noted in industry, it is made clear that we are a long way from having all industries embrace sustainable development objectives.

The book is not a critique of the contents of the *Brundtland Report*, but there are some criticisms of the message as set out in the *Brundtland Report* and the recommendations of the Legal Experts Group which accompanied it. For example, following publication in 1987, the key recommendation of the *Brundt-*

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[4]*Ibid.* at 4-5.
[5]*Ibid.* at 8.
[6]C. 2 "Global Responses to Global Problems," and c. 3 "The Wheels of Government," *ibid.*
[7]C. 4 "Private Groups: A Force for Change," *ibid.*
[8]*Ibid.* at 63.
[9]C. 5 "A Commitment by Producers and Consumers," *ibid.*
[10]C. 6 "Delivering the Message," *ibid.*

land Report, the application of sustainable development, was suddenly on everyone's conference agenda. The problem with so broad a term is that it means all things to all people. The vagueness of the meaning of sustainable development (defined by the *Brundtland Report* as meeting "the needs of the present without compromising the ability of future generations to meet their own needs")[11] can be seen as both a weakness and a strength. Starke mentions it as a strength in her first chapter but it can also be criticised as a weakness largely because it can be interpreted to suit the audience. Various meanings have therefore been proposed. These range from the view that no further development should take place at all to another view that sustainable development means continuing to find the resources needed (even if that means in national parks) because only in this way is the resource "sustainable." Whatever criticisms one may have of the terms used in the *Brundtland Report* it has certainly generated much debate and been a major catalyst for action throughout the world on one of the most important global issues we presently face, how to reconcile developmental and environmental needs in such a way that the needs of future generations are not compromised. The *Brundtland Report* emphasised that in order to bring about the changes required to implement sustainable development, greater citizen participation in decision-making is essential. The involvement of lesser developed countries at the international level is also essential. This in turn requires changes in legal and institutional structures at national and international levels. Citizen participation is part of some national legal systems. However, citizen participation under existing international law as a means of implementing the *Brundtland Report*'s objectives is problematic.

International Law and the Environment

Until recently legal measures to protect the environment have tended to develop in national legal systems rather than at the international level. The field of international environmental law is growing in a piecemeal fashion. Books on public international law written ten or more years ago are unlikely to have any references to international law on the environment. This field has, by and large, emerged or been identified as a separate area of international public law since the mid 1980s.[12] Impacts which have caused discussion about the need for international regulation of the environment include transboundary impacts caused by disasters such as the nuclear accident at Chernobyl, the chemical accident at Bhopal in India and oil pollution by the Exxon Valdez.[13] The problems presented by global warming, such as climate change, are causing concern through-

[11]*Ibid.* at 8.

[12]Books written more recently are now likely to include a chapter on the subject. See *e.g.* D.H. Ott, *Public International Law in the Modern World* (London: Pitman, 1987).

[13]For a discussion of these issues, see book reviews in this issue by C. Lamarre and D. Pharand.

out the world and there is now interest in developing mechanisms to deal with this problem.[14]

There are a few global conventions in the environmental area being considered now which aim to preserve bio-diversity, reduce de-forestation and deal with global warming. There is no global environmental protection convention. One has been proposed by the Legal Expert Group of the World Commission on Environment and Development but it is more likely to be used for discussion purposes than as a convention or treaty to be adopted by the United Nations.

The number of regional instruments which could be described as environmental is considerable. The United Nations Environment Programme's Bibliography of environmental law numbers these at over 140. Perusing these documents demonstrates their fragmented subject matter. The instruments address specific issues such as the preservation of areas or items of international importance or particular global environmental issues.

The *Stockholm Declaration* of 1972 is commonly regarded as the starting point of modern international environmental law.[15] Environmental issues were not of major concern to the international community until this decade. Since 1972 there has been a significant increase in the number of international instruments which could have environmental consequences. In that period there has been on-going debate about economic development and its relation to the environment. Initially, the two were seen as incompatible. There is now a greater acceptance of their inter-relatedness. This question is particularly vexing for developing countries who see the need to pursue development objectives if they are ever to "catch-up" to the developed western countries. A further dimension which is providing major challenges to international legal development is the increasing complexity of the environmental problems faced on a global basis with not only transboundary pollution, but also global warming leading to climate change.

Problems in International Environmental Law

A crucial area in which public international law fails is enforcement of obligations imposed on governments under international law. If governments

[14]The United Nations General Assembly decided to establish the International Negotiating Committee to develop a convention to deal with climate change following the Second World Climate Conference in Geneva in September 1990. The first negotiating session was held in Washington D.C. on 4-14 February 1991. The aim is to draft a convention which can be signed at the U.N. Conference on Environment and Development scheduled for 1992.

[15]The first major United Nations conference on the environment was held in Stockholm in 1972. The Stockholm Conference on the Human Environment produced the *Report of the United Nations Conference on the Human Environment*, 1972, U.N. Doc. A/CONF 48/14/1972/Corr. 1, 11 I.L.M. 1416 (1972) [hereinafter *Stockholm Declaration*] and contained a large number of resolutions about action in the environmental area.

fail to act against a recalcitrant nation there are virtually no direct legal avenues open to non-governmental bodies or private citizens (whether individually or in groups) to seek enforcement of international law against a government. Traditional international lawyers will say that public international law, while it continues as the law between nations rather than individuals, is enforceable by states alone.[16] That is strictly correct in terms of present legal measures open to governments. Enforcement at the international level is often by way of coercion through economic sanctions or, ultimately, the use of force, as much as by legal means. This clearly reflects the political reality that is an important component of international law and its enforcement. It is also one of the major reasons why protection of the environment under international law is problematic. Providing a greater role to citizens and N.G.O.s at the international level would assist in the implementation of responsibilities.

Other difficulties in dealing with environmental problems in the international system can be seen. In the first chapter of *Signs of Hope* Starke refers to some of the major global environmental problems being faced in the world.[17] One of these is the problem of global warming and climate change. One aspect of this problem is ozone-depletion. Starke sets out the efforts made to control ozone-depleting substances through international conventions and protocols. The process leading to the implementation of the *Vienna Convention for the Protection of the Ozone Layer* of 1985[18] and the *Montreal Protocol on Substances that Deplete the Ozone Layer*[19] is viewed by many as an example of successful negotiation at the international level. The more complex problem of how to control the various activities leading to global warming is now being addressed at the international level. This process more than any other may demonstrate the extent to which there has been true acceptance of the message of the *Brundtland Report*. The early signs are not very hopeful. The United Nations International Negotiating Committee (I.N.C.) on drafting a Climate Change Convention has just finished meeting in Chantilly, near Washington D.C., for its first negotiating session. For those participating from N.G.O.s and lesser developed countries, the two weeks were a sobering start to the process. The entire time was taken up with how the work of the I.N.C. should take place procedurally, rather than spending any time on substantive issues. The difficulty of overcoming national interests at the international level is demonstrated in

[16]International law commentators constantly state that generally the subjects of international law are states. See *e.g.* I. Brownlie, *The Principles of Public International Law*, 4th ed. (Oxford: Clarendon Press, 1990); and, R. Wallace, *International Law* (London: Sweet & Maxwell, 1986). Numerous international arbitrations and court decisions agree. See *e.g. Nottebohm Case (Liechenstein* v. *Guatemala)*, [1955] I.C.J. 4, 22 I.L.R. 349; and, *Anglo-Iranian Oil Co.*, [1952] I.C.J. 93, 19 I.L.R. 507.

[17]*Supra*, note 2 at 10-11.

[18]U.N. Doc. UNEP/IG 53/3, 4 & 5/Rev. (1985); reprinted in 26 I.L.M. 1516 (1987).

[19]26 I.L.M. 1550 (1987) [entered into force Jan. 1, 1989].

multi-lateral negotiations of this nature with the clear reluctance of some developed countries to agree on targets for limiting greenhouse gas emissions. This is despite the fact that the occurrence of sea-level rise caused by global warming is accepted by most climate scientists (the unsettled question being the extent of the rise and the period in which this will occur) and that even a small rise will reek considerable havoc and destruction to small island states in the Pacific, Caribbean and Mediterranean regions. The draft convention is targeted for presentation at another important milestone in the United Nations environmental calendar: the United Nations Conference on Environment and Development (U.N.C.E.D.), scheduled to take place in Brazil in 1992.

Developing Public International Law for the Environment

As is clear from the discussion above, citizen participation at the international level is relegated to largely informal mechanisms. This reflects the nature of international law as the law of states rather than individuals. The field does not traditionally provide mechanisms for citizen participation. As a developing field of public international law, the international environmental law field is possibly the most open to change given the considerable interest in this field world-wide.

The Centre for International Environmental Law (C.I.E.L.) was established in 1989 with the aim of developing international law in a way that will lead to better protection of the environment. C.I.E.L. also wants to address the problem that international law is not very responsive to non-governmental pressure. This can be achieved in part by trying to ensure that citizens through N.G.O.s have better access to the international legal system. C.I.E.L.'s major activities are teaching, research and advice work for individuals, N.G.O.s and states which are economically disadvantaged. C.I.E.L. is based in Washington D.C. and at King's College, London.

C.I.E.L. is working on several projects. One project involves the new European Bank for Reconstruction and Development. C.I.E.L. is working to ensure a positive environmental role for the newly established development bank set up to provide funding for Central and Eastern Europe. C.I.E.L. initially drafted a provision mandating that the 10 billion ecu bank pursue sustainable development. The bank became the first ever multilateral development bank with an environmental mandate — to pursue environmentally sound and sustainable development. C.I.E.L. is now working to ensure that this mandate becomes operational, through such measures as environmental assessment requirements, citizen access to information and independent administrative review. This will enable citizens to better monitor the bank's operations and ensure that as far as possible the bank's work is carried out in an environmentally sound and sustainable manner.

C.I.E.L. is also working on global climate change and sea level rise. It is preparing several research papers on areas such as the precautionary principle, technology transfer and transfer funding mechanisms. C.I.E.L. in London is working closely with small, developing island states in the climate change convention being drafted presently. C.I.E.L. in Washington D.C. is working with N.G.O.s in their efforts to lobby governments in relation to the draft convention.

The 1992 U.N. Conference on Environment and Development

Many of the important initiatives started by the *Brundtland Report* will be focusing on this conference as a possible opportunity to make meaningful changes in international environmental law. Starke describes the conference as a "major turning-point" and as "a critical chance — perhaps the world's last — to change the course of development."[20] The U.N. Conference on Environment and Development (U.N.C.E.D.) will also provide an important opportunity for governments to demonstrate that they are committed to the recommendations of the *Brundtland Report*. If it is to be more than a talkfest for governments, it will need to consider co-ordinated international action to solve major problems in a relatively short time frame, something international action has not generally been noted for. Having said that, the level of discussion and activity at the U.N. on environmental issues is substantial and there is reason to believe that, finally, governments are aware of the serious problems confronting them and may be more willing to co-operate in solving the problems.

There are two aspects of the 1992 Conference which are of major importance. The subject matter of the Conference and how this will be treated is obviously vital. In addition, the level of participation enabled for governments of lesser developed countries and the independent (or non-government) sector is a significant issue and must be addressed.

In its Resolution calling for the Conference to be held, the U.N. General Assembly stressed the need to consider the inter-relationship between poverty and environmental degradation, a key matter which needs to be addressed and an important dynamic discussed in the *Brundtland Report* and *Signs of Hope*. In all, twenty-three objectives for the meeting were specified, including promotion of environmental education and the establishment of a fund to aid in the transfer of environmentally sound technology to the Third World.[21] Issues include consideration of patterns of consumption and production in North and South, the transfer of technology from North to South as well as the eradication of poverty and the need to improve the quality of life for much of the world's population.

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[20]*Ibid.* at 172.
[21]*Ibid.* at 171-72.

Whether the U.N.C.E.D. Conference grapples successfully with the environmental problems caused by poverty remains to be seen. It is an encouraging sign that such issues appear on the agenda at this stage. Hopefully the issues raised by the relationship between the environment, development and poverty will be a centrepiece at the 1992 Conference itself.

The level of involvement of lesser developed countries could be crucial in determining the direction of the debate on the many important issues which will arise at the 1992 Conference. Smaller developing countries in particular often lack the resources to participate fully in the preparatory meetings and to provide their own technical and scientific expertise. A voluntary fund is to be established by the governments of the United Nations to help developing countries participate in the preparatory process. This sounds laudable but the size and administration of the fund will determine to a large extent how effective it is.

N.G.O. involvement in multilateral decision-making is one of the most effective means of providing greater citizen participation. Citizen participation through N.G.O.s is particularly important in international fora where governments do not represent important concerns in their own countries or ignore a minority group within their own country when making policies, as often happens with minority indigenous people. Such groups have great difficulty in presenting their case at the international level in the U.N. when their own governments ignore their circumstances. Providing a voice to N.G.O.s gives opportunity to a useful and independent movement to provide insight and expertise on significant issues. N.G.O.s are also vital in pressuring governments at the conference to raise issues not on the agenda and in providing valuable information on those issues. N.G.O.s can lobby governments to vote for proposals such as a suitably effective convention on climate change or the protection of biodiversity and an Earth Charter which could provide a framework for global environmental protection, to name but a few issues. It is still unclear to what extent N.G.O.s will be allowed to participate in the 1992 Conference itself. There appears to be a major push to depart from previous conferences where formal N.G.O. involvement was extremely limited, as in most UN fora. It will be a substantial mark of progress in assessing the openness of governments around the world to generally debate environmental issues if representatives and the views of N.G.O.s are allowed to voice their concerns.

Conclusions

Signs of Hope is not intended as a major analytical work on the subject of the environment and development. Its strength lies in its distillation of the message of the *Brundtland Report* and its identification of some of the positive steps that have been taken as a result of that report. It is clearly and informatively written and provides a concise compilation of material which would be difficult to find elsewhere in such an accessible form. With its highly readable text and

lay-out the book is designed to highlight the key issues for non-specialist readers.

The message in *Signs of Hope* is that there is reason to be optimistic, despite the considerable environmental problems threatening the world. Whether or not one agrees with this view, reading this book will provide an excellent background to the impact of the *Brundtland Report* and its continued relevance to changes in our perceptions of the environmental problems facing us. Given the relatively short period since the *Brundtland Report*'s release and the usually slow pace of change at the international level there has been quite unprecedented action in some areas. A further assessment of the quality and pace of that change after the 1992 U.N.C.E.D. Conference will indicate if the trends identified by Starke will continue in the crucial decade of the nineties.

Robert Boardman, *Global Regimes and Nation-States: Environmental Issues in Australian Politics*. Ottawa: Carlton University Press, 1990. Pp. xiv, 222 [$19.95]. Reviewed by Douglas M. Johnston*

Despite post-modernist leanings to localism in certain sectors of social and legal theory, one of the prevailing tendencies in Canada in the applied social sciences is to seek sophistication in comparative studies. Over the last decade, insights into Canadian public policy, law, and administration have been sought after through the study of other national "systems" that are deemed sufficiently cognate or compatible to support useful comparison with Canada's.[1] Given its rising priority in this country, the area of environmental policy seems especially well-chosen for a Canadian scholar to apply himself to overseas research. *Global Regimes and Nation States: Environmental Issues in Australian Politics*[2] is a strikingly impressive justification of the modern practice of spending a study leave far from home.[3] It also seems appropriate that such a review should be written for the McGill Law Journal twenty years after (now Emeritus) Prof. Maxwell Cohen undertook the task of chairing an external advisory committee to assist Environment Canada with its early work in the field of international environmental law and policy.[4]

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[1] See *e.g.* R.H. Leach, *Whatever Happened to Urban Policy? A Comparative Study of Urban Policy in Australia, Canada, and the United States* (Canberra: Centre for Research on Federal Financial Relations, Australian National University, 1985); B.W. Morse, *Aboriginal Self-Government in Australia and Canada* (Kingston: Institute of Intergovernmental Relations, Queen's University, 1984); K.G. Banting & R. Simeon, eds, *Redesigning the State: The Politics of Constitutional Change in Industrial Nations* (Toronto: University of Toronto Press, 1985); R.M. Stern, *Trade and Investment in Services: Canada-U.S. Perspectives* (Toronto: Ontario Economic Council, 1985); G.S. Mahler, *New Dimensions of Canadian Federalism: Canada in a Comparative Perspective* (Rutherford: Fairleigh Dickinson University Presses, 1987); and, M.C. Cummings, Jr. & R. S. Katz, eds, *The Patron State: Government and the Arts in Europe, North America, and Japan* (New York: Oxford University Press,1987).

[2] R. Boardman, *Global Regimes and Nation-States: Environmental Issues in Australian Politics* (Ottawa: Carleton University Press, 1990) [hereinafter *Global Regimes and Nation States*].

[3] Much of the research for the study reviewed here was carried out by its author during a stay at the Australian National University in Canberra.

[4] This committee, established at the suggestion of the first deputy minister of Environment Canada, consisted of B. Flemming, D.M. Johnston, and D. Pharand, under the chairmanship of M. Cohen. For a number of years it provided fairly detailed commentary on governmental and intergovernmental documents prepared for the 1972 U.N. Conference on the Human Environment and for the early years of the U.N. International Sea-bed Committee (1968-1973), which of course provided the basis for the Third U.N. Conference on the Law of the Sea (1973-1982). The McGill linkage with that process is reflected also in the involvement of W. Foster and A. de Mestral, now both prominent members of the McGill Faculty of Law.

The literature on comparative public policy studies shows that Australian experience is frequently the most relevant to Canada's. By almost any criterion, the environmental policy experiences of Canada and Australia seem especially deserving of close comparison. Geographically, both countries are immense with exceptionally long coastlines. Comparable economies, rich in natural resources, have generated similar issues between economic development and environmental protection. Canada's climatic and ecological zones are less diverse than Australia's, and Australia has no neighbourly presence analogous to the United States,[5] but the scientific, if not psycho-cultural, significance of the Canadian Arctic bears some similarity to that of the "Australian Antarctic Territory."[6] Both peoples, it might be said, have a wilderness ethic or "myth" embedded in their collective psyche, which has contributed in each country to the growth of a wildlife conservation movement, symbolized by kangaroos and crocodiles in one and by beavers and polar bears in the other.

Structurally, the federal systems of both Canada and Australia have created difficult political and administrative tensions between the central government and the various governments at the state/provincial and territorial levels. Accordingly, the political life of both nations tends to be animated by frequent, and occasionally bitter, quarrels over jurisdictional domain, sometimes resolved by recourse to judicial process of the same lineage, but more often finessed, as a matter of expediency rather than principle, through the negotiation of intergovernmental arrangements under the rationale of "cooperative federalism."[7]

In matters of international environmental diplomacy, Canberra and Ottawa have had to contend with comparable challenges at the global level, but the convoluted history of bilateral Canadian-U.S. environmental treaty-making[8] has no counterpart in Australia. In the late 1960's the United Nations General Assembly decided to undertake the first comprehensive stocktaking of major environmental problems confronting the world community as a whole, as the basis of the Stockholm Conference on the Human Environment[9] scheduled for 1972. This coincided with a perception on the part of both federal governments that, notwithstanding an irrelevant and obstructive division of constitutional powers,

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[5]*Global Regimes and Nation States, supra*, note 2 at 197.

[6]Claims to Antarctic territory were made by the Crown in 1926, but some of these areas were later transferred to Australia and New Zealand. In the case of Australia, the transfer was confirmed by the *Australian Antarctic Territory Acceptance Act* of 1933 (*ibid.* at 78).

[7]For a description of Australian "cooperative federalism" in the environmental sector see c. 6 "Institution-building and Cooperative Federalism" (*ibid.*, 97). For a list of variously qualified sorts of federalism see W.H. Stewart, *Concepts of Federalism* (Landham, MD: University Press of America, 1984).

[8]For a detailed study, see J.E. Carroll, *Environmental Diplomacy: An Examination and a Perspective of Canadian-U.S. Transboundary Environmental Relations* (Ann Arbor: University of Michigan Press, 1983).

[9]United Nations Conference on the Human Environment, Stockholm 1972.

a way had to be found to develop truly national environmental priorities and programmes. Within a few years it seemed obvious that national environmental policy-making in both countries would, henceforth, owe as much to globally negotiated concepts and principles as to the outcome of internal (federal-state/provincial/territorial) negotiations. By 1972 Canada and Australia had become widely recognized as "middle powers" with "leader state" experience and capabilities in the environmental context, and in the years since then it has become increasingly difficult for them to resist the political temptation to use these capabilities to their advantage in their conduct of foreign policy around the world.

Boardman's account of Australian involvement in these internal and external developments is rich in detail, and is sufficient reason for favourable review. But the readers of this Journal may be chiefly interested in the legal aspects of this topic, and in the insights into Canadian foreign/domestic policy-making suggested by the comparison of the two national experiences, although neither is the primary focus of this study.

In Australia, the chief responsibility for environmental protection is vested in the states and the government of the Northern Territory. In most sectors of Australian environmental administration one finds the primary mandate entrusted to the state level of government: general environmental policy planning; land use planning; resource development and management; environmental impact assessment; waste management; pollution control; ecological reserves; wildlife protection; and, preservation of the national heritage.[10] Even the so-called "national" parks system of Australia was developed at the state level,[11] not the federal level as in Canada. However, in no state are the various sectoral functions of environmental management entrusted to any one single agency, so that the process of national environmental policy-making is further complicated by intra-state and inter-state politics, bureaucratic as well as electoral, within a highly "individualistic" political culture which, by and large, has been hostile to the centralization of authority in general and to the harmonization of state laws and policies in particular.[12] On the other hand, the Commonwealth of Australia, in a degree comparable with the Dominion of Canada, has exclusive legislative jurisdiction over the Australian Capital Territory, the Australian External Territories, and Commonwealth-owned land in the states — an area totalling

[10]See G.M. Bates, *Environmental Law in Australia* (Sydney: Butterworths, 1983) at 22.

[11]*Global Regimes and Nation States*, *supra*, note 2 at 176. However, with the election of the Labor (Whitlam) government at the end of 1972, just a few months after the Stockholm Conference, a phase of unprecedented environmental activism began at the federal level. This was reflected not least in the establishment of the Department of Environment and Conservation, one of whose immediate tasks was the creation of an Australian national parks and wildlife service influenced by the U.S. and Canadian federal models (*supra* at 101).

[12]See B.W. Hodgins, *et al.*, eds, *Federalism in Canada and Australia: Historical Perspectives, 1920-1988* (Peterborough: Frost Centre for Canadian Heritage and Development Studies, 1989).

over one million hectares. Moreover, s.51 of the *Australian Constitution*[13] enumerates various heads of federal jurisdiction under which the Commonwealth might purport to enact environmental legislation: for example, taxation, external affairs, and trade and commerce. The latter power is restricted by s. 92,[14] which guarantees freedom of trade between the states, but the Commonwealth's power to regulate overseas trade is unlimited.[15] Furthermore, the Commonwealth possesses an "implied power," which has been interpreted judicially in such a way as to enable it "to engage in enterprises and activities appropriate to a national government which may be undertaken by the Commonwealth on behalf of the nation[.]"[16] This doctrine has been applied to uphold the constitutional validity of the Commonwealth's *National Parks and Wildlife Act*[17] of 1975, but the political system is reluctant to tolerate a wholesale passing over of environmental authority to Canberra for the purpose of implementing environmental treaties concluded by the Commonwealth government.[18]

What is striking to a Canadian reader is the comparability of Canadian and Australian efforts to think through, negotiate and implement federal-state/provincial/territorial arrangements in sectors of public policy where the national government has taken a prominent and responsible role in the development of

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[13]*Commonwealth of Australia Constitution Act, 1900* (U.K.), 63 & 64 Vict., c. 12 [hereinafter *Australian Constitution*]:

> S. 51. Legislative powers of the Parliament
> The Parliament shall, subject to this Constitution, have power to make laws for the peace, order, and good government of the Commonwealth with respect to:
> (i) Trade and Commerce with other countries, and among the States:
> (ii) Taxation; but so as not to discriminate between States or parts of States: [and]
> (xxix) External affairs[.]"

[14]*Ibid.*:

> S. 92 Trade within the Commonwealth to be free
> On the imposition of uniform duties of customs, trade, commerce, and intercourse among the States, whether by means of internal carriage or ocean navigation, shall be absolutely free.
> But notwithstanding anything in this Constitution, goods imported before the imposition of uniform duties of customs into any State, or into any Colony which, whilst the goods remain therein, becomes a State, shall, on thence passing into another State within two years after the imposition of such duties, be liable to any duty chargeable on the importation of such goods into the Commonwealth, less any duty paid in respect of the goods on their importation.

[15]Bates, *supra*, note 10 at 19.

[16]*Ibid.* at 20.

[17]Australian National Parks and Wildlife Service, *Report for the Period 1 July 1976 – 30 June 1977* (Canberra: Queen's Printer, 1977). See *Global Regimes and Nation States*, *supra*, note 2 at 82-83.

[18]On the World Heritage — South-west Tasmania controversy, see *Global Regimes and Nation States*, *ibid.* at 137-45. For a general overview of the constitutional issues in Australian environmental policy, see R.L. Mathews, ed., *Federalism and the Environment* (Canberra: Centre for Research on Federal Financial Relations, Australian National University, 1985).

environmental principles, standards and procedures at world community, regional, and bilateral levels of international diplomacy. In both countries, moreover, domestic environmental law developments might be linked with foreign policy initiatives in the politically and ethically significant context of international development assistance.[19] Along with colleagues in one or two other Commonwealth countries, such as New Zealand, environmental law and policy specialists of Canada and Australia might be persuaded by this valuable study that the time is ripe for a collaborative research project focussing on sectors of shared expertise.

For those of us with an active interest in international environmental law, Boardman's work is of further value because of the light it projects on Australian government contributions to that rapidly evolving field. Useful information is provided on the Australian input into the 1972 Stockholm Conference[20] and the U.N.'s Third Law of the Sea Conference (U.N.C.L.O.S.);[21] into the U.N. Environment Programme (U.N.E.P.),[22] the Environment Committee of Organization for Economic Cooperation and Development (O.E.C.D.),[23] and the International Union for Conservation of Nature and Natural Resources (I.U.C.N.).[24] *Global Regimes and Nation States* also details Australian input into important global environmental treaties such as the *Convention on International Trade in Endangered Species* (C.I.T.E.S.),[25] the 1972 *United Nations Educational, Scientific and Cultural Organization* (U.N.E.S.C.O.) *World Heritage Convention*,[26] the 1971 *Ramsar Convention on the Protection of Wetlands*,[27] the family of marine pollution agreements,[28] and, of course, the various agreements concerned with environmental protection in Antarctica and the Southern Ocean.[29]

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[19]See D. Runnalls, *Environment and Development: A Critical Stocktaking* (Ottawa: North-South Institute, 1986). See also various essays in J.O. Saunders, ed., *The Legal Challenge of Sustainable Development — Essays from the Fourth Institute Conference on Natural Resources Law* (Calgary: Canadian Institute of Resources Law, 1990) in Part 5 "International Economic Relations and Sustainable Development": D. Runnalls, "The Evolution of Environmental Factors in Aid Programs" (in Saunders, ed., *supra*, 313); F. Bregha, "Aid and the Environment: The Canadian Approach" (in Saunders, ed., *supra*, 325); P.M. Saunders, "Legal Issues in Development Assistance: The Challenge of Sustainable Development" (in Saunders, ed., *supra*, 336); J. Keeping, "Canadian Gas Export Policy: Part of the Problem" (in Saunders, ed., *supra*, 356); J.O. Saunders, "Legal Aspects of Trade and Sustainable Development" (in Saunders, ed., *supra*, 370); and, A. Leonard & J. Vallette, "The International Waste Trade: A Greenpeace Report" (in Saunders, ed., *supra*, 387).

[20]*Global Regimes and Nation States*, *supra*, note 2 at 19-25.

[21]*Ibid.* at 61-66.

[22]*Ibid.* at 22-28.

[23]*Ibid.* at 28-30.

[24]*Ibid.* at 31-34.

[25]*Ibid.* at 40-48.

[26]*Ibid.* at 51-55, 137-45.

[27]*Ibid.* at 50, 136.

[28]*Ibid.* at 67-71.

[29]See c. 5 "Australia, Antartica and the Southern Ocean" (*ibid.* at 77).

Most of these contexts are of sufficient importance to deserve separate, full-scale (monographic) treatment in Canada as well as Australia. Published studies have tracked recent Canadian diplomatic involvement in a variety of environmental problem areas such as the environmental law of the sea,[30] fishery management and conservation,[31] ship-generated marine pollution,[32] land-based marine pollution,[33] deep ocean mining,[34] acid rain,[35] ozone layer,[36] Arctic Ocean transit management,[37] and Great Lakes protection.[38] Moreover, recent lists of Canadian doctoral dissertations reveal the popularity of topics such as the international regulation of toxic chemicals and other hazardous substances; the protection of marine mammals, seabirds, and endangered species; and the disposal

[30]Canadian diplomatic influence on international environmental law-making is described in such works as A.L. Hollick, *U.S. Foreign Policy and the Law of the Sea* (Princeton: Princeton University Press, 1981); J. Schneider, *World Public Order of the Environment: Towards an International Ecological Law and Organization* (Toronto: University of Toronto Press, 1979); B. Johnson & M.W. Zacher, eds, *Canadian Foreign Policy and the Law of the Sea* (Vancouver: University of British Columbia, 1977); D. McRae & G. Munro, eds, *Canadian Oceans Policy: National Strategies and the New Law of the Sea* (Vancouver: University of British Columbia, 1989); and, D.M. Johnston, ed., *The Environmental Law of the Sea* (Gland, Switzerland: International Union for Conservation of Nature and Natural Resources, 1981).

[31]D.M. Johnston, *The International Law of Fisheries: A Framework for Policy-Oriented Inquiries* (New Haven: Yale University Press, 1964), reprinted 1987 with new introductory essay (Norwell, MA.: New Haven Press/Kluwer, 1987); and E.L. Miles, ed., *Management of World Fisheries: Implications of Extended Coastal State Jurisdiction* (Seattle: University of Washington Press, 1989).

[32]R.M. M'Gonigle & M.W. Zacher, *Pollution, Politics, and International Law: Tankers at Sea* (Berkeley: University of California Press, 1979). For a Canadian assessment of marine pollution agreements, see D.M. Johnston, "Marine Pollution Agreements: Successes and Problems" in J.E. Carroll, ed., *International Environmental Diplomacy: The Management and Resolution of Transfrontier Environmental Problems* (New York: Cambridge University Press, 1988) 199.

[33]M. Qing-Nan, *Land-based Marine Pollution: International Law Development* (London: Graham & Trotnam, 1987). This book is based on the author's doctoral dissertation for Dalhousie Law School.

[34]E. Riddell-Dixon, *Canada and the International Seabed: Domestic Determinants and External Constraints* (Kingston: McGill-Queen's University Press, 1989).

[35]I. Van Lier, *Acid Rain and International Law* (Alphen aan den Rijn: Sijthoff & Noordhoff, 1981); and, J. Brunée, *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Dobbs Ferry, N.Y: Transnational Publishers, 1988). Although these authors were trained mostly in the Netherlands and Germany respectively, these books are based on theses written at Dalhousie University.

[36]Brunée, *ibid.*

[37]See, for example, D. Pharand, *The Law of the Sea of the Arctic with Special Reference to Canada* (Ottawa: University of Ottawa Press, 1973); D. Pharand, *Canada's Arctic Waters in International Law* (New York: Cambridge University Press, 1988); C. Lamson & D.L. VanderZwaag, eds, *Transit Management in the Northwest Passage: Problems and Prospects* (Cambridge: Cambridge University Press, 1988); F. Griffiths, ed., *Politics of the Northwest Passage* (Kingston: McGill-Queen's University Press, 1987); and, D.L. VanderZwaag & C. Lamson, eds, *The Challenge of Arctic Shipping: Science, Environmental Assessment, and Human Values* (Kingston: McGill-Queen's University Press, 1990).

[38]Carroll, *supra*, note 8.

of nuclear wastes. Significantly, most of these areas of Canada's scholarly effort are ocean-related, reflecting an even greater concern with the marine environment in Canada than in Australia. Sadly, the intensity of academic interest in these areas of concern is still not yet sufficiently matched by political will to result in the ratification of the 1982 U.N. *Convention on the Law of the Sea*[39] or of several important marine pollution control conventions.[40] The absence of a match between academic interest and political will has also failed to produce any commitment for a national ocean policy,[41] a nation-wide approach to the problem of coastal, shoreline management,[42] or the development of a national counterpart to the 1980 *World Conservation Strategy*, such as Australia adopted.[43]

Let us hope that the energy and imagination needed to attain these important goals in Canada will be fortified by collaborative projects of the kind envisaged above, which in turn will be developed on the basis of foreign-country studies such as *Global Regimes and Nations States.*

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[39]See T.L. McDorman, "Will Canada Ratify the Law of the Sea Convention?" (1988) 25 San Diego L. Rev. 535.

[40]D.M. Johnston, *Canada and the New International Law of the Sea* (Toronto: University of Toronto Press/Royal Commission on the Economic Union and Development Prospects for Canada/Canadian Government Publishing Centre, Supply and Services Canada, 1985) at 53-54, 115-16.

[41]In the mid-1980's, it was proposed that Canada establish a national ocean policy council (*ibid.* at 61-63). The Canadian government's initial response was a document agreeing on the need for an oceans strategy: Fisheries and Oceans Canada, *Oceans Policy for Canada: A Strategy to Meet the Challenges and Opportunities on the Oceans Frontier* (Ottawa: Minister of Supply and Services, 1987). Shortly thereafter, Fisheries and Oceans established a national advisory council, which meets periodically but seems to lack the endowment of funds and authority necessary to have a significant effect on ocean policy-making.

[42]For an early appraisal of needs in Atlantic Canada, see D.M. Johnston, *et al.*, *Coastal Zone: Framework for Management in Atlantic Canada* (Halifax: Institute of Public Affairs, Dalhousie University, 1975). See also B. Sadler, ed., *Coastal Zone Management in British Columbia* (Victoria: Department of Geography, University of Victoria, 1983).

[43]In 1980, after several years of gestation, the World Conservation Strategy was given life under the parentage of I.U.C.N. and the World Wildlife Fund. Several countries since then have produced national versions of the global document, which prescribe measures to be taken for achieving some of the objectives of the *World Conservation Strategy*. Australia was one of the first countries to undertake the development of a National Strategy, but the Commonwealth government encountered many difficulties before final nation-wide approval was achieved in 1986 (*Global Regimes and Nation States, supra*, note 2 at 125-29, 166-69).

Dianne Saxe, *Environmental Offences — Corporate Responsibility and Executive Liability*. Aurora: Canada Law Book, 1990. Pp. xxxiv, 254 [$55.00]. Reviewed by David O. Cox*

Recent Decima quarterly polling indicates that the majority of Canadians continue to be very concerned about the quality of the environment.[1]

Other independent research on public opinion suggests that Canadians rank passing stricter laws and getting tough with polluters ahead of all other activities that the Federal Government should be doing.[2] Sixty-one per cent of Canadians consider personally fining executives to be the preferred punishment of executives of polluting companies with 17 per cent choosing both a personal fine and jail sentence.[3]

Based on their studies, Decima reports that 39 per cent of Canadians believe that the prime motivation for industries undertaking environmentally friendly actions is fear of tougher government regulations.[4]

Judging from these current statistics, the Canadian public appears to support continued government regulation and enforcement of environmental protection laws. The question arises, though, will such an approach lead to the desired objective of a cleaner natural environment?

The debate over the merits of government regulation in this area has raged on for years and perspectives range from the call for increased criminalization of environmental laws[5] to deregulation[6] and greater emphasis on a system of private property rights allowing people harmed by pollution to obtain damages or injunctive relief.

In *Environmental Offences — Corporate Responsibility and Executive Liability*,[7] Dianne Saxe refreshingly leaves the wider debate aside and focuses on the prosecution of corporations and their executives. The release of her book is timely, given a recent decision of the Ontario Court (Provincial Division) in

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[1]Decima Research, *Decima Quarterly Report: Public Affairs Trends* (Toronto: Decima Research, 1990) at 49.

[2]International Environmental Monitor Ltd., *The Environmental Monitor* (Toronto, 1990) [unpublished].

[3]*Ibid.*

[4]*Supra*, note 1 at 53.

[5]Law Reform Commission of Canada, *Crimes Against the Environment* (Working Paper 44) (Ottawa: Law Reform Commission of Canada, 1985) at 67.

[6]J. Shaw, *Address* (Address to Our Environment: Solutions for Business from Business Conference, Ottawa, June 7-8, 1990) [unpublished].

[7]Aurora, Ont.: Canada Law Book, 1990 [hereinafter *Environmental Offences*].

May of last year, when for the first time in Canadian history an executive was sentenced to a six month prison term for environmental offences. Though the term was significantly reduced on appeal, the case will no doubt serve as a benchmark of the surge of interest in potential corporate exposure to liability under environmental statutes.[8]

While Saxe has designed the book in a manner that lends itself to reference in the heat of practice, a greater appreciation for the project is gained by a complete reading. In doing so, it is much more likely that one will formulate their own view of increased corporate executive and officer accountability for environmental offences. The societal benefits of prosecuting individuals instead of, or in addition to, corporations would appear sacrosanct. It is not surprising then that personal liability of corporate directors and senior officers is provided for throughout Canadian statutes including environmental laws. As Saxe discusses in the chapter entitled "The Role of Prosecution,"[9] the reluctance to prosecute appears to stem from the general perception that it is inappropriate to ascribe individual responsibility for what can be described as essentially corporate activities.

Saxe confronts this viewpoint directly. She systematically builds an effective argument for increased prosecution of individuals citing numerous references which focus on the necessity of linking corporate behavior to human control:

> Commitment to compliance must begin with the directors and senior officers. In the absence of such commitment, subordinates will be much more likely to commit or permit offences. Corporations that do violate and those that largely do not are distinguished by "corporate cultures" or ethical climates. The directors and senior officers bear the ultimate responsibility for the corporate culture of their firms.[10]

This is an example of her most compelling response to the various arguments against personal prosecution. Less convincing are her comments responding to the specific argument that an increase in personal prosecutions could deter competent and conscientious people from accepting a director's position.[11] Saxe cites the extensive range of statutes which impose personal liability on directors which she suggests has not had a detrimental effect on board composition.[12]

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[8]*R.* v. *Blackbird Holdings Ltd.* (22 June, 1990) (Ont. Prov. Ct.) [unreported], sentence reduced; *G. Crowe and Blackbird Holdings Ltd.* v. *R.* (6 May 1991) (Ont. Prov. Ct.) [unreported].

[9]*Environmental Offences*, *supra*, note 7, c. 2.

[10]*Ibid.* at 34.

[11]*Ibid.* at 37.

[12]*Ibid.*, n. 80. In that footnote, Saxe states that "there are at least 80 federal statutory provisions of this type, 62 in British Columbia, 98 in Alberta, 45 in Manitoba, 126 in Ontario and 19 in New Brunswick" (*supra* at 71). N. 80 refers the reader forward to c. 3 "The Legislative Framework" and n.90 (*supra*).

This is a weak response for two reasons. First, it is probably not the existence of such provisions that will alter corporate executive behavior; rather, what is relevant is whether the government adopts a practice of prosecuting individuals personally under such statutes. Second, the environmental context can be distinguished from others where potential personal liability is imposed. It can be argued that compliance with environmental laws is largely based on the discretionary judgement of Ministry of Environment officials creating a significant degree of uncertainty that does not exist in other contexts. Consequently, a person is apt to consider this a greater risk factor when making a decision whether to become a director.

Saxe does identify the key issue and the common sense response to the concern. How personal liability is imposed will likely affect the behavior of individuals in this regard more than anything else. Restricting the personal prosecution of executives to those with influence and control over the commission of the offence[13] will have the least adverse effect. Saxe uses results from an attitudinal survey she conducted to confirm the significance of this point.[14]

The chapter entitled "The Role of Prosecution" concludes with the details of that survey.[15] Its primary purpose, however, was to provide empirical evidence to support a decision of environmental regulators to give greater emphasis to prosecution of officers and directors, which Saxe states has to date been lacking. Among the conclusions drawn from the survey are:

> [C]orporations which have been prosecuted report allocating significantly more of their resources to environmental protection then do corporations which have not been prosecuted. In addition, corporate executives reported that attention to environmental matters at the highest levels of the firm, and corporate efforts to avoid pollution, would be greater if corporate executives faced the possibility of personal prosecution for pollution.[16]

The first conclusion is drawn from the factual information provided by individual respondents in selected corporations. The second conclusion, however, is based on information generated by an experiment where Saxe posed hypothetical questions concerning possible government prosecuting policies to be answered under one of three "experimental conditions":

> [O]ne group was asked to assume that they could not be personally prosecuted for corporate pollution, the second group to assume that they would rarely be personally prosecuted, and the third to assume that they would be prosecuted for any environmental offence for which the corporation was charged.[17]

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[13]That is, to "those who could have prevented pollution and failed to do so" (*ibid.* at 38).
[14]*Ibid.* at 50.
[15]*Environmental Offences*, *supra*, note 7, c. 2.
[16]*Ibid.* at 53-54.
[17]*Ibid.* at 46.

Concerns regarding the design and experimental method applied raise questions as to the validity of Saxe's second conclusion. She reports that several respondents stated that the hypotheticals did not contain enough details on which to found decisions. The question arises whether she pre-tested the hypothetical questions to ensure that she was obtaining a response to the question she posed. The fact that several did not respond makes one question why those that answered did so. Perhaps they were predominately reacting to previous experiences rather than the hypothetical questions. Saxe similarly does not address whether or not an attempt was made to eliminate bias stemming from previous experience in the selection of the three groups. In eliminating the bias, the conclusions of the study might have been more substantiated.

With the exception of the last chapter[18], the balance of the book is devoted to an in-depth review of the legal principles underlying environmental prosecutions generally and particularly where appropriate. In her analysis, Saxe provides access to an invaluable number of unreported decisions no doubt gathered over the years in her capacity as legal counsel for the Ministry of the Environment.

The discussion of theories of liability is organized to perfection.[19] She classifies theories under which directors and officers may be held liable for environmental offences in four major categories:

– As a principal, if the officer or director personally commenced a forbidden act;[20]

– As a party under the terms of special statutory provisions which expressly impose liability on directors and officers in relation to a corporate offence;[21]

– As a party to an offence committed by the corporation or another person, under the provisions of accomplice liability such as Sections 77 and 78 of the Ontario *Provincial Offences Act*;[22] and

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[18]C. 7 "The Director's Dilemma" (*ibid.*). Saxe describes the director's dilemma as "the dilemma of the conscientious director faced with the pervasive uncertainty of Canadian environmental law" (*supra* at 3).

[19]C. 5 "Theories of Liability" *ibid.*

[20]*Ibid.* at 103ff.

[21]*Ibid.* at 107ff.

[22]*Ibid.* at 140. Ss 77 and 78 of the *Provincial Offences Act*, R.S.O. 1980, c. 400 [hereinafter *Provincial Offences Act*] read as follows:

s.77 (1) Every person is a party to an offence who,
(a) actually commits it;
(b) does or omits to do anything for the purpose of aiding any person to commit it; or
(c) abets any person in commiting it.
(2) Where two or more persons form an intention in common to carry out an unlawful purpose and to assist each other therein and any one of them, in

– As a party to conspiracy with others or with the corporation itself to commit the offence.[23]

Typically, attention is given both in the literature and practically to the first two categories. Charges in Ontario are rarely laid under sections 77 and 78 of the *Provincial Offences Act* and as indicated "conspiracy has not yet received much use in Canada as a method of fastening liability on officers and directors for environmental offences."[24]

Saxe's thorough research of American caselaw provides excellent examples of the potential for using these approaches. Also, her extensive review of the "influence and control" principle in Canada,[25] and particularly in the United States will be much appreciated by practitioners. In the area of corporate environmental responsibility and executive liability, the principle is the linchpin of the argument for the Crown in most cases.

Saxe includes a brief section on the fiduciary principle in her discussion on due diligence[26] and questions whether it is an appropriate standard to protect the public interest in the environment. She concludes that it is, since it has of late appeared to apply "in almost any situation where one is at the mercy of another."[27] In support of her opinion, she relies on the comments of the former Chief Justice Dickson in *Guerin et al.* v. *R.*[28] where he states that "[t]he categories of fiduciary ... should not be considered closed."[29]

Notwithstanding the brief excerpt from the *Guerin* case, it is one thing to consider opening the doors wide enough to allow the application of the concept in the context of the Aboriginal-Crown relationship where, despite the nature of

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carrying out the common purpose, commits an offence, each of them who knew or ought to have known that the commission of the offence would be a probable consequence of carrying out the common purpose is a party to the offence.

S.78 (1) Where a person counsels or procures another person to be a party to an offence and that other person is afterwards a party to te offence, the person who counselled or porcured is a party to the offence, notwithstanding that the offence was committed in a way different from that which was counselled or procured.

(2) Every person who counsels or procures another person to be a party to an offence is a party to every offence that the other commits in consequence of the counselling or procuring that the person who counselled or procured knew or ought to have known was likely to be committed in consequence of the counselling or procuring.

[23]*Environmental Offences, ibid.* at 141.

[24]*Ibid.*

[25]*Ibid.* at 112ff.

[26]C. 6 "Due Diligence" *ibid.*

[27]*Ibid.* at 169.

[28][1984] 2 S.C.R. 335, 13 D.L.R. (4th) 321 [hereinafter *Guerin* cited to S.C.R.].

[29]*Ibid.* at 340.

the relationship, the Courts remain loathe to open the doors entirely, and quite another to suggest its potential to protect the elusive concept of the public interest in environmental matters. The public is not at the mercy of corporate directors in the environmental context, which according to Ernest Weinrib,[30] quoted by Dickson C.J. in *Guerin*, "is the hallmark of a fiduciary relation."[31] Rather its interests are protected by government intervention. As P. Handler pointed out, it

> has long been a function of government to shield the citizenry from those dangers against which it cannot readily protect itself; hence police and fire departments, armies and navies.[32]

Saxe closes the book with an interesting chapter entitled "The Directors Dilemma" where she concludes that prosecutions are a poor choice to resolve the uncertainties which exist in environmental protection.[33] It is a curious conclusion to a work that speaks largely to the effectiveness of pursuing personal prosecutions in the corporate context. It would have been enhanced by some reference to the issues raised earlier regarding the effectiveness of achieving compliance in the environmental field by prosecuting corporate executives. While the criminal courts may not always be the best venue for resolving many of society's complex social issues, prosecutions will continue to be a necessary element in any regulatory program. Beyond the obvious impact on individual or corporate wrongdoers are the unquestionable benefits of deterring similar behaviour in the general population.

Saxe has provided a thoroughly researched piece in an area of environmental law that is rapidly becoming significant to all practioners with corporate clients. She has, in addition, raised issues that will challenge one's perspective on the future of environmental protection. Consequently, it will be of interest to anyone involved in the field.

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[30]E. Weinrib, "The Fiduciary Obligation" (1975) 24 U.T.L.J. 1.

[31]*Ibid.* at 7, *Guerin, supra*, note 27 at 384. According to Weinrib, *supra*, "the hallmark of a fiduciary relation is that the relative legal positions are such that one party is at the mercy of the other's discretion." (Weinrib, *supra*).

[32]P. Handler, "Some Comments on Risk" in National Research Council, *The National Research Council in 1979: Current Issues and Studies* (Washington: National Academy of Sciences, 1979) 3 at 3.

[33]*Environmental Offences, supra*, note 7 at 191.