Canada and the New International Law of the Sea

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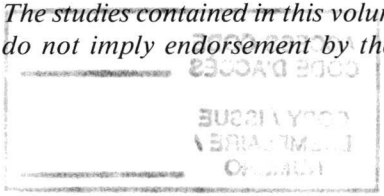

DOUGLAS M. JOHNSTON

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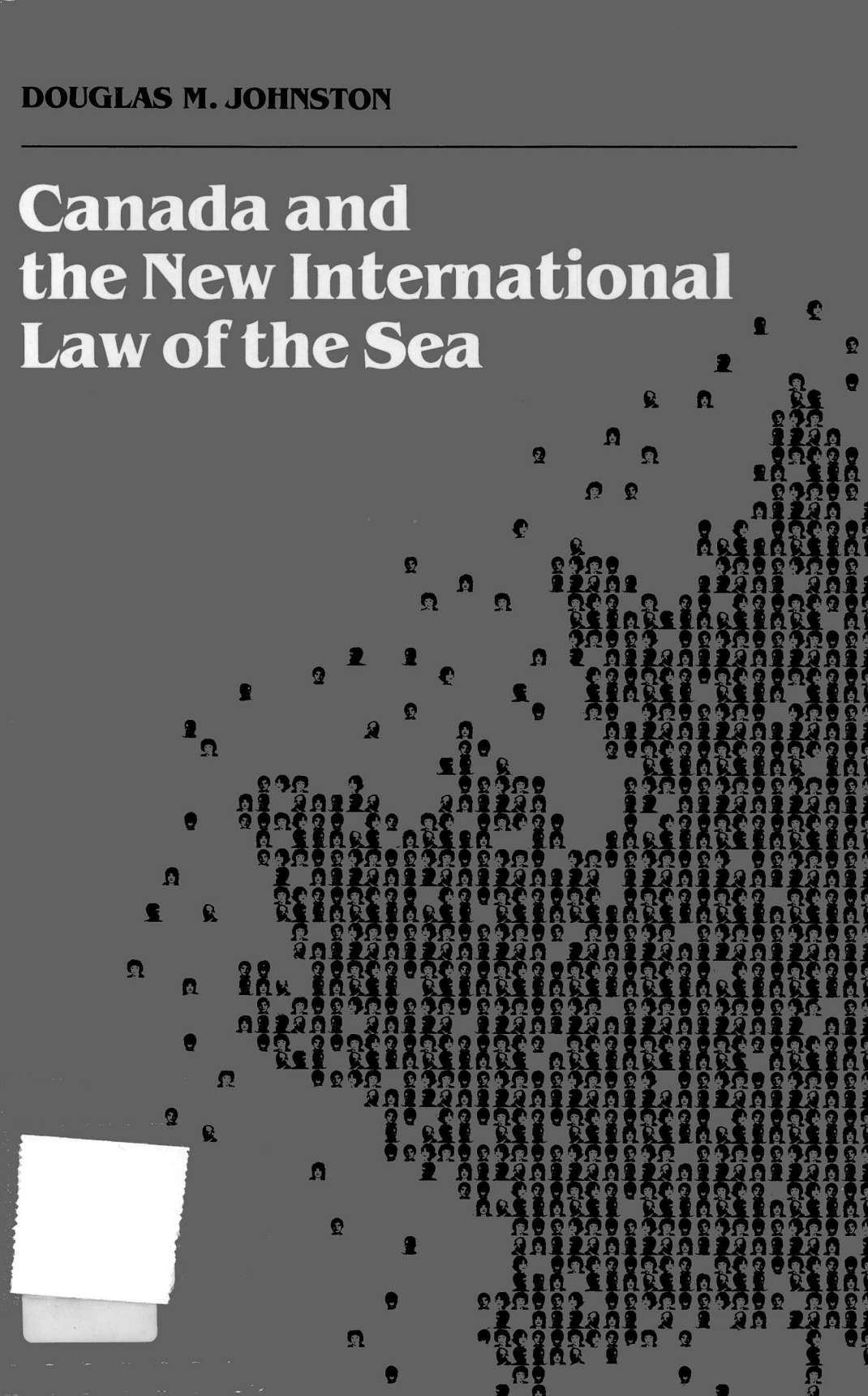

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FOREWORD

When the members of the Rowell-Sirois Commission began their collective task in 1937, very little was known about the evolution of the Canadian economy. What was known, moreover, had not been extensively analyzed by the slender cadre of social scientists of the day.

When we set out upon our task nearly 50 years later, we enjoyed a substantial advantage over our predecessors; we had a wealth of information. We inherited the work of scholars at universities across Canada and we had the benefit of the work of experts from private research institutes and publicly sponsored organizations such as the Ontario Economic Council and the Economic Council of Canada. Although there were still important gaps, our problem was not a shortage of information; it was to interrelate and integrate — to synthesize — the results of much of the information we already had.

The mandate of this Commission is unusually broad. It encompasses many of the fundamental policy issues expected to confront the people of Canada and their governments for the next several decades. The nature of the mandate also identified, in advance, the subject matter for much of the research and suggested the scope of enquiry and the need for vigorous efforts to interrelate and integrate the research disciplines. The resulting research program, therefore, is particularly noteworthy in three respects: along with original research studies, it includes survey papers which synthesize work already done in specialized fields; it avoids duplication of work which, in the judgment of the Canadian research community, has already been well done; and, considered as a whole, it is the most thorough examination of the Canadian economic, political and legal systems ever undertaken by an independent agency.

The Commission's Research Program was carried out under the joint direction of three prominent and highly respected Canadian scholars: Dr. Ivan Bernier (*Law and Constitutional Issues*), Dr. Alan Cairns (*Politics and Institutions of Government*) and Dr. David C. Smith (*Economics*).

Dr. Ivan Bernier is Dean of the Faculty of Law at Laval University. Dr. Alan Cairns is former Head of the Department of Political Science at the University of British Columbia and, prior to joining the Commission, was William Lyon Mackenzie King Visiting Professor of Canadian Studies at Harvard University. Dr. David C. Smith, former Head of the Department of Economics at Queen's University in Kingston, is now Principal of that University. When Dr. Smith assumed his new responsibilities at Queen's in September, 1984, he was succeeded by Dr. Kenneth Norrie of the University of Alberta and John Sargent of the federal Department of Finance, who together acted as co-directors of Research for the concluding phase of the Economics research program.

I am confident that the efforts of the Research Directors, research coordinators and authors whose work appears in this and other volumes, have provided the community of Canadian scholars and policymakers with a series of publications that will continue to be of value for many years to come. And I hope that the value of the research program to Canadian scholarship will be enhanced by the fact that Commission research is being made available to interested readers in both English and French.

I extend my personal thanks, and that of my fellow Commissioners, to the Research Directors and those immediately associated with them in the Commission's research program. I also want to thank the members of the many research advisory groups whose counsel contributed so substantially to this undertaking.

DONALD S. MACDONALD

At its most general level, the Royal Commission's research program has examined how the Canadian political economy can better adapt to change. As a basis of enquiry, this question reflects our belief that the future will always take us partly by surprise. Our political, legal and economic institutions should therefore be flexible enough to accommodate surprises and yet solid enough to ensure that they help us meet our future goals. This theme of an adaptive political economy led us to explore the interdependencies between political, legal and economic systems and drew our research efforts in an interdisciplinary direction.

The sheer magnitude of the research output (more than 280 separate studies in 72 volumes) as well as its disciplinary and ideological diversity have, however, made complete integration impossible and, we have concluded, undesirable. The research output as a whole brings varying perspectives and methodologies to the study of common problems and we therefore urge readers to look beyond their particular field of interest and to explore topics across disciplines.

The three research areas, — *Law and Constitutional Issues*, under Ivan Bernier; *Politics and Institutions of Government*, under Alan Cairns; and *Economics*, under David C. Smith (co-directed with Kenneth Norrie and John Sargent for the concluding phase of the research program) — were further divided into 19 sections headed by research coordinators.

The area *Law and Constitutional Issues* has been organized into five major sections headed by the research coordinators identified below.

- Law, Society and the Economy — *Ivan Bernier and Andrée Lajoie*
- The International Legal Environment — *John J. Quinn*
- The Canadian Economic Union — *Mark Krasnick*
- Harmonization of Laws in Canada — *Ronald C.C. Cuming*
- Institutional and Constitutional Arrangements — *Clare F. Beckton and A. Wayne MacKay*

Since law in its numerous manifestations is the most fundamental means of implementing state policy, it was necessary to investigate how and when law could be mobilized most effectively to address the problems raised by the Commission's mandate. Adopting a broad perspective, Canada's legal system was examined from the standpoint of how law evolves as a result of social, economic and political changes and how, in turn, law brings about changes in our social, economic and political conduct.

Within *Politics and Institutions of Government*, research has been organized into seven major sections.

- Canada and the International Political Economy — *Denis Stairs and Gilbert Winham*
- State and Society in the Modern Era — *Keith Banting*
- Constitutionalism, Citizenship and Society — *Alan Cairns and Cynthia Williams*
- The Politics of Canadian Federalism — *Richard Simeon*
- Representative Institutions — *Peter Aucoin*
- The Politics of Economic Policy — *Bruce Doern*
- Industrial Policy — *André Blais*

This area examines a number of developments which have led Canadians to question their ability to govern themselves wisely and effectively. Many of these developments are not unique to Canada and a number of comparative studies canvass and assess how others have coped with similar problems. Within the context of the Canadian heritage of parliamentary government, federalism, a mixed economy, and a bilingual and multicultural society, the research also explores ways of rearranging the relationships of power and influence among institutions to restore and enhance the fundamental democratic principles of representativeness, responsiveness and accountability.

Economics research was organized into seven major sections.

- Macroeconomics — *John Sargent*
- Federalism and the Economic Union — *Kenneth Norrie*
- Industrial Structure — *Donald G. McFetridge*
- International Trade — *John Whalley*
- Income Distribution and Economic Security — *François Vaillancourt*
- Labour Markets and Labour Relations — *Craig Riddell*
- Economic Ideas and Social Issues — *David Laidler*

Economics research examines the allocation of Canada's human and other resources, how institutions and policies affect this allocation, and the distribution of the gains from their use. It also considers the nature of economic development, the forces that shape our regional and industrial structure, and our economic interdependence with other countries. The thrust of the research in economics is to increase our comprehension of

what determines our economic potential and how instruments of economic policy may move us closer to our future goals.

One section from each of the three research areas — The Canadian Economic Union, The Politics of Canadian Federalism, and Federalism and the Economic Union — have been blended into one unified research effort. Consequently, the volumes on Federalism and the Economic Union as well as the volume on The North are the results of an interdisciplinary research effort.

We owe a special debt to the research coordinators. Not only did they organize, assemble and analyze the many research studies and combine their major findings in overviews, but they also made substantial contributions to the Final Report. We wish to thank them for their performance, often under heavy pressure.

Unfortunately, space does not permit us to thank all members of the Commission staff individually. However, we are particularly grateful to the Chairman, The Hon. Donald S. Macdonald, the Commission's Executive Director, Gerald Godsoe, and the Director of Policy, Alan Nymark, all of whom were closely involved with the Research Program and played key roles in the contribution of Research to the Final Report. We wish to express our appreciation to the Commission's Administrative Advisor, Harry Stewart, for his guidance and advice, and to the Director of Publishing, Ed Matheson, who managed the research publication process. A special thanks to Jamie Benidickson, Policy Coordinator and Special Assistant to the Chairman, who played a valuable liaison role between Research and the Chairman and Commissioners. We are also grateful to our office administrator, Donna Stebbing, and to our secretarial staff, Monique Carpentier, Barbara Cowtan, Tina DeLuca, Françoise Guilbault and Marilyn Sheldon.

Finally, a well deserved thank you to our closest assistants, Jacques J.M. Shore, *Law and Constitutional Issues*; Cynthia Williams and her successor Karen Jackson, *Politics and Institutions of Government*; and I. Lilla Connidis, *Economics*. We appreciate not only their individual contribution to each research area, but also their cooperative contribution to the research program and the Commission.

IVAN BERNIER
ALAN CAIRNS
DAVID C. SMITH

This monograph on the law of the sea, Michael Hart's monograph on the GATT legal system, and a third volume containing four essays that survey and analyze other salient aspects of the legal framework governing Canada's foreign economic relations, are the product of the Royal Commission's Legal and Constitutional Research program. These three volumes result from a research project on the "international legal environment" which was designed to examine how the international legal framework for multilateral and bilateral economic relations is likely to shape Canada's future economic development.

Canada's economic future depends on the effectiveness of a global legal system that promotes the openness, stability and dynamism of international markets. This legal system encompasses a number of formal institutions such as the GATT, the International Monetary Fund and the United Nations Convention on the Law of the Sea; it also includes a diverse range of more specialized arrangements designed to regulate particular transactions or economic activities with significant transnational consequences such as foreign direct investment and the transfer of technology.

The monographs and essays in the three volumes attempt to analyze the strengths and weaknesses of the present international legal framework, and assess the likely impacts of future legal and institutional developments on Canada's economic and political interests. The papers in this part of the Commission's research program were designed to educate a non-specialist audience in the basic legal norms and decision-making procedures governing the most important aspects of Canada's foreign economic relations: (1) trade in goods and services; (2) the utilization of marine resources and national regulatory powers applicable to coastal and offshore areas; (3) the transfer of technology and intellectual property regulation; (4) Canada–United States economic relations; and (5) the regulation of foreign direct investment. The authors of these studies have also examined the

existing arrangements for foreign economic policy making in Canada, and their work clarifies the basic options for designing domestic policies and institutions in response to the changes emerging from the evolving global legal framework. All the authors advance concrete proposals for substantive and procedural reforms to both the international legal framework and the domestic rules and processes that shape Canada's foreign economic relations.

Recent developments in the international rules governing the allocation of rights in ocean resources are likely to have significant effects on three of Canada's resource industries: fishing, mining, and oil and natural gas. Canada has been favoured with the world's longest coastline and the second largest continental shelf area. The ocean areas adjacent to our shores are known to contain valuable fisheries and huge reserves of oil and gas. Moreover, new technologies are likely to permit future coastal industries based on the tidal generation of electricity and the mining of metals and minerals on the seabed.

Since most of Canada's vast coastline fronts on open ocean, free of islands or shores possessed by neighbours, Ottawa has consistently promoted the desirability of extending coastal state jurisdiction and ownership rights to offshore areas. The landmark event in the postwar evolution of ocean law has been the signing, in 1982, of the United Nations Convention on the Law of the Sea. This multilateral treaty is the product of almost 15 years of negotiation by the 134 nations that have signed the agreement. At present (April 1, 1985), approximately 15 states have taken the additional step of ratifying the Convention. Within the next five years, Canada and the vast majority of other signatories, will have to decide whether to ratify the treaty and thus become legally bound to implement its provisions.

Because of the salience of the Law of the Sea Convention to Canada's economic future, the Commission's research staff asked Professor Douglas Johnston of Dalhousie Law School to prepare a monograph on the Convention and its implications for Canadian policies concerning all major aspects of ocean development. Professor Johnston's work provides a comprehensive survey of the opportunities and challenges that are likely to result when, and if, the Convention's proposed legal changes receive formal adoption. For example, one of the primary potential contributions of the Convention will be to clarify the international rules governing ownership of the living and non-living resources of the world's oceans. The treaty proposes a globally uniform zone of coastal state ownership and regulatory control which would dramatically expand the scope of Canada's jurisdiction over adjacent offshore areas. The Convention also incorporates innovative and controversial proposals for the creation of a seabed mining regime controlled by a multilateral institution with plenary powers to regulate the exploitation of non-living resources in areas outside of national jurisdiction.

Professor Johnston's work focusses on how the Convention is likely to shape the development of Canada's major ocean resource industries, and the prospects for the creation of wholly new industries in Canada's maritime regions. His extensive analysis of the Convention also examines several other issues of special concern to Canada, such as the rules governing marine boundary delimitation and the authority of coastal states to regulate shipping-related environmental hazards. Certain aspects of federal-provincial and Canada–U.S. relations pertinent to the economic development of ocean resources are also discussed. The monograph concludes with a number of proposals for reforming existing domestic laws and decision-making procedures governing the use and protection of Canada's ocean resources.

JOHN QUINN

ACKNOWLEDGMENTS

Editing the monographs and essays in these three volumes was an intellectually rewarding task, not only because of the excellence of the authors' work, but also because of the many valuable exchanges and discussions with colleagues and friends who offered their assistance during the course of the Commission's research program. Dean Ivan Bernier of the Laval Law School deserves special mention. As the director of the research program, he helped to conceive the overall project and to design all the studies that appear in these three volumes. His intellectual and administrative contributions throughout the entire project were invaluable. Further thanks are due to the Commission staff who performed an indispensable role in bringing these studies to completion, especially my friend Jacques Shore who did an outstanding job of managing the administrative side of the research program.

During the project, I was fortunate to have the assistance of several external advisors who commented on manuscripts and made many helpful suggestions to the authors. Their varied knowledge and experience on matters of international law and economics was a signal contribution to the project. The individuals who served as research advisors were:

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J.Q.

INTRODUCTION

Most Canadians have a land-bound perception of the nation. Especially in the inland provinces, few individuals and even fewer institutions give more than the occasional passing thought to the ocean and its impact on the nation. Of the coastal provinces, perhaps only two — Newfoundland and Nova Scotia — can be said to be deeply imbued with maritime traditions and to possess a high degree of "ocean consciousness." Despite our possession of the world's longest coastline (approximately 151,489 miles) and the second largest shelf (2.5 million square miles), few of us have any appreciation of the significance of the new law of the sea for Canada. Since 1968 the international community has effected a "revolution" in the law of the sea through UN conference diplomacy. It is the purpose of this paper to describe these legal developments and to assess their implications for Canadian policy making in a number of domestic and international contexts.

The phrase "new law of the sea" is a convenient shorthand reference to the entire field of international law, policy and practice relating to the ocean, and to the many fundamental changes that have been effected in that field since the late 1960s. Increasingly over the last 50 years, science has transformed our perception of the ocean from a two- to a three-dimensional space.[1] Oceanography has long since grown out of its infancy and learned to apply the most sophisticated techniques to the study of the marine environment. Ecologists and conservationists have opened our eyes to the richness and diversity of ocean life. Platform and underwater technology and improvements in mariculture and fishing techniques have opened up new uses of the sea. The world shipping industry has acquired an extraordinary diversity in the type and size of vessels it deploys.[2] In response to these developments in ocean science and technology, new political and economic demands have been forged in the heat of UN conference diplomacy, shaped by contending ideas and energies

at work in the world community. The "new law of the sea" is the *product* of these ideas and energies, but it is also the *process* for the making of future policies and decisions related to the ocean at national as well as at global and regional levels.

The new law of the sea is assuming legal form in a variety of instruments and practices: global treaties, multilateral agreements among like-minded nations, regional or subregional conventions and protocols among neighbouring littoral states, bilateral arrangements, national statutes and regulations, unilateral declarations and decrees, and other administrative acts that can be said to reflect "state practices." Over the last 12 years alone, several hundred instruments of these kinds have been concluded or promulgated. For example, some 80 bilateral maritime boundary agreements have been negotiated,[3] and almost 100 claims to extended coastal state jurisdiction have been officially proclaimed.[4] Judicial pronouncements play a less constant role in the development of international law in general, but since the 1950s many of the arbitrations before the International Court of Justice have been law of the sea disputes.[5] Amid this proliferation of legal developments, however, one particular contribution stands out as dominant and all-pervasive: the 1982 UN Convention on the Law of the Sea.[6] After 15 years of global negotiations of unprecedented complexity, at the Third UN Conference on the Law of the Sea (UNCLOS III), 134 states have come forward to sign this immense law-making treaty,[7] which consists of 320 articles and nine annexes. Over a dozen states have already gone to the point of ratifying the Convention,[8] and it is expected that by the end of the 1980s the majority of nations, including Canada, will have become bound to it, as parties, under the law of treaties.[9]

The UN Convention on the Law of the Sea is a unique document. No other global treaty has ever been negotiated on this scale. Indeed it is difficult to think of any legal instrument, at any level of legal development, of comparable scope. It has often been described as the "constitution of the oceans" — which encompass over 70 percent of the globe — but in truth the Convention goes further than most national constitutions, or even the UN Charter, in the elaboration of rules, the development of regimes, and the creation of institutions, guidelines and procedures. In short, the Convention represents the indispensable legal framework for almost all future activities at sea.[10]

In addition to such developments at UNCLOS III and other law-making forums,[11] the new law of the sea can also be seen to be evolving outside the limits of legally binding instruments.[12] Through declarations, action plans, and other important "soft law" documents, the legal and institutional development of ocean policies and principles occurs, more or less continuously, in various global and regional contexts.[13] This diversity of

legal development is especially conspicuous in the environmental law of the sea.[14]

Of all the nations of the world, none has had more at stake than Canada in these modern developments in the law of the sea. Even back at the first UN Conference on the Law of the Sea (UNCLOS I), held at Geneva in 1958,[15] and at its abortive successor two years later (UNCLOS II),[16] Canada played an important part in the negotiation of several major issues.[17] In the late 1960s, as soon as it became evident that the UN Seabed Committee, convened by the UN General Assembly, was intended to review and possibly redesign much of the existing law of the sea, the Canadian government realized the substantial benefits that might be secured for Canada within such a "radical" frame of reference.

In purely economic terms, it was obvious that the eventual outcome of UNCLOS III could have a profound effect on three of Canada's resource industries: fishing, petroleum and mining. Moreover, it was seen that strategic ("sovereign") Arctic interests might be affected in the complicated interplay of ocean-related interests at UNCLOS III, and that more general environmental concerns might be addressed through imaginative resort to legal diplomacy. As one of the major oceanographic "powers" in the world, Canada also had a substantial interest in the issues related to the regulation of marine scientific research. Furthermore, UNCLOS III was perceived as the most important single forum for the advancement of New International Economic Order claims by developing nations. Because of its substantive and symbolic impact in the context of North-South issues, UNCLOS III evolved rapidly as the forum where Canada had the greatest need to develop its political skills in the search for an appropriate balance between acquisitive self-interest and concern for less advantaged nations.

In short, for reasons of geography, economic development, and national strategic planning in the largest sense, Canada was induced to assign an extremely high priority to UNCLOS III, and to the coordination of its national ocean policy at other forums. Now that the major law-making exercise has been concluded and a global framework brought into existence, the nation has important tasks of policy implementation on its agenda for the 1980s and 1990s.

Canadian Interests and Concerns

Early in the period of the UN Seabed Committee (1968–73), it became apparent that UNCLOS III would be primarily devoted to acquisitive purposes. Despite a measure of idealism reflected in the initial proposal to establish an international organization to regulate activities on the deep ocean floor,[18] the truth is that almost all delegations were chiefly motivated by the prospect of substantial gain.

For most *coastal* states the immediate and substantial gain to be won at UNCLOS III was in the form of ocean space and resources which could be brought under their respective jurisdiction and control. Prior to UNCLOS III — as early as the 1950s — the concept of the *continental shelf* had been accepted as the basis of a new regime of exclusive coastal state jurisdiction over seabed resources in customary international law.[19] But the pre-UNCLOS III legal definition of the outer limits of this regime remained elastic, and it lay in the interest of "broad margin states," such as Canada, to prevent a redefinition that would force them to roll back their claims to "sovereign rights" over the non-living resources in their adjacent offshore areas.[20] In this context the facts of geography and geology prevailed over any other consideration. As "possessor" of the world's second largest shelf and claimant to fairly spectacular offshore reserves, Canada had the strongest of motivations to bring a degree of aggressiveness to this context of conference diplomacy, though no more so, perhaps, than the other broad margin states.[21]

For a much larger number of coastal states, however, the prospect of gaining extensive *new* areas of maritime jurisdiction and control arose not merely from the seabed but from the sea itself. In the early 1970s most of these aspirations focussed on the proposal for a globally uniform zone, whose seaward limits would extend 200 nautical miles from the baseline of the coastal state's territorial sea. Within this area, named the exclusive economic zone (EEZ), the coastal state would acquire sovereign rights to both the living and non-living resources of the waters *and* the seabed: fish, and petroleum and any other resources that might become available.[22] In addition, within the EEZ the coastal state would also acquire jurisdiction (and a measure of control) over certain other activities, such as scientific research and the protection and preservation of the marine environment.[23] To Canada, with an extremely long coastline and frontage on the open ocean, the advent of the EEZ regime opened up a vast extension of the land economy. By the most conservative estimate, UNCLOS III held out to Canada the promise of the world's fifth largest EEZ.[24] If, however, one adds in those Arctic Ocean areas which, technically considered, might be regarded as falling under the UNCLOS III regime of internal waters,[25] Canada is probably to be ranked third or fourth among the world's largest

gainers of surface area, and second or third, with the depth dimension, of ocean space.[26]

These, then, are the physically measurable areas of spatial gains that Canada stood to make through successful UNCLOS III diplomacy. If the measurement of stakes extends to the value of all resources contained within these vastly expanded limits, then Canada might be regarded as the country which has had the most to gain, in relative if not absolute resource terms, from the new law of the sea.[27]

Moreover, in the early stages of the UN Seabed Committee, it seemed likely that Canada would also have something to gain eventually from the development of industrial capability to extract manganese nodules from the deep ocean floor. But because of Canada's prominence as a land-based producer of nickel and copper — two of the principal metal constituents of these nodules[28] — the Canadian attitude to deep ocean mining issues at UNCLOS III tended to be defensive and equivocal.[29] Accordingly, Canadian diplomacy on this issue has reflected, in part, a long-term interest in research and development to ensure that Canada not lose its present salience in the world mining industry. In the shorter term, Canada's posture has been one of concern that the advent of deep ocean mining might result in further depression of world metal prices, and that the onset of international bureaucracy in the field might result in unacceptably restrictive regulatory controls on the industry. In this area of UNCLOS III negotiations, then, Canada has been motivated by an uneasy combination of long-term *interests* and immediate *concerns*.[30]

In a number of other, non-resource contexts at UNCLOS III, the Canadian delegation had to develop positions reflecting a combination of acquisitive and nonacquisitive motivations. Precisely because of its high-profile involvement in the most "acquisitive" areas of the agenda, Canada had to work hard to offset its apparent desire for self-enrichment. In various contexts, discussed below, Canada was obliged to enter into an unprecedented number and variety of alignments and coalitions with other delegations with a view to maintaining and projecting consistency and credibility as a self-interested but concerned moulder of the new law of the sea. The story of our effort to strike that balance makes up one of the most interesting chapters in Canadian diplomatic history.

Fishery Interests

Canada has always been a major fishing nation, lying adjacent to some of the world's richest fisheries both in the Atlantic and in the Pacific Oceans. Even by weight, Canadian landings of fish have always placed this nation in the upper echelons of world rankings, though in recent years we have accounted for not more than 2 percent of total world catch.[31] Measured in value, the Canadian contribution to world fishing is much

higher, because of our participation in high-value fisheries such as scallop, salmon, and lobster, as well as popular species like haddock, sole, and cod. Today the total annual product value of the Canadian fishing industry is around $2 billion.[32]

It is true, of course, that fishing is not one of our massive industries measured in gross earnings,[33] and its contribution to the nation's protein diet is modest by international standards.[34] But the industry consists of over 50,000 more or less full-time fishermen, and it also provides a livelihood for a large number of processors and part-time fishermen.[35] At the regional level, fishing is still a basic component of the local economy. In Newfoundland and Nova Scotia several hundreds of small coastal communities, mostly consisting of fewer than 500 inhabitants, subsist chiefly on fishing and related activities.[36]

The rankings in Table 1 show Canada's prominence as a fishing nation. In 1982, this country was in 15th place in total landed catch — only one-seventh of the Soviet landed catch and one-eighth of the Japanese. However, Canada was in second place, behind Iceland, in the percentage of its landed catch used in export, and in first place as a fish exporting country measured by value.

The export figures should, however, be read as a warning rather than as an accomplishment. They certainly do not reflect the Canadian fishing industry's virtuosity in market development, but rather Canada's adjacency to some of the world's most valuable fisheries and the reluctance of Canadians to eat large quantities of fish.[37]

The Canadian fishing industry is very largely an export industry, an important earner of foreign currency. In its view, therefore, the significance of UNCLOS III was the opportunity to obtain global consent to some form of extended fishery jurisdiction, so that it could devote itself ambitiously to fishery development. Today the chief problem is no longer security of access to the resource but security of access to markets.[38]

As noted above,[39] the extension of fishery jurisdiction at UNCLOS III took the form of a vast, multifunctional zone called the exclusive economic zone (EEZ). When this concept was first put forward, at the 1972 session of the UN Seabed Committee,[40] the Canadian government's initial reaction was mixed. Some voices were heard to warn against unrealistic expectations, reminding the optimists and nationalists that "clearing out the foreigners" would, in itself, do little to solve the basic problems of Canadian fishery policy.[41] Others were instinctively repelled by the arbitrariness of uniform 200-mile limits from any fishery management perspective, and even regretted such a wholesale repudiation of the concept of international fishery management, even if the record of existing international fishery commissions was generally unimpressive.[42] At the other extreme of Canadian official opinion, the nationalists noted the acquisitive nature of the Conference and pressed for a regime that would grant the coastal state exclusive management authority over all species of fish coex-

TABLE 1
Canada's Ranking as a Fishing Nation, 1982

Country	Landed Catch		Percentage of Landed Catch Used in Export		Value of Fisheries Exports	
	(million metric tons)	(rank)	(percent)	(rank)	(millions of U.S. dollars)	(rank)
Japan	10.5	1	6.7	11	800.6	5
U.S.S.R.	9.2	2	3.7	15	218.0	16
United States	3.9	3	10.3	10	1,034.4	2
Chile	3.7	4	25.3	5	386.0	10
Peru	3.4	5	22.8	6	288.8	14
China	3.4	6	2.8	17	299.7	12
Norway	2.5	7	28.1	4	888.4	4
South Korea	2.2	8	15.2	9	754.5	6
Denmark	1.9	9	37.2	3	900.5	3
Thailand	1.8	10	22.6	7	464.8	9
Indonesia	1.5	11	5.9	12	231.6	15
North Korea	1.5	12	1.5	18	31.4	18
India	1.4	13	5.0	13	354.5	11
Mexico	1.4	14	3.6	16	489.7	8
Canada	1.3	15	39.9	2	1,299.7	1
Spain	1.3	16	17.4	8	292.5	13
Philippines	1.2	17	3.8	14	107.6	17
Iceland	0.8	18	45.9	1	508.9	7

Source: Food and Agriculture Organization, *Yearbook of Fishery Statistics*, 1982.

tensive with the continental shelf, so as to eliminate the "straddling stock" situation which would arise from an arbitrary 200-mile limit in the Northwest Atlantic.[43] But easily prevailing over all reservations was the view that the expansionist EEZ concept was an idea whose time had come, assuring Canada of substantial economic benefits in the form of increased landings and of new allies and alignments among the expansionist-minded delegations, whose support was needed on more controversial UNCLOS III issues of importance to Canada.[44] Above all, the prospect of an exclusive fishing zone within 200-mile limits was highly popular within the Canadian fishing industry, which has always been coastal and protectionist in orientation.[45] Finally, Canada's espousal of the EEZ at UNCLOS III was seen by most Canadian fishery officials and diplomats as a natural culmination of the trend toward expansionism in Canadian fishery jurisdiction, which had been reflected in legislation and "phase-out diplomacy" since the late 1950s.[46]

But Canada's initial support for extended jurisdiction at the UN Seabed Committee had been carefully qualified. The position Canada took in 1971 repudiated the 200-mile territorialist approach and advocated what came to be known as the functionalist approach, supporting preferential rather than exclusive rights for the coastal state in its offshore zone,[47] and proposing a differential rather than a unitary system of fishery management and conservation.[48] But the notion of preferential rights was found to be too modest a position to be acceptable by most of the expansionist delegations, and differential management too complex and demanding, especially for the developing coastal states. So Canada's new alignments with these delegations forced it to withdraw its original proposals and to acquiesce in the more popular demands for exclusive rights and unitary management authority under the EEZ proposal.[49] In the summer of 1974, at the Caracas session of UNCLOS III proper, Canada's support for the proposed 200-mile EEZ regime — and thereby for a 200-mile exclusive fishing zone — was formally announced.[50] Since then both the substance and style of Canadian fishery policy have changed.[51]

The UNCLOS III fishery "system,"[52] which Canada supported but did not originally advocate, has six major elements:

1. Under the EEZ regime, as defined in Part V of the Convention, the coastal state has exclusive (sovereign), but qualified, rights to the living resources of "the waters superjacent to the seabed and of the seabed and its subsoil,"[53] subject to:
   a. the duty of the coastal state to set conservation limits (allowable catch) and to adopt appropriate "conservation and management measures;"[54]
   b. the duty of the coastal state to determine its own "capacity to harvest" the living resources of its EEZ;[55] and

c. the duty of the coastal state to give other states access to the "surplus of the allowable catch,"[56] with a view to promoting the global objective of "optimum utilization."[57]

2. Under the EEZ regime, the coastal state is permitted to exercise conservation and management authority over all fishing and fishermen through a wide range of regulatory controls.[58]
3. Under the EEZ regime, the Convention provides for special arrangements in the case of highly migratory species,[59] anadromous species,[60] catadromous species,[61] "straddling stocks,"[62] and marine mammals.[63]
4. Under the regime of the continental shelf, as defined in Part VI of the Convention, the coastal state has exclusive (sovereign) rights to all "living organisms belonging to sedentary species."[64]
5. Under the regime of the high seas, as defined in Part VII of the Convention, the Convention retains a relatively open (neo-classical) legal system for the fishing of nonsedentary species beyond 200-mile EEZ limits.[65]
6. Under Part XV, dealing with the settlement of disputes, the Convention provides for "compulsory procedures entailing binding decisions"[66] in the case of fishery disputes arising under the regimes of the high seas and the continental shelf, but places major limitations on the applicability of these procedures in the case of fishery disputes arising under the EEZ regime concerning a coastal state's failure to discharge any of its duties enumerated in (1) above.[67]

This new legal system for fisheries creates a mixture of new opportunities and problems for Canadian fishery policy and the Canadian fishing industry, which are reviewed in the following section.

Energy Interests

Since the early 1970s it has become more urgent, as well as fashionable, to approach the ocean as a source of energy resources. With a view to supplying the long-term energy deficiencies arising from our current overdependency on nonrenewable energy materials, the ultimate energy use of the oceans might be developed by harnessing wave and wind power.[68] In some equatorial ocean areas pilot projects in ocean thermal energy conversion (OTEC) have produced encouraging results.[69] In a few estuarine areas, such as the Bay of Fundy between New Brunswick and Nova Scotia, it is technologically feasible to harness tidal power.[70]

The existence of these future, nonconventional sources of energy in the ocean has been acknowledged in the UN Convention on the Law of the Sea. Under Article 56, the coastal state has "sovereign rights" within its EEZ "with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water,

TABLE 2
Canadian Petroleum Reserves, 1983

	Oil (million cubic metres)			Gas (billion cubic metres)		
Region	**Known**	**Estimated[a]**	**Total**	**Known**	**Estimated[a]**	**Total**
Western Canada	754	593	1,347	2,111	2,504	4,615
(Canada, total onshore)[b]	(754)	(593)	(1,347)	(2,111)	(2,504)	(4,615)
East Coast	225	1,877	2,102	246	2,423	2,669
Beaufort Sea/ McKenzie Delta	117	1,347	1,464	286	1,865	2,151
Arctic Islands	76	686	762	361	2,357	2,718
(Canada, total offshore)	(418)	(3,910)	(4,328)	(893)	(6,645)	(7,538)
Total for Canada	1,172	4,503	5,675	3,004	9,149	12,153

Source: Based on Proctor, Taylor and Wade, *Oil and Natural Gas Resources of Canada, 1983* (Geological Survey of Canada, Paper 83-31, Energy, Mines and Resources, (1984)).

a. These figures represent the "average" expectations of the Canadian government intermediate between the official "confident" and "optimistic" estimates.

b. Canada's onshore petroleum reserves outside western Canada are virtually negligible.

currents and winds." For Canada, this provision is important to the extent it dispels any lingering doubts that might have been raised about Canada's legal entitlement to proceed, if it wishes, to tidal power generation in the Bay of Fundy.[71]

But, for the next twenty years or more, by far the most important single source of energy in the ocean consists of the relatively abundant reserves of petroleum under the seabed in many regions of the world.[72] Geologically, at least, Canada is particularly well favoured in the potential supply of offshore oil and gas. As Table 2 suggests, there may be as much as 4,328 million cubic metres of oil and 7,538 billion cubic metres of natural gas physically available in the Canadian offshore, — if "known" and "estimated"reserves go much higher.[73] According to the average expectations of Canadian government geologists, Canada's offshore oil reserves may be three and a half times larger than its remaining onshore reserves, and its offshore gas reserves may be over 60 percent larger than the onshore reserves of gas. These geological estimates of Canada's offshore reserves compare most favourably with those of Norway and the United Kingdom. To the extent that total volume of the resource is a major factor in production planning, it is quite conceivable that Canada will one day surpass both of these countries as a major offshore producer. Indeed as early as 1977 a study by the International Labour Office predicted that Canada would quickly become one of the five leading offshore producers.[74] However, these estimates are of little reliability as a basis for projecting production levels, because production decisions are made in the light of various physical considerations, such as the propinquity of sites of highest concentration.[75] Moreover, offshore production decisions in the 1980s and 1990s will of course be heavily influenced by economic considerations, not least by the availability of alternative offshore and onshore reserves at competitive cost levels and of government-controlled incentive programs derived from overall national energy policies.[76] Yet after acknowledging the difficulty of prediction in energy policy planning, one still assumes that over the next two decades Canada will find it physically possible and economically attractive to become one of the world's major offshore producers. Meanwhile, it is by no means accepted by the Canadian petroleum industry as a whole that the present level of Canadian government investment in the exploration of the offshore and other frontier areas is justified, and major revision of the National Energy Program may greatly reduce the present attractiveness of offshore petroleum development.[77]

As far as the next decade is concerned, it seems likely that most of Canada's offshore production will occur initially within 200 miles of the Canadian shoreline, i.e., within the limits of Canada's EEZ.[78] However, the most contentious part of the continental shelf debate at UNCLOS III focussed on the outer areas of the continental margin[79] beyond these 200-mile limits. The chief issue was the formulation to be adopted for

the determination of the seaward limits. What resulted, in Article 76, was an exceedingly complex formula consisting of geological, geomorphological, geometric and mileage components.[80] Under this article the coastal state is authorized to delineate the outer limits of the shelf in accordance with the formula provided, but it will be required to submit "information" about the delineation to an international body, the Commission on the Limits of the Continental Shelf, which will be set up under Annex II "on the basis of equitable geographical representation."[81] The exact nature of the Commission is left deliberately vague: it is empowered to make "recommendations to coastal states on matters related to the establishment of the outer limits of their continental shelf," but the limits "established by a coastal state on the basis of these recommendations shall be final and binding."[82]

Another continental shelf issue at UNCLOS III was the question of revenue sharing.[83] The price that the "margineer" states had to accept for entitlement, in the form of sovereign rights, to the resources of the shelf beyond 200 miles was the obligation to make "payments or contributions in kind"[84] to a fund, which will be administered by the International Seabed Authority and distributed among parties to the Convention "on the basis of equitable sharing criteria, taking into account the interests and needs of developing states, particularly the least developed and the landlocked among them."[85] Canada will certainly be required to make such payments or contributions in respect of its offshore activities beyond 200-mile limits in the Northwest Atlantic, but not until the sixth year after production has begun at any site in these outer areas.[86] Accordingly, the first of these payments by Canada may not be due until the late 1990s, or even later.

Of course, Canadian offshore development has been retarded and complicated by political and constitutional quarrels at home. Some of these domestic issues have not yet been resolved, although in March 1984 the Supreme Court of Canada took a decisive step at the judicial level in determining the constitutional issue over the Atlantic shelf in favour of Canada in proceedings against Newfoundland and Labrador.[87] In 1967 the Supreme Court also ruled in favour of Canada against British Columbia in respect of the Pacific offshore seaward of Vancouver Island.[88] More recently, in May 1984, it held, on the other hand, that the "inland sea" between Vancouver Island and the mainland of British Columbia fell under provincial, not federal, jurisdiction.[89] Nevertheless, joint development and management arrangements between federal and provincial governments will have to be negotiated before industry can proceed to invest substantially in the exploration and exploitation of promising offshore areas such as Hibernia. Moreover, changes may be made in Canada's National Energy Program to alter the present balance in favour of offshore production. In the meantime, however, recent legislation has brought Canada's national claim to the petroleum resources in its offshore areas

into line with the provisions of the new law of the sea;[90] the Canada Oil and Gas Lands Administration (COGLA) has been created with primary responsibility for offshore as well as onshore development of Canadian petroleum resources on "Canada Lands;"[91] and a joint mechanism for offshore development has become operational under an agreement between Canada and Nova Scotia.[92] The problems and opportunities now confronting the nation's offshore development planners will be reviewed in the following section.

Mining Interests

Until the 1950s mining was almost entirely confined to the land. But the realization that deposits accumulating on the deep ocean floor (popularly referred to as manganese nodules) constituted a major new source of commercially valuable metals[93] stirred interest among governments around the world. Especially excited by the prospect of deep ocean mining were those countries heavily dependent on foreign supplies of these metals, and therefore most vulnerable to the vicissitudes of the international economy.[94]

By the late 1960s — even before the convening of the UN Seabed Committee in 1968 — it was already being suggested that the nodules should be brought under the jurisdiction of a new global regime, and that mining and other activities associated with them should be subject to some kind or degree of regulatory control by an international agency.[95] Proposals of this kind were immediately acclaimed by the majority of developing countries: namely, by those developing countries *not* included among the world's major land producers of the metals involved.[96] Most strongly opposed, or at least most fearful, were those countries which had the most to gain from an international legal system that would guarantee their mining companies free access to these metals on the deep ocean floor with a minimum of regulatory restraints: namely, those not included among the world's major land producers of the metals, but possessing the economic and technological capability to become the leading deep ocean mining states under favourable political and legal conditions.[97] But for many of the developing countries it became evident that short-term, or even medium-term, gains from UNCLOS III were more likely to be derived from the extension of coastal state jurisdiction than from participation in a global system for the regulation of deep ocean mining. For these countries, the issues surfacing in the First Committee had less of a substantive importance than a symbolic or political significance in the ideological context of the New International Economic Order.[98] Accordingly, the course of "seabed politics" at UNCLOS III was somewhat unusual.[99]

Canada did not belong to any of these categories, but instead to the category of land-based producer states: namely, those which already have a preponderant role in the world mining industry, as far as one or more

of these metals are concerned.[100] In some respects, these land producer states had the most difficult hand to play on deep ocean mining issues at UNCLOS III. They formed a small minority which, as "advantaged" nations within this context, could not expect to gain a great deal of sympathy or support from others; and, more than the other states, stood to lose much through miscalculation.[101] The risk of miscalculation is, of course, particularly grave within the metals industry, complicated as it is by the near impossibility of accurate cost and price projections beyond the immediate short-term.[102]

The Canadian nickel mining industry is especially conspicuous: Canada is the world's largest producer of nickel, contributing 47 percent of annual global production. The most important nickel mining companies are INCO, Noranda, Falconbridge, and New Quebec Raglan Mines. Canadian nickel mining accounts for over 3 percent of our gross national product.[103] It has been estimated that known nickel deposits on land in Canada will last at least another 100 years.[104] In the case of cobalt and copper,[105] Canada is also one of the leading producers and exporters, but manganese ore, on the other hand, has to be imported by Canada, chiefly for use in the manufacture of steel.[106]

Because of its salience as a producer-exporter of nickel, and to a lesser extent of cobalt and copper, Canada was unable to align itself with the other major industrial users of these metals on deep ocean mining issues at UNCLOS III. Nor could Canada react ideologically to Ambassador Pardo's 1967 proposal for an international agency to "regulate, supervise and control all activities" in the international seabed area.[107] But the concept of an international area "beyond the limits of national jurisdiction" did threaten to reopen the legal issue of the breadth of the continental shelf, which had been defined in highly elastic terms at UNCLOS I, in a way that had suited Canadian interests admirably in the years since 1958.[108] After some soul-searching, the Canadian government decided to give qualified support to the Pardo proposal, in the context of deep ocean mining despite the risk that UNCLOS III might insist on rolling back the seaward limits of the shelf. Apparently prevailing over all other considerations was Canada's need for the security of an international treaty system for deep ocean mining, given the prospect that the United States and other industrial powers were likely to become dominant in the world mining industry through their virtuosity in deep ocean technology.

In conjunction with this policy decision by the Canadian government, the Canadian mining industry also had to take a stand on the issues of deep ocean mining. Canada's two largest nickel producers, INCO and Noranda, decided to join corporate partners from the United States, Japan, and West Germany in international consortia put together for the purpose of preliminary research and development in deep ocean mining.[109] Thereafter, it can be said, the Canadian mining industry in general, and these two corporations in particular, followed closely the

developments in deep ocean mining in two ways: by contributing to the development of the technology and by participating in the Canadian delegation at UNCLOS III.

The context of deep ocean mining issues was the most widely contentious and most technically complicated of the many areas of negotiation on the UNCLOS III agenda. The various issues addressed in the First Committee were seen to be of interest or concern, substantively or symbolically, by almost all of the 150-odd delegations negotiating at the Conference. As negotiations proceeded, on the ambitious course charted by the UN Seabed Committee between 1968 and 1973,[110] it became evident that a large majority of delegations sought, or accepted as inevitable, an array of highly diverse provisions ranging from general principles of a normative, aspirational, or "constitutional" character, at one extreme, to highly specific arrangements of a procedural, regulatory, technical, or organizational sort, at the other. Accordingly, Part X of the Convention and the relevant Annexes were negotiated both as a kind of constitution and as a mining code.[111] To no one's surprise, these issues in the First Committee, representing the "ideological" side of the Conference, proved extraordinarily resistant to the process of compromise diplomacy; and, to the consternation of most countries, it is not yet clear whether the provisions finally negotiated will eventually be accepted universally as the legal framework for deep ocean mining activities around the world.[112]

The principal UNCLOS III issues on deep ocean mining can be divided into four classes: those concerned with allocation, structure, representation, and production control. In the early period of negotiations the First Committee was chiefly involved in the first two of these four areas, which had to be resolved before the third and fourth kinds of issues could be dealt with in detail.

The *allocative* issues were finally resolved in the mid-1970s, after several alternative approaches had been proposed, debated, and abandoned.[113] The allocative system adopted by the Conference, generally referred to as the "parallel system," envisages that seabed mining and related activities will be carried out in parallel by the Enterprise, the operating arm of the proposed International Seabed Authority (ISA), and by state or private mining entities under the direction of the ISA.[114] This dual arrangement is based on the new legal principles that the seabed and its resources beyond the limits of national jurisdiction — that is, beyond the seaward limits of the continental shelf regime — belong to the "common heritage of mankind,"[115] and that all uses of this designated international area shall be exclusively for peaceful purposes[116] and for the benefit of mankind as a whole.[117] Claims to sovereignty or sovereign rights over this area by any state — whether or not a party to the Convention — are declared to be invalid in international law,[118] and the ISA is authorized to apply the principle of equitable sharing to all financial and other economic, benefits derived from activities in the designated international area of the

seabed.[119] This allocative system, it should be noted, was derived partly from a Canadian proposal in 1974 that seabed mining should be based on joint ventures between the ISA and seabed mining consortia.[120]

The debate on *structural* issues resulted in the design of an elaborate international organization, the ISA, consisting of three principal organs: an Assembly, a Council, and a Secretariat. The Assembly, which consists of all members of the Authority and meeting annually, is the "supreme" organ of the ISA and is mandated to address a wide range of legislative or quasi-legislative functions.[121] The Council, consisting of 36 members of the Authority elected by the Assembly in accordance with a prescribed representational formula, is the executive organ of the Authority,[122] and it will be assisted in its activities[123] by two important subsidiary organs: the Economic Planning Commission[124] and the Legal and Technical Commission.[125] The Secretariat will consist of a Secretary-General and a staff of scientific and technical and other personnel.[126] However, since the purpose of the ISA is, above all, to organize, conduct and control exploration and exploitation of the deep ocean floor, the Conference also created another organ, called the Enterprise, to conduct these activities on a day-to-day basis and to engage directly, on behalf of the Authority, in the transporting, processing and marketing of minerals recovered from the designated international area of the seabed.[127] In addition, the Convention provides for the establishment of a separate Seabed Disputes Chamber of the proposed International Tribunal for the Law of the Sea for certain kinds of seabed-related disputes between states that are parties to the Convention, or between such states and the Authority itself.[128] The Chamber is *not* an organ of the ISA, and may not substitute its discretion for that of the Authority.[129]

The most controversial of the *representational* issues concerned the composition of the Council. After much debate the Conference accepted a formula whereby the 36 members of the Council would consist of states party to the Convention drawn from five distinct categories:

- four from the category of major consumers and/or importers of the minerals expected to be derived from the deep ocean floor;
- four from the category consisting of the eight largest investors in seabed mining and related activities;
- four from the category of major exporters of the minerals expected to be derived from the deep ocean floor;
- six from the category consisting of developing states with special interests (e.g., least developed, geographically disadvantaged, heavily populated); and
- eighteen elected according to the usual UN formula designed to ensure equitable geographical distribution.[130]

Canada would seem to be eligible for election to the Council, after ratification or accession, under three of these five heads: categories (3) and (4) as well as (5).

But of all the difficult issues negotiated in the First Committee, none was more important and more divisive than that of *production control.* The proposal for special protection for land-based producers originated in 1976 on the part of the United States and some Latin American copper producers, but these proponents based their production limitation formula on an arbitrarily selected 6 percent per annum increase in nickel demand. Canadian experts, convinced that nickel demand would be much lower, argued that the formula was against the interests of all land-based producers, including copper producers. From 1976 to the end of the Conference the Canadian delegation found itself immersed in protracted and highly contentious wrangling over various alternative and exceedingly complex formulae. The final version, less than entirely satisfactory from a Canadian perspective,[131] was agreed to in 1981 and remained in the Convention despite a last-minute effort by the United States to have it deleted.[132]

Finally, it must be noted that the last year of the seabed mining debate at UNCLOS III featured a new and increasingly bitter North-South issue over the demand by the United States for "preparatory investment protection" (PIP) for the "pioneer" seabed mining states. The idea behind this scheme was that those states which had already made substantial investments in deep ocean mining research and development would have their investments protected by being given priority in obtaining mining sites under the Convention. Although not associated with this initiative, Canada was affected by it as one of the pioneer seabed mining states, along with Belgium, France, the Federal Republic of Germany, India, Italy, Japan, the Netherlands, the United Kingdom, the U.S.S.R, and, of course, the United States. Despite the potential benefits available to Canada under the PIP resolution,[133] the Canadian delegation sympathized with the objections raised by the developing countries (the so-called Group of 77), who by this time were infuriated by eleventh hour demands by the United States to renegotiate a much wider range of UNCLOS III issues. Canada tried to close the gap that had opened up between the Group of 77, and the major industrial powers through the mediation efforts of a group of industrialized or semi-industrialized middle powers called the Group of 12.[134] Sadly, these efforts and other frenetic attempts at last-minute concessions on other mining issues failed to appease the United States, possibly due to what has been called "a tragic failure of communications,"[135] and the U.S. government announced its refusal to sign the Convention.[136]

The problems and opportunities confronting the Canadian mining industry in light of the Convention and associated uncertainties will be reviewed in the following section.

Arctic Interests

Perhaps the highest priority of all for Canada at UNCLOS III was the buttressing of legal claims to the Arctic Ocean. For generations many Canadians, and most Canadian governments, have been emotionally involved in the effort to secure sovereignty, or its moral equivalent, in the unguarded North. Many readers will recall the international vibrations emitted by the *Manhattan* transit of the Northwest Passage in the late 1960s and the (much easier) passage through Parliament of the Arctic Waters Pollution Prevention Act in 1970.[137] Today the Arctic Ocean is still regarded as a region of acute sensitivity from various political, military, sociological, and environmental perspectives.[138]

The law of the sea issues confronting Canada in the Arctic have always been technically, as well as diplomatically, tricky.[139] The nature and extent of Canadian legal claims or aspirations in the Arctic Ocean have long been in contention between the Canadian and U.S. governments in particular, and to a lesser but appreciable degree a matter of concern to some European scientists and others with a sentimental as well as professional interest in the region. It has long been a major objective of Canadian national policy to secure sufficient autonomy in the Arctic Ocean to legitimize Canada's role as the controlling "manager" of the Northwest Passage.[140] Over the years, however, Canadian officials have learned not to couch such claims or aspirations in territorial terms, as far as the water areas between the Canadian Arctic islands are concerned.[141] Canada's legal strategy in the Arctic has been to advance arguments that together are tantamount to a de facto, as distinguished from a formal de jure, sovereignty claim. This strategy of incrementalism — sometimes derided by foreign critics as a policy of creeping jurisdiction — was one of the reasons why Canada and the other Arctic littoral states agreed in the early 1970s *not* to put these Arctic issues explicitly on the Conference agenda at UNCLOS III.[142] This left Canada in a position to advance its Arctic claim on a variety of fronts under a number of separate heads on the UNCLOS III agenda: territorial sea, internal waters, international straits, exclusive economic zone, continental shelf, and special environmental authority. The subtlety and sophistication with which the Canadian delegation played its Arctic hand at UNCLOS III is one of the most interesting stories of the Conference.

First, fortunately for Canada, there was little resistance at UNCLOS III to the proposal for a uniform 12-mile *territorial sea*, given widespread agreement on the new concept of an exclusive economic zone extending 200 miles seaward of the baseline of the territorial sea. The significance of this is that it permits Canada to exercise the full authority inherent in "sovereignty" in all Arctic straits or other entrances to the Northwest Passage[143] that are less than 24 miles in width,[144] and thus to "choke off" access to the Passage, if necessary, from either direction. Under present

conditions of technology, it is probably impossible to conduct surface navigation on a year-round basis through those entrances that are *more* than 24 miles in width.[145]

Second, the Conference contributed in various ways to the broadening, if not the clarification, of the regime of *internal waters* on the landward side of the baseline of the territorial sea. Two of these ways are worth noting: through the development of criteria for the delineation of the baseline of the territorial sea,[146] and through the creation of a new regime of mid-oceanic archipelagic states[147] permitting the enclosure of immense coastal areas on the landward side of their archipelagic baseline''. These new provisions make it easier for Canada to argue, directly or analogically, that it is entitled under the new law of the sea to enclose large areas of internal or coastal archipelagic waters in the Arctic.[148]

Third, Canada was particularly anxious to oppose any tendency at UNCLOS III to reformulate the provisions on *international straits* in a way which might be read as including the Northwest Passage in that category. This issue was central to Canada's strategy for securing management authority over the Passage, since the Conference eventually agreed to guarantee the ''right of transit passage'' through ''straits used for international navigation.''[149] Canada has long maintained that it should lie in the managing state's discretion to deny access to the Passage to any vessel, foreign or Canadian, that failed to meet reasonable standards. In the final result, the Conference declined to designate any specific straits deemed to qualify as ''international.'' So the matter of definition is still open, and Canada must continue to deny, on the facts of history, that the Passage is ''used for international navigation,'' until it is universally accepted that Canada has sole transit management authority in the region.

Fourth, the legitimization of the *exclusive economic zone* at UNCLOS III has, of course, secured Canada's sovereign rights to all resources, both living and non-living, within 200 miles of the baseline of Canada's territorial sea in Northern waters. At present there is only a modest prospect of fishery development in the Arctic Ocean,[150] but, as we have seen,[151] the potentiality for offshore mineral development is considerable.

Fifth, the *continental shelf* definition in Article 76 is, as we have also seen,[152] quite expansive, but it is not yet clear how much of the continental margin in the Arctic might be subject to Canada's ''sovereign rights'' beyond 200-mile limits under that complex definition.[153]

Finally, and most directly applicable to the unique problems of navigation in the Arctic, Canada succeeded in its initiative to secure *special environmental authority* in ''ice-covered areas.''[154] This provision, drafted and promoted assiduously by the Canadian delegation, won for the Arctic littoral states such as Canada ''the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic condi-

tions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance." Although this special entitlement is generally worded, and may be variously interpreted, it represents a major victory for Canada at UNCLOS III.

Given the importance of Canada's stake in the Arctic, and the diversity of related legal issues, it must be concluded that the Canadian delegation's Arctic strategy at UNCLOS III was highly successful.[155] The decision to keep almost all explicitly Arctic issues off the agenda has been vindicated.

Navigational Interests and Environmental Concerns

More generally, outside the specific context of the Arctic, Canada has been waging a diplomatic campaign for many years to strengthen coastal states' rights with a view to the prevention and control of marine pollution. To some extent this effort has been motivated by a broad, scientific, altruistic concern for the conservation and protection of the ocean environment as a whole,[156] but especially since the *Arrow* oil spill off the Nova Scotia coast in February 1970 Canada's environmental crusade has tended to focus, in a more self-interested way, on the problems of ship-generated (or "vessel source") pollution in coastal waters.[157]

After the *Arrow* incident Canada began to play a central role in drafting what came to be known as the "Ottawa principles" on marine pollution for the 1972 UN Conference on the Human Environment.[158] These principles had an influence on the environmental thinking of the Third Committee both of the UN Seabed Committee between 1971 and 1973 and of UNCLOS III thereafter.[159] But not all the Canadian ideas incorporated in the "Ottawa principles" were to prevail at UNCLOS III. The Conference failed, for example, to adopt the Canadian concepts of "custodianship" and "delegation of powers," that is, that the "basis on which a state should exercise rights or powers, in addition to its sovereign rights or powers, pursuant to its special authority in areas adjacent to its territorial waters, is that such rights or powers should be deemed to be delegated to that state by the world community on behalf of humanity as a whole."[160] After many years of intensive effort at compromise diplomacy, the Third Committee did finally strike a delicate balance between coastal states' rights and interests, on the one hand, and the rights and interests of shipping (i.e., transit) states, on the other. Moreover, the Second Committee also had to reconcile navigational interests and environmental concerns in developing its jurisdictional regimes: for example, in the provisions on the territorial sea, international straits, archipelagic waters, and the exclusive economic zone.

The work of the Third Committee on the "protection and preservation of the marine environment" was in many ways a consolidation of previous norm-setting and law-making contributions from other forums: not only the 1972 Stockholm Conference on the Human Environment but also a number of shipping-related conferences convened since the 1960s by the International Maritime Organization (formerly the Intergovernmental Maritime Consultative Organization).[161] Moreover, its contribution to marine pollution prevention and control in the contexts of non-vessel-source pollution was modest.[162] But in the context of ship-generated pollution UNCLOS III made important and creative contributions by developing a system of alternative or concurrent jurisdictions to facilitate action, both preventive and remedial, for the prevention and control of this kind of pollution. In addition to acknowledging the traditional enforcement role of flag states in such matters,[163] it recognized and clarified the enforcement role of the coastal state,[164] and, with Canadian advocacy, introduced provisions for enforcement by "port states".[165] Even more important, from a Canadian perspective, the Third Committee recognized, clarified, and developed the legislative authority of coastal states in certain, carefully defined, circumstances for the prevention of pollution from vessels within limits of national jurisdiction.[166] The most significant of these was the provision authorizing the coastal state, in certain circumstances, to adopt special mandatory measures for pollution prevention, beyond what is normally acceptable under "international rules and standards."[167] This special entitlement is, however, subject to the approval of the International Maritime Organization, which, it may be hoped, will seek to work cooperatively toward these ends with the applicant coastal state.[168]

The Second Committee reformulated the provisions on the right of "innocent passage" through the territorial sea[169] — though not to the satisfaction of the Canadian delegation[170] — with a view to balancing the navigational interests of the transit sites and the environmental concerns of the coastal states. Under the regime of international straits, the right of "transit passage" was secured, but balanced against the need for agreements between user and littoral states for the prevention, reduction and control of pollution from ships,[171] and against the right of the littoral states to designate sealanes and to prescribe traffic separation schemes.[172] A similar balance was struck in the provisions on archipelagic waters.[173] Under the regime of the exclusive economic zone the coastal state was granted "jurisdiction" — without further qualification — over "the protection and preservation of the marine environment,"[174] but a balance was struck in other provisions between the coastal state's environmental interests, on the one hand, and the right of navigation and other noncoastal freedoms, on the other.[175]

Taken together, these various outcomes in the Second and Third Com-

mittees at UNCLOS III have resulted in a carefully negotiated system that greatly reduces the vulnerability of environmentally concerned states such as Canada.

Other Interests and Concerns

Note should also be taken of a number of other UNCLOS III developments of lesser interest or concern to Canada.

The Third Committee, at the demand of developing coastal states which have felt threatened or at least deprived by their lack of effective participation in *marine scientific research*, developed a "consent regime" under which the coastal state will be entitled to exercise a high degree of discretion, albeit conditional discretion, in the regulation of such activities by foreign states within its limits of national jurisdiction.[176] Canada did not choose to take a strong position on these issues, partly perhaps in deference to developing coastal states whose support Canada needed on other issues, and partly because the Canadian oceanographic community, unlike its U.S. counterpart, was relatively unalarmed by this trend at UNCLOS III.[177]

Somewhat similarly, Canada was not deeply involved in the issues of concern to *archipelagic states* (such as Indonesia, the Philippines, and Fiji), but chose to support their demands for a special entitlement to enclose vast areas of archipelagic waters, partly because of the need to win their support on other issues, and partly because of the potential analogy that might be drawn between their midoceanic inter-island waters and Canada's coastal archipelago in the Arctic.[178]

The issues of *maritime boundary delimitation*, between neighbouring states with opposite or adjacent coastlines, were more complicated, and of much more importance, for Canada. Throughout the period of the UN Seabed Committee (1968–73) and the early period of UNCLOS III proper, Canada and the United States were locked in talks and then negotiations concerning unresolved ocean boundary issues in four areas: the Gulf of Maine, the waters seaward of Juan de Fuca Strait, the waters within and seaward of Dixon Entrance, and the Beaufort Sea. Issues of a similar kind with Denmark (Davis Strait) and France (St. Pierre and Miquelon) were also on the negotiating table. The Gulf of Maine dispute was accorded the greatest importance, but unfortunately a brave effort to settle this dispute and associated transboundary problems proved abortive[179] and these serious differences between the two countries finally had to be taken to the International Court of Justice.[180] Accordingly, Canada had to take an active interest in the UNCLOS III negotiations on the global formula to be applied to boundary delimination. The matter was complicated by the fact that Canada had to make different, if not contradictory, arguments in these various boundary negotiations. However, given the salience of the Gulf of Maine dispute, Canada had little choice but to join the camp of the "equidistance" proponents at UNCLOS III. With this posture,

Canada found itself, with 20 other states, vehemently opposed by 29 other delegations which supported "equitable principles" instead of "equidistance." Since the deadlock between the two factions could not be broken, the Conference was finally forced to accept general language designed to favour neither group.[181]

Dispute settlement was another area of negotiations where Canada kept a relatively low profile at UNCLOS III, but faced with a strong reluctance on the part of most delegations to accept a compulsory system of dispute settlement, the Canadian delegation felt obliged to join in the search for a compromise. The Canadian approach was not entirely based on principle: Canada was reluctant to risk losing some of the substantive gains it had made in earlier negotiations,[182] and in any event the Canadian government in recent years had not shown itself to be wholly committed to a policy of unconditional acceptance of the compulsory jurisdiction of the International Court of Justice.[183] In the final result, Canada acquiesced in the general trend toward a hybrid system of dispute settlement consisting both of obligatory and optional elements. In the final version of the text the Conference accepted "compulsory procedures entailing binding decisions"[184] where no settlement could be reached through optional means,[185] but these provisions on compulsory procedures were subject to a wide range of carefully negotiated "limitations and exceptions."[186] At the time of signing, ratifying, or acceding, any state may declare in writing that it does not accept any one or more of the compulsory procedures in any one or more of certain designated categories of disputes, such as boundary delimitation disputes and certain kinds of disputes over a coastal state's exercise of its discretion with respect to foreign scientific research within its limits of national jurisdiction.[187]

Finally, Canada did express interest, albeit at a low level of national priority, in the UNCLOS III issues related to the *development and transfer of technology*, which were debated in the Third Committee.[188] Along with all other developed states represented at UNCLOS III, Canada was, of course, placed in a defensive posture whenever it was argued by a developing country delegate that obligations to transfer technology should be made specific and legally binding. Inevitably, the reluctance of developed countries to be saddled with strictly binding obligations of this sort resulted in much looser language of an aspirational character, intended merely to convey a general order of long-term moral commitment. Accordingly, the Canadian delegation found it sufficient to coordinate its position on these issues at UNCLOS III with its position on similar North-South issues in other forums, as part of its overall, orchestrated approach to the New International Economic Order. As soon as it became evident that the transfer of technology provisions proposed at UNCLOS III[189] were relatively moderate and "unthreatening", within this sector of Canadian foreign policy, it seems that the Canadian government adopted an acquiescent rather than an active approach.

Canada has never engaged in any public examination of its national ocean policy. Despite the occasional referral of specific ocean-related issues to royal commissions, Canadian governments have never chosen to use such an inquiry for systematic ocean policy making. Yet now it seems quite urgent for a national stock taking of the diverse policy implications that arise from the new law of the sea. It is scarcely hyperbole to assert that UNCLOS III has effected a revolution in this area of international law. Given Canada's extraordinary salience as a coastal state — permanently assured by geography — a failure to pull together the elements of national ocean policy planning would be inexcusable.

Other countries behave differently. In the United States, for example, the Stratton Commission was appointed in 1962 to undertake a broadly based study of the national interest in the ocean[190] and a temporary Marine Council was established in the White House under the chairmanship of Vice-President Humphrey.[191] The recommendations of the Stratton Commission[192] were taken seriously and had an important influence on national policy, especially in the development and implementation of coastal zone management programs.[193] Currently, the U.S. Congress is considering a proposal for another Stratton-type inquiry into the state of U.S. national ocean policy.[194] Similar proposals have been made for Canada,[195] but with no discernible impact.

Canada's failure to engage in systematic policy planning may be a mark of its culture, or the result of an unduly regionalized system of federal government. Whatever the reason for this failure, it has nothing to do with capability. Canadian officials have been centrally involved in many of the major UN planning studies for the international community and are second to none in this particular kind of virtuosity.[196]

With a view to encouraging a systematic study of Canadian ocean policy requirements for the next 15 years, it may be useful to review some of the more obvious considerations. The first of these will be addressed within the traditional sectors of industrial policy related to the ocean: fishing, energy, mining, and shipping. Other important considerations that do not fit so neatly into these familiar categories will be discussed as types of "strategic planning".

Sectoral Problems and Opportunities

FISHING

There are few, if any, industries more frustrating for policy makers than the fishing industry. Over the years the problems of the Canadian fishing industry, especially on the Atlantic seaboard, have defied any long-term or generally acceptable solution. Indeed, some experienced analysts ques-

tion whether these problems are truly soluble within the framework of our culture and political system. The fact that many of these problems are also unsolved elsewhere, under different cultural and political conditions, might be of small consolation in Canada, but it does at least underline that some, if not most, of the difficulties involved in fishery development and management arise directly from the nature of the ocean fishery resource itself.

An ocean fishery is a common property resource.[197] This means that no one person, unit, or institution can own it outright and thus establish total control over the input factors of production so as to secure a reasonably dependable "rent" from the resource.[198] Accordingly, it is impossible for fishery policy advisers to derive much insight from the theory of agriculture or the practical experience of farming on land. Twenty years ago the leading fishery economists argued for solutions in the form of limited entry policies which would permit the imposition of quota controls and licensing requirements.[199] Gradually most fishery biologists began to accept these arguments for a variety of reasons, both theoretical and practical,[200] not least because limited entry seemed to promise a more effective approach to the problems of stock conservation.[201] Most fishery experts believed that the "enclosure movement" (the advent of 200-mile exclusive fishing zones under the proposed EEZ regime), would facilitate successful experimentation with limited entry programs under the sole management control of the coastal state. Much was made of the argument that "clearing out the foreigners" would make at least some of the chronic problems of fishery policy manageable, if not totally soluble.[202]

Of course, it was acknowledged in the early 1970s, even by the optimists and nationalists, that extended fishery jurisdiction would result in temporary dislocations within the world fishing industry, but these disruptions were usually envisaged in terms of reallocation of total fishing effort. Even the limited statistics presented in Table 1 show a fairly impressive increase in the annual volume of fish landings by developing coastal states, which are new to the upper echelon of the world's major fishing states, and a corresponding decline in the dominance of the traditional distant fishing states of Western Europe, although Japan and the Soviet Union are still firmly entrenched in the leading positions.[203] But in most countries, including Canada, the "enclosure movement" has contributed little to the improvement of fishery management, and it has been painfully learned that increased landings are scarcely more than a first step toward the goal of fishery development.

The ordeal of the Canadian fishing industry in the last decade continues to be a serious national problem.[204] In 1982–83 two federally appointed task forces published reports: the Pearse commission on the problems of the Pacific[205] and the Kirby commission on those of the Atlantic.[206] What seems to be shared by the Pearse and Kirby Reports is a common understanding of the malaise: the diagnosis is essentially the same on both

coasts. Both reports emphasize that the common property characteristics of the resource itself tend to result in overcapitalization within the industry: too many vessels, too many plants, too much investment, and, above all, too many fishermen. Overexpectations and traditional attitudes combine to keep far too many engaged both on the catching and processing sides of the industry; excess capacity raises production costs, and this in turn reduces the level of available net income.[207]

Moreover, both reports agree that entry limitation arrangements, through quota and licensing controls, have resulted in excessive government regulation. Although intended to guarantee fairness in the distribution of fishing licences and efficiency in the allocation of fishing effort, the system is in chronic disarray. The regulations are lacking in uniformity, and therefore inequitable to someone somewhere. Licensing decisions are suspected of being politically motivated, and are not subject to review procedures. The stock quota system induces fishermen to take the quota as quickly as possible, intensifying the natural seasonality of the fishery, overstraining vessel and plant capacity for short periods, lowering the quality of the product, and thus reducing the Canadian industry's competitiveness in the export markets. As the spiral continues, fisheries close early and vessels and plants lie idle. Moreover, an unpopular regulatory system is difficult and expensive to enforce at the community level, because fishermen have little motivation to protect the common property resource.[208]

The Pearse Report was, of course, also influenced by factors peculiar to the Pacific sector. First, British Columbia is a relatively affluent province, and the Pacific fisheries do not make a major contribution to the regional economy, either in terms of total domestic product or in terms of employment. Few of the coastal communities are solely, or even preponderantly, dependent on the fisheries. Those who are engaged in year-round commercial fishing — and now most registered fishermen operate on a full-time basis — are moderately comfortable, earning about twice the income of their counterparts on the Atlantic coast, since much of their catch consists of very high value species such as salmon, halibut, and roe herring.[209]

Second, the problems of fishery management on the Pacific coast vary significantly from species to species. In the case of salmon, for example, the central problem is habitat management, since the condition of the upstream spawning areas and downstream transit areas is adversely affected by other upstream and downstream uses, such as forestry, irrigation, flood control, and hydro-electric power generation, by pollution of various sorts, and other urban and industrial impacts. Effective salmon fishery management seems to require a highly sophisticated and carefully coordinated management plan for the entire river basin area, and this will be expensive and politically sensitive, not least because of the federal-provincial and management-union issues involved.[210]

Third, both for salmon and halibut, the Pacific fishery development and management problems arise partly from the interaction of Canadian and U.S. fishermen and the interdependence of Canadian and U.S. fishermen and the interdependence of Canadian and U.S. fishery policies and programs, at state/provincial as well as at federal levels. In both of these fisheries, most problems have an international aspect, demanding the bilateral negotiation of politically sensitive issues and the successful administration of bilateral commissions, such as the International Pacific Salmon Fisheries Commission (IPSFC) and the International Pacific Halibut Commission (IPHC). In respect to salmon, difficult diplomatic issues remain to be resolved[211] and in respect to halibut, international pressures have led to a reduction of the Canadian fishery.[212] By and large, the effect of the UNCLOS III enclosure movement on the Pacific coast has been to reinforce the vulnerability of Canadian national fishery development and management to the vagaries of Canadian–U.S. diplomacy and transboundary management arrangements.[213]

On the Atlantic coast, the socio-economic and political settings of fishery policy making are entirely different. The Atlantic Canada region is far from affluent; in many areas unemployment is extremely high, and in some communities underemployment is almost accepted as a way of life. Especially in Newfoundland and Labrador and Nova Scotia, the provincial economies of the region are significantly affected by the rising and falling fortunes of the fishing industry. Income from fishing and related occupations is low or unreliable, or both.[214]

The Atlantic fishery is highly diversified. Fishery management does not lend itself to discrete strategies based on the specific characteristics of any one commercial species. The diffuse and diverse nature of the fisheries of the region means that no one source of impact can be brought usefully under any comprehensive single system of resource management, habitat management, or coastal zone management can be designed, much less implemented, to respond effectively to all the management problems involved.[215] On the other hand, the fishery tends to be more resilient than the Pacific fishery; the groundfish stocks recover more quickly under effective conservation. The chief developmental task in Atlantic fishery management today, in the wake of UNCLOS III, is the design of a strategy for improved use of underutilized species, such as silver hake.

Internationally, the Atlantic fishery problems have multilateral as well as bilateral diplomacy implications. The advent of Canada's 200-mile exclusive fishing zone has reduced, but not eliminated, the role of international institutions in the management of the Northwest Atlantic fisheries.[216] Moreover, the Georges Bank area in the Gulf of Maine, which includes a highly valuable scallop fishery, is now divided between American and Canadian fisheries, and this gives rise to new international requirements for consultation on fishery management in the area.[217]

Of the many difficult problems associated with fishery policy in Atlan-

tic Canada, two in particular may be picked out for comment. First, fishery policy issues in the region have almost invariably a socio-economic, political, cultural, and therefore emotional, significance. Government policies, programs, and officials tend to be distrusted or resented, almost regardless of the circumstances. The "cultural" response to almost any government initiative tends to be negative, leading to demands for greater communal autonomy, in one form of self-management or another.[218] This is a very difficult demand for modern government to accept: particularly for a directive kind of system such as that of the federal government of Canada, and particularly within an industry which is notoriously dependent on governmental support and largesse.[219]

A very different kind of difficulty, but equally central to the fishery problems of the Atlantic region, is that of securing dependable, long-term marketing arrangements.[220] In a country with limited interest in eating more fish than it already does, there is no gain in catching larger volumes of fish in Canada's exclusive fishing zones unless we can sell these additional landings. Marketing is not a major problem on the Pacific coast, but it constitutes the largest single challenge to the development of the industry in the Atlantic region. It seems unlikely that appropriate marketing arrangements can be made without some resort to trade-off wheeling and dealing in the larger context of Canadian international trade policy. This is not a popular line of argument to the Canadian fishing industry, but it is probably the price that must be paid if Canada is to gain substantially from its living resource acquisitions under the EEZ regime.

These two examples, one communal and the other industrial, reflect the coexistence of two very different, but equally legitimate, approaches to Canadian fishery policy in general. In a sense each approach represents a dual philosophy or ideology, one communal and the other industrial. Especially on the Atlantic coast, it is difficult to envisage any formulation of Canadian fishery policy that does not accommodate this duality of philosophy. Canadians may have to accept the inevitability of the balancing of industrial and community considerations, as well as foreign and domestic factors, recommended by the Kirby Report in its formulation of the basic objectives of Atlantic fisheries policy:

(i) The Atlantic fishing industry should be economically viable on an ongoing basis, where to be viable implies an ability to survive downturns with only a normal business failure rate and without government assistance.
(ii) Employment in the Atlantic fishing industry should be maximized subject to the constraint that those employed receive a reasonable income as a result of fishery-related income transfer payments.
(iii) Fish within the 200-mile Canadian zone should be harvested and processed by Canadians in firms owned by Canadians wherever this is

consistent with Objectives (i) and (ii) and with Canada's international treaty obligations.[221]

This framework of Atlantic fishery policy objectives may, in fact, prove as useful on the Pacific coast as on the Atlantic. But the crucial factor is the relative weighting to be given to each of these elements or considerations, and this is a matter which may be resolved accidentally, rather than deliberately, by the mix of biologists, economists and sociologists involved in the implementation of Canadian fishery policy. Economists tend, by reason of their training and orientation, to emphasize the industrial side of policy, and therefore to criticize such things as the high level of subsidization afforded by the federal government to the industry as a whole, and the extraordinarily high cost of fishery management allegedly close in value to the nation's total catch.[222]

Sociologists, on the other hand, tend to reflect and articulate community concerns such as the inequity of particular licensing and quota arrangements and the burden on fishermen of the regulatory system as a whole. Some discern in government planning an assumption that "things will get better," whereas in reality the fate of fishing communities is to oscillate between good times and bad. Most government intrusions on the community tend to be harmful, in the long term if not in the short. Some even deny the common property character of an inshore fishery, pointing to informal, traditional, community-based arrangements for catch allocation. They are particularly resentful of "tough" recommendations by economists advising some form or degree of displacement in those coastal communities which cannot establish an economically viable role in the modern fishing industry.[223]

Scientists, on the other hand, are constantly burdened by the scale of research that seems to be required to provide a sound and reliable information base for rational fishery development and management. Typically, the biologist's approach to fishery policy is that of constant experimentation and frequent revision as new data become available. Biologists tend, moreover, to be split fairly evenly in their sympathies between the no-nonsense, industrial school of economists and the more compassionate, community-oriented school of sociologists.[224]

It must be confessed that the new law of the sea has not yet brought any magic solutions to the problems of the Canadian fishing industry. Yet, despite many industrial disappointments since the convening of UNCLOS III and the promulgation of our 200-mile exclusive fishing zone in 1974, it must be hoped that the newly extended framework of national fishery policy planning will permit a larger degree of wisdom in the management of these natural resources.

It may be that now is the best time to recognize that the chasing of wild fish is no longer the most efficient method of utilizing the living resources of the sea. Many fishing-related problems may be best treated outside the

context of fishing as problems in community stabilization, technology development and international trade. Perhaps at least *some* of the solutions are to be found in the establishment of a national plan for the development of mariculture. Under a properly designed, funded and researched program in maricultural development the appropriate Canadian skills might be adapted to a more profitable and less volatile lifestyle based on the traditional values of the coastal community.[225] But, however promising the prospect of growth in Canadian mariculture, the sun is not about to set on the offshore sector of Canada's fishing industry. The only realistic objective in the next 25 years is displacement (not replacement) of fishing community effort, and at most the displacement can only be partial and gradual.

Offshore Energy

In some respects Canada's offshore energy problems seem a good deal less complicated than the fishery problems reviewed above. Though it presents its own range of technical difficulties and social uncertainties, offshore mineral development is generally perceived in terms of economic opportunity. It resides in the "growth sector" of the national psyche. Despite some reports of adverse impacts on coastal communities elsewhere,[226] offshore petroleum development is not generally viewed with suspicion or resentment by the coastal residents of this country or by the public at large. The technology of offshore production is much the same around the world, and this uniformity makes it easier for government and industry to learn from experience elsewhere. Moreover, the relatively short life of offshore petroleum production reduces the need for long-term projections and scales down the level of investment risks incurred.[227]

If the analysis stopped there, we might suppose that now, 25 years after the commencement of commercial offshore exploration, Canada would be well placed to take advantage of its newly confirmed monopoly over the energy resources of its continental margin. But, despite many favourable developments in these 25 years, the Canadian story is largely one of delay and frustration. In order to understand the offshore energy problems of the 1980s, it seems necessary first to look at the offshore in the context of national energy requirements.

National energy planning is a relatively new government responsibility, necessitated by a series of threats to traditional sources of strategic materials by factors beyond consumer control, such as the instability of political systems on the supply side and the danger of international cartelization.[228] Offshore energy is still a minor component of energy planning as a whole, even in a country like Canada which possesses considerable offshore energy resources. Effective energy policy planning is dependent on collaboration between government and industry, and within

a federal system such as ours requires a willingness on the part of federal and provincial governments to work cooperatively in difficult areas of resource management and regulation. The planning of the new offshore sector of Canada's energy industry also seems to call for a new political balancing of provincial interests: on the one hand, between the coastal and inland producer provinces and, on the other, between the producer and consumer provinces.

Seen in the larger context of long-term national energy requirements, the ocean's crucial role will be that of supplier of infinitely renewable resources in the form of wind and tides. The chief significance of the new law of the sea for Canadian energy production may be that the advent of the EEZ regime guarantees Canada's monopoly over the energy resources of the Bay of Fundy,[229] whose extremely high tides make it a logical site for the world's largest tidal energy production facility.[230]

For decades the technical feasibility of such a facility has been studied and debated.[231] Now it seems to be agreed that most of the engineering solutions are available.[232] The problems remaining are mostly economic[233] and environmental in character.[234] The economic problems require a formidable act of political will by the Canadian government system — though one that might be compared with earlier decisions to proceed with multibillion dollar megaprojects in other parts of Canada.[235] The environmental cost or risk is more difficult to assess. Scientists are coming closer to understanding the probable risk in terms of measurable effects,[236] but since environmental consequences may be felt off the shores of New England,[237] the interests of the United States are also involved. Moreover, since most of the tidal energy generated in the Bay of Fundy would have to be exported to the New England market,[238] the project is of considerable economic interest as well as environmental concern to our neighbours. Indeed the project would represent an aspect of U.S. national energy policy even more than one of Canadian energy policy. Like Canadian fishing, Fundy tidal power would be an export industry, and it would be vulnerable to the strains in Canada–U.S. relations.[239] Accordingly, great care will have to be taken before a final commitment is made to proceed with the Fundy Tidal Power Project. In the meantime a pilot project has been initiated to test the technology available for tidal power generation in these waters.[240]

But more immediate, albeit more limited, are the current problems associated with the development of offshore petroleum. Most observers seem to agree that offshore development will remain an important feature of Canadian energy development policy, though perhaps for socio-political rather than strictly economic reasons. The problems have to do with the rate and manner of offshore development, which to some extent is competing for government favour and private capital with other kinds of petroleum reserves and with other non-petroleum sources of energy.[241]

As far as petroleum development options are concerned, the first distinc-

tion that has to be made is between conventional and nonconventional sources. Conventional sources are the onshore oil and gas reserves in Western Canada (chiefly Alberta but increasingly also Saskatchewan), which can be exploited under present conditions. Nonconventional sources, which can be developed with a high level of public and private investment, are available in three principal ways: through enhanced recovery,[242] tar sands development,[243] and frontier development. ("Frontier" consists of offshore and Arctic onshore.) Although it is common to say, for purposes of conciliation within the industry, that *all* these modes of development must be supported, the truth is that the offshore mode of development must compete with the other Canadian modes: with Arctic onshore, with tar sands development, with enhanced recovery, and with the development of conventional reserves in the West.

But the emphasis to be placed on offshore development is an intensely political issue. Account must be taken of economic considerations of cost and price, and industrial considerations of profit, but in the context of strategic planning even the best motivated of politicians must give due regard to the social and political systems of Canada as well as the national economy. Just as Arctic onshore (and offshore) development is a matter of special interest and concern to the people and governments of the Territories, offshore development on the East Coast is a prospect of great significance for the people and governments of Atlantic Canada. To put the matter as delicately as possible, a question of regional balance is at stake in these large-scale investment decisions.[244]

Also involved is the constitutional and political issue of division of powers between the federal and provincial authorities within the Canadian governmental structure. Until recent times, the provinces tended to have most control over promotion, production and regulation in the field of indigenous mineral resources.[245] Federal authority tended to be limited to the regulation of export and import trade in such resources, interprovincially and internationally.[246] But in the 1950s the federal government began to realize the potential of petroleum development in the "Canada lands," especially in the offshore.[247]

Canadian interest in Arctic island petroleum development seems to have originated in the late 1950s. Under the first federal regulations,[248] written in 1961 with a high degree of corporate involvement, it seemed that the federal government's role in petroleum development would be supportive rather than directive.[249] The federal government's interest was stimulated by John Diefenbaker's economic vision of the North in the early 1960s, and, of course, revived in 1967 after the massive discovery of petroleum reserves at Prudhoe Bay in Alaska.[250]

As to the offshore, relatively little thought seems to have been given to this area of petroleum development by the federal government until the mid-1950s, when Canada had to take a position internationally on continental shelf provisions being prepared by the International Law Com-

mission for UNCLOS I, which was held at Geneva in 1958.[251] In that period the Arctic offshore was still assumed to be the chief area of potential offshore petroleum development under federal jurisdiction, but as the seismic evidence started to accumulate more attention was given to the prospect of commercial activity off the east coast of Canada. The first offshore drilling took place in 1966, when Amoco sank some wells off the Grand Banks, but unlike the North Sea, where drilling began about the same time,[252] the process of offshore development to the point of production has been slow, and it may be 1988 or later before offshore production begins in the Northwest Atlantic.[253]

Exactly when and how offshore production occurs in Canada will depend on highly political decisions that must be made, and made soon, on the balance to be struck between federal and provincial government roles and between the roles of government and industry. To the extent that the Supreme Court of Canada has more or less upheld federal jurisdiction over offshore development,[254] it seems likely that the federal government will retain control over this area of economic planning, though further concessions to the provinces may be expected in revenue-sharing and management participation.[255] Certainly the National Energy Program will be revised or modified in some form,[256] but the three objectives of the Program — self-sufficiency,[257] Canadianization,[258] and fairness[259] — are unlikely to be repudiated.[260] The present grant system of incentives to promote offshore exploration[261] might be subject to adjustment, or complemented with a tax incentive program, to appease industry and government critics in Western Canada.[262] It is possible that Petro-Canada's role in frontier development might be reduced.[263] But it now seems to be an imperative of Canadian government and politics that regional balance must be secured in all major areas of economic planning, and Canada's offshore mineral resources certainly have a contribution to make to the overall goal of national economic development.

Deep Ocean Mining

It has been suggested that the Canadian mining industry's approach to deep ocean mining issues at UNCLOS III was based on a mixture of short-term concerns about proposed formulae on pricing and production controls and a long-term interest in research and development. But the actual imminence of these short-term concerns has long been a matter inviting skepticism. At the time of writing, 18 months after the conclusion of UNCLOS III, there are more reasons than ever to question whether the deep ocean mining provisions of the 1982 Convention are likely to become operational within the world mining industry.

First, there are *legal* reasons for scepticism. To become legally binding, the mining provisions in Part XI and related annexes of the UN Convention on the Law of the Sea must be brought under the law of treaties.

Because most of these provisions are completely new and highly specific and deal with a mixture of operational and organizational matters, they cannot pass into general (or "customary") international law and become binding on non-party states which decline to sign and ratify the Convention.[264] Accordingly, the legal significance of these particular provisions depends on the future of the Convention as a whole under the law of treaties, that is, on the number and identity of nations that choose to confer or withhold their final consent in the form of signature and ratification — or later accession.[265]

There are three schools of scepticism regarding the legal aspects of the UNCLOS III provisions on deep ocean mining. The first, the extremist faction, denies that the Convention in its present form will ever come into effect, because as many as 60 instruments of ratification or accession are required under Article 308. If this arithmetical projection proves correct, then of course the mining provisions will have no legally binding effect, even on those nations which have chosen to grant their final consent to them.[266] The second group concedes that the Convention may eventually come into effect for 60 or more states — say, early in the 1990s — but argues that the important consideration is the identity, and not merely the number, of the parties to the Convention. The crucial question, they contend, is whether all or most of the ocean mining states — that is, those with the capability to become ocean miners — choose to grant their final consent to these provisions through signature and ratification. The future they project is that of a chaotic legal world, in which deep ocean mining activities would be attempted, on the one hand, by party states in accordance with the nominally global regime of UNCLOS III and, on the other, by a group of non-party states in accordance with some other kind of regime.[267] The third kind of scepticism on legal aspects envisages merely continuing rounds of unsuccessful effort to create a viable and effective system for deep ocean mining under the aegis of the Preparatory Commission and the projected International Seabed Authority.[268] This opinion is based on doubt that such an effort can succeed without the active participation of the United States and other key industrial powers.[269] As this argument goes, the UNCLOS III mining provisions will have to be renegotiated as soon as the inevitability of their failure is generally recognized.

Apart from these arguments on the legal aspects, scepticism arises from *economic* considerations. World metal prices have been severely depressed for almost a decade, and there is no short-term prospect of dramatic price recoveries.[270] There is very little incentive for the mining industry to invest heavily in high-cost production of low-priced metals.[271] According to most economists, substantial preparatory investment in the production of ocean metals in the 1980s can only be expected in a situation where a rich, metal-importing country is determined, at virtually any cost, to create its own secured supply of these "strategic materials" and the govern-

ment of such a country is prepared, for overall security reasons, to assist its mining operators to absorb the high costs of seabed prospecting and production — somewhat in the manner of state-supported shipbuilding.[272] As matters stand, Canada does not seem likely to follow such a course, but the same may not be said of the United States, Japan, and the Federal Republic of Germany, among others.[273] If it is true that no seabed mining will take place before the year 2000 except on the part of a few strategically motivated industrial powers, then it seems unlikely that the Convention provisions will be accepted as more than a set of nonbinding guidelines in certain aspects of ocean mining.

There are other, *industrial* reasons for questioning the operational significance of the UNCLOS III provisions on deep ocean mining. Alternative land sources of supply of nickel, copper, cobalt and manganese may be preferred to new ocean sources, even if they represent equally high costs of future production.[274] Moreover, some "broad margin" states, especially France and the United States, now seem likely to commence seabed mining within their limits of national jurisdiction — that is, under the regime of the continental shelf — even though it remains true that most of the nodules on the seabed lie beyond national limits in international areas of the Pacific Ocean.[275]

Finally, there is new *scientific* evidence that much richer concentrations of metals in the ocean may become economically available in forms other than that of manganese nodules lying on the ocean floor. Considerable excitement has been generated by the recent discovery of polymetallic sulfides fissuring up from crevices in mid-ocean ridges in the Pacific and Atlantic Oceans,[276] but too little is known at present about these sulfides to permit speculation on the future impact of this new source of ocean metals on the UNCLOS III regime for deep ocean mining, a regime which was designed solely with nodules in mind.[277]

For these many reasons it is appropriate to entertain a degree of scepticism about the short-term operational significance of the UNCLOS III regime on deep ocean mining. Quite properly, the Canadian government participates in the semi-annual sessions of the Preparatory Commission and contributes to the work of that body.[278] But INCO and Noranda no longer have any foreseeable interest in participating in deep ocean mining for nickel or copper. The Canadian industry's problem is not access to the resource, but access to the market.[279] Moreover, Canada has no foreseeable problem in gaining access to supplies of cobalt and manganese. Although the cost of importing these ores may raise the cost of certain Canadian manufacturers, it does not seem to be economically desirable to accept the much higher costs of involvement in deep ocean mining merely to have direct access to a Canadian-controlled deep ocean source of supply, even in the case of manganese, which is important for steel production in Canada.

The conclusion is that Canadian involvement in the new UNCLOS III

regime for deep ocean mining should be based on foreign policy, not on industrial considerations.

SHIPPING

Of Canada's four ocean industries, the shipping industry was the least directly affected by UNCLOS III. The world shipping industry in general was involved in these negotiations only to the extent that the Conference dealt with jurisdictional issues related to navigation (or transit) rights. These issues required a reconciliation of coastal state interests with the interests of shipping states. Because most Canadian-owned and Canadian-registered vessels are confined to inland and coastal waters, the Canadian government was able to take a strongly coastal position on these issues without running counter to the dominant interests of the Canadian shipping industry.[280] Canada's position on shipping-related matters was, therefore, influenced less by industrial pressure than by a combination of environmental and administrative considerations,[281] so that Canada was essentially in the same negotiating position as most of the *developing* coastal states within this particular context.

Yet, like most developing coastal states represented at UNCLOS III, the Canadian government has had to give some thought to the possibility that Canada may, sooner or later, wish to develop its own deep sea shipping capability. Although this country is unlikely in the near future to abandon its general coastal state orientation on ocean policy affairs, it may nonetheless wish to build up its own national merchant marine, at least on a modest scale, so as to enjoy the advantages of possessing "flag state" jurisdiction over an appreciable number of ocean-going vessels as the state of registration.[282] Once again, Canadians are reviewing the arguments for and against the development of national flag shipping in Canada.[283]

First, it should be remembered that the Canadian shipping industry has had an unusually volatile history. There have been periods when Canada ranked high among the world's shipping states, especially in times of war when it was strategically expedient to place a large volume of shipping, both foreign-owned and Canadian-owned, under the Canadian flag. In times of peace, on the other hand, and especially in the period since the late 1940s, the Canadian merchant marine has been allowed to run down to a low level — the level at which Canada is judged to be competitive in the world market for shipping services. Currently, the Canadian merchant fleet, measured in gross registered tons for vessels over 300 tons, ranks about 35th in the world.[284] In times past, Canadian importers and exporters usually derived advantage from access to imperial preferential arrangements, and certainly incalculable benefits from a shared legal heritage,[285] but at least the preferential treatment has largely eroded in the postwar period,[286] and the legal advantages are becoming more ques-

tionable as shipping law becomes more "transnational" under UNCTAD and IMO (IMCO) influences.

Almost continuously since the late 1940s, arguments have been put forward in support of the position that Canada should develop its own deep sea shipping capability, that is, that the Canadian government should support and develop the Canadian shipping industry beyond the level at which a Canadian merchant marine is at present commercially competitive in the open market of supply and demand. There are seven principal arguments: three of these are traditional mercantilist arguments for industrial protectionism, and the remaining four may be classified as modern.

The first traditional argument attempts to justify protection on the grounds of *national defence*. Given the extremely limited military power that Canada can or should exert in world affairs, virtually no one is prepared to make this kind of protectionist argument for Canadian shipping, except possibly in the limited and special context of Arctic sovereignty.[287] The second traditional argument proceeds from the premise that the development of national flag shipping would produce a favourable net effect in terms of the *balance of payments*. But most shipping economists have concluded that the net effect would be negative in the short run, and small, if favourable at all, in the longer run.[288] The third traditional argument rests on the proposition that the development of the Canadian shipping industry would result in new *employment* opportunities. But it must be conceded that the world shipping industry in general is becoming more *capital* intensive, and it is extremely doubtful, in the light of the Canadian fishing industry's experience, how many unemployed men or women in Canada are prepared to undergo intensive training programs is order to qualify for a career at sea.[289]

The first of the modern arguments proceeds from the premise that the protection of selected industries is *politically* crucial to the development of an underdeveloped or "unbalanced" economy. The case rests on the psychological, rather than the economic, benefits available, and has more to do with the psycho-cultural concept of nation building than with that of economic or industrial development. This line of argument, though emotionally appealing to many nationalists, is scarcely amenable to rational analysis.[290]

The second line of modern argument is that a short-term economic loss is justifiable, or even necessary, in the first phase of sectoral development in order to become competitive in the second phase. Thus it may be argued that, under the supportive policies of UNCTAD[291] and other UN bodies,[292] Canada should make substantial short-term national investments in a vulnerable sector of its economy, such as shipping, in the hope that the infant industry will be sufficiently safeguarded in the second generation.[293] The strength of this argument depends on how one views the future pattern of the market for shipping services. Some experts believe

that the current world surplus of shipping services, which keeps marine transportation costs extremely low, is unlikely to continue for more than 10 years, and that now is the time for a newcomer like Canada to plan and invest its way into a competitive and influential position in a future seller's market.[294]

The third modern argument, distinguishable from the second, is the so-called "dark clouds" argument, that is, that the increasingly interventionist, protectionist trends in the international economy will have adverse effects indefinitely on the capacity and efficiency of (mostly foreign) shipping services currently available to Canadian importers and exporters. The principal reference here is to the LDC-sponsored Liner Code of Conduct, approved under UNCTAD auspices,[295] whereby cargo would be shared equally, 40 percent each, by the vessels of the importing and exporting countries, leaving only 20 percent for the vessels of third party countries (mostly those of the developed countries which still dominate the world shipping industry).[296] From this kind of projection regarding the redistribution of economic power within the world shipping industry, it can be argued that Canadian flag shipping, which would not otherwise be commercially viable, should be subsidized now as a national investment against future costs.[297]

The fourth, and final, modern argument is the admittedly limited and special argument that Canada's stake in the protection of the Arctic Ocean environment, and therefore in the administrative control of the Northwest Passage, is so great — not least for psycho-cultural reasons of "nation-building" — that a policy of special government support is necessary in order to permit the development of Canadian capability not only in shipping services but also in the entire range of ancillary services necessary for a system of transit management in that region of special national importance.[298] This argument is less cogent if restricted to the goal of environmental protection than if extended to that of transit management; but even in its extended form the argument may seem too specialized to support a general policy of protection for the Canadian shipping industry as a whole.[299]

This debate on Canadian shipping policy has been waged, more or less continuously, since the birth of the nation. A cynical observer might be excused for concluding that this kind of policy is determined less by the merits of the various arguments than by the political influence of the debaters. Apart from the taxpaying public, which in practice has little direct influence on this kind of issue, there are four principal interest groups engaged in the shipping policy debate: the shipowners (carriers), the users of shipping services (importers and exporters), the shipbuilders, and the maritime and ship-building unions.[300] Each of these groups has a different position on Canadian shipping policy. The unions are the most unequivocal in support of government interventionist measures which would lead to an expansion of Canadian flag shipping, and their position

rests chiefly, of course, on the employment argument.[301] The importers and exporters are the most consistently opposed to the concept of a substantial Canadian merchant marine on the grounds that a policy of government support, in any of the various forms suggested,[302] would inevitably raise the costs of transportation and adversely affect their trading position in the market.[303] The shipowners are, of course, mostly in favour of developing their own industry, but it is a heterogeneous grouping, whose interests are by no means identical.[304] The shipbuilders do *not* press for a requirement that all Canadian flag vessels should be Canadian built or Canadian repaired, but they are, of course, in favour of a national flag policy which would have the effect of bringing in more orders, and they see the Arctic as a special case in which Canadian-built vessels should be employed.[305]

Since the electorate is not emotionally involved, the Canadian political system is able to absorb the shipping policy debate more easily than its fishing policy counterpart. But shipping policy problems have never been comfortably addressed by the government system. Senior decision makers in Ottawa rarely have any "feeling" for the world of shipping. Indeed to most Canadians, in industry and commerce as well as in government, shipping is an alien world, full of traps and complications, best left to foreigners who know what they are doing. But the challenge calls for national vision as well as understanding, and it seems to deserve a ranking on the national agenda.

Strategic Planning Issues

TRANSIT MANAGEMENT

Even if the Canadian government should eventually decide to move in the direction of developing our national shipping capability, Canada will retain its present coastal orientation on virtually all navigational issues. This means that Canada will continue to be less concerned with the preservation of the traditional freedom of navigation in the high seas — a principle that Canada has no reason to challenge — than with the development of regulatory transit management systems of various kinds within Canadian limits of national jurisdiction.

Transit management is a term intended to convey the idea of a system for the regulation and control of vessel traffic within a designated area: either over all vessel movements, if the area itself tends to be congested or presents certain hazards, or at least over certain classes of vessels that present special hazards. Within limits of national jurisdiction the coastal state would act as the managing state, but the kinds of regulatory measures and administrative controls applied by the coastal authorities would, of course, have to be in accordance with international rules and standards and recommended procedures and practices, in conformity with the UN

Convention on the Law of the Sea.[306] Juridically, one can envisage different approaches to the development of transit management systems under five distinct regimes: internal waters, archipelagic waters, territorial sea, international straits, and exclusive economic zone.[307] At least in the third of these regimes, beyond the 12-mile limits of territorial sovereignty the managing coastal state has an obligation to develop a partnership relationship with the International Maritime Organization, the specialized agency based in London that represents the international community in matters related to navigation and vessel-source marine pollution.[308] This seems to be a reasonable interpretation of the Convention, at least from the viewpoint of a potential managing coastal state such as Canada.[309]

Nowhere is the case for a Canadian initiative in transit management stronger than in the Northwest Passage. Outside shipping-related circles, relatively few Canadians have any conception of the potential significance of the Northwest Passage. But for the obstruction of ice and other physical hazards, the Passage could provide a direct link between the Pacific and western Europe, saving thousands of miles and tens of thousands of dollars on any cargo-carrying voyage, over the next best alternative ocean route through the Panama Canal.[310] At the present level of technology, we now possess *most* of the technical capability to begin planning and design arrangements for initiating trans-seasonal, if not year-round, navigation through the Passage.[311] If the economic case can be made for commercial Arctic navigation, Canada should have in place by the year 2000 a permanent transit management system for the Passage, the western approaches in the Beaufort Sea, and the eastern approaches in the Davis Strait, Baffin Bay, and adjacent waters. In this context, the concept of transit management embraces all processes of policy making, legislation, regulation, administration and enforcement applied to the shipment of *any* cargoes, by *any* means, in and through the Passage and its approaches, and to the necessary technical support system.

Crucial to this task is the need to make full allowance for the special physical and environmental characteristics of the Arctic Ocean.[312] Moreover, a Northern mega-project on this scale must be conceived and designed within a socially appropriate, environmentally sensitive (ecodevelopmental) framework of economic planning.[313] Much thought would have to be given to the design of appropriate navigational aids and special training programs for those permitted to navigate in these difficult waters.[314] Given the diversity of governmental procedures for screening proposals for mega-projects of this scale, special care should be taken in the selection of approval procedures appropriate to a permanent transit management system for installation in the Canadian Arctic Ocean.[315] Moreover, this kind of system planning and design should be the product of 10 to 15 years of the most sophisticated study and analysis that Canadian expertise can provide in the late 20th century.[316]

The task is large, calling for an impressive exercise of will and imagination within the political and bureaucratic sectors of the Canadian government system. Not least, there will be a need for a high degree of diplomatic tact and firmness in dealing with international aspects of such a system in the Northwest Passage.[317] It is difficult to think of any ocean-related initiative that should have a higher ranking on the national agenda.

Ocean Management

Most specialists who have participated in the last 15 years of ocean development have found the need to regroup around one or two new concepts that seem to lie at the centre of their shared concerns. One of the new concepts evolving, both in government and the academic community, is that of ocean management.

The idea behind this recent coinage is that under the new, and newly expanded, regimes of national jurisdiction the coastal state has a widening range of managerial responsibilities which must be addressed together, holistically, as well as specifically within individual "sectors" such as that of fishery management. The managing state is confronted with expanding uses of the sea: offshore petroleum exploration and production, tidal power generation, ocean thermal energy conversion, transit by new kinds of vessels, disposal of various wastes, new forms of recreation, and aquaculture, as well as many types of fishing. Each of these uses, old and new, can be brought under an overall system of "rational" management, whereby the conflicts among uses can be anticipated and minimized, if not avoided, objectives clarified, priorities established, and research and training programs developed. Particularly for the purposes of research and training, the framework of "ocean management" must be designed in interdisciplinary terms in order to offset the biases and distortions inherent in each of the sectors.

Most coastal states in the world, not least those of the developing regions, now accept the need for an "integrative" approach to the tasks of planning and management in their coastal and offshore waters under the new law of the sea. The idea is not entirely new. In the early 1970s the division of the North Sea continental shelf into national areas[318] induced Norway, the United Kingdom, and other littoral states in the region to enter into cooperative arrangements,[319] both bilateral and multilateral, and to initiate thinking about the need for systematic "sea use planning".[320] At the same time the United States was beginning to develop an ambitious, federally inspired, national program of "coastal zone management."[321] Because of the timing of this path-breaking venture in American public administration, proposed several years *before* the advent of extended maritime jurisdiction in the form of a 200-mile exclusive economic zone,[322] the coastal zone was limited to the ocean area

within the three-mile limits of the U.S. territorial sea but included also a narrow strip of hinterland behind the shoreline.[323] Thus this concept of the coastal zone was that of the *interface* between the land and the ocean. Since the early 1970s variants of the sea use planning and coastal zone management concepts have emerged in several other regions of the world,[324] and in 1982 the United Nations Environment Program (UNEP)[325] took the important step of designating coastal zone management as an area of secondary priority for the second decade under the UN Action Plan on the Human Environment.[326]

Against this background, it seems obvious that Canada — with the world's longest coastline, the second largest continental shelf, and one of the biggest economic zones — should be making a major and innovative contribution to the development of "ocean management," not least by virtue of Canada's experience and international reputation in environmental management.[327] But, strangely, Canada has been slow in responding to the need for a comprehensive, integrative approach to the management of its vast coastal and offshore waters. In 1975 several alternative approaches to a coastal zone management system for Atlantic Canada were suggested,[328] and the topic was put on the agenda of a federal-provincial council of ministers.[329] However, despite (perhaps because of) the inclusion of the inland provinces under the concept of "shore management," little has been heard of any significant developments that could be said to reflect inter-government awareness of the need for a national system of ocean management.[330] Yet Canada needs an ocean management plan — with or without the inclusion of the inland provinces.

Now, with the crystallization of the new law of the sea, one can see that a comprehensive ocean management plan for Canada would be based on two kinds of ocean management systems around the Canadian coastline: binational and national. Binational ocean management systems need to be developed with neighboring states in six easily designated marine regions: in the Fundy-Maine-Georges (FMG) region with the United States;[331] in the St. Lawrence-Gulf outer region with France (St. Pierre and Miquelon);[332] in the Davis Strait region with Greenland/Denmark;[333] and in the Beaufort Sea, Dixon Entrance, and Juan de Fuca regions with the United States.[334] National ocean management systems need to be developed, of course, in the remaining Canadian coastal and offshore areas interspersed between the binational management regions. Underlying these management systems would be a number of common principles and institutions, including those established or further developed in the UN Convention on the Law of the Sea and other international agreements. In areas where it is premature to proceed to the design of an ocean management system, steps should at least be taken to begin consultations on the elements of an appropriate Regional Ocean Management Action Plan.[335]

Offshore Development

Another pivotal concept evolving in the field of ocean affairs is that of offshore development. What is usually meant by this term is a systematically planned effort to direct the entire process of developing the petroleum resources of the continental shelf (within the limits of national jurisdiction on the continental margin) over which the coastal state has sovereign rights under the new law of the sea.[336] It is assumed that offshore development planning should begin as soon as the initial geological prospecting of offshore areas suggests the existence of petroleum reserves of potential commercial significance, so that appropriate stimulation and regulation can be applied to the entire series of steps thereafter right down to the final phase of production (and the post-production clearance of installations).

The offshore development concept, like the larger concept of ocean management, is multidisciplinary and multifunctional in scope. It is intended to provide a framework for a variety of planning activities: stimulating, directing, and coordinating the appropriate research strategies; orchestrating the inputs of the various government agencies with relevant capabilities and responsibilities; designing effective procedures both to stimulate and to regulate the offshore development process; fusing the relevant resources of government, industry, and the academic community as productively and economically as possible; incorporating the views and interests of the affected coastal communities; and providing linkages with other coastal states and regions with experience in offshore development.

Offshore operations began, initially in a rudimentary and unsystematic fashion, on the U.S. continental shelf in the Gulf of Mexico, and later off the coast of Venezuela, and in the offshore waters of Indonesia.[337] A more systematic approach to offshore development was taken in the North Sea in the late 1960s by the governments of Norway and the United Kingdom.[338] Now, in the mid-1980s, we are about to witness in Canada the appearance of the third generation of offshore development, initially in the northwest Atlantic Ocean and, perhaps a little later, in the Beaufort Sea. Given the value of the resources at stake, Canadian industry and government have a strong incentive to take the third generation of offshore development to a higher level of efficiency and sophistication.

With a view to this end, a recent collaborative effort has been made to establish the Program for Atlantic Co-operative Offshore-Onshore Development (PACOD).[339] The Canadian component of this program (viz. CANPAC) will consist of a network of participating institutions from the three sectors of government, industry, and the academic community,[340] and CANPAC will also cooperate in various ways with counterpart institutions in Norway (NORPAC[341] and Scotland (SCOPAC).[342] It is hoped that the voluntary efforts of these institutions will result in an intelligent and

effective fusing of resources, so that Canadians will be able to take pride in their contribution to offshore development over the next 25 years.

Unfortunately Canada's efforts to stimulate and regulate offshore development over the last decade have been flawed by federal-provincial and interprovincial conflicts. Thoughtful Canadians may well be chilled by the prospect of future political wrangling over various aspects of offshore development.

Since the tragic sinking of the *Ocean Ranger* drilling rig in stormy seas off the Newfoundland coast in February 1982,[343] both government and industry have been deeply concerned with the problems of offshore safety. The problems of safety have, of course, been the major concern of the Canada-Newfoundland Royal Commission on the *Ocean Ranger* Marine Disaster,[344] but the terms of reference have been broadened to include a fuller study of all regulatory requirements for the exploration of the East coast offshore.[345] Canadians everywhere will hope that the Commission's final recommendations[346] will be given the most careful consideration by government and industry alike.

Coastal Community Development

As noted above,[347] it is widely agreed today, especially among economists and industrialists, that the major problem in the Canadian fishing industry is overcapitalization. It seems logical, therefore, to approach the problems of Canadian coastal communities as if they were essentially economic, or even industrial, in origin. But to most specialists in the field of coastal community studies it is precisely this sectoral assumption — that community development is virtually equatable with economic development — that must be challenged.[348]

First, it should be made clear that the focus of concern is the small coastal community, not the town or city located on a shoreline which has an entirely different set of characteristics. The small coastal community, like the small rural community, tends almost by definition to subsist at the periphery of the industrial economy in a country such as Canada. It does not necessarily follow — it may or it may not — that the best way of developing a small community is by ensuring it acquires a more central role within the industrial economy. On the other hand, it seems pointless, at least in a dynamic society such as ours, to deny that small coastal communities need to be developed. Like larger communities, small ones, both coastal and rural, have developmental, not merely maintenance or conservationist, requirements.

Perhaps the chief danger is overgeneralization. Important regional distinctions must be made between the coastal community problems of Atlantic Canada, British Columbia, and the Canadian Arctic.

All coastal communities in the Canadian Arctic are "small," and all

bear witness to difficult problems in community development. But the fact that almost all of them are Inuit settlements and that they suffer special forms of hardship due to a harsh climate and terrain has tended, until recently, to emphasize the cultural and environmental factors in community development. Only recently has it been noticed by policy planners that these are also coastal communities, whose residents are traditionally dependent on ocean resources for their survival. With current developments in technology the Inuit coastal communities in Northern waters are no longer so isolated from the kinds of governmental and industrial impacts that have complicated the problems of coastal community development elsewhere in Canada. Impacts on these Northern coastal communities tend to be the product of two kinds of policies: the federal government policy for Native peoples, on the one hand, and the industrial-governmental policy for industrial development[349] on the other. Before irrevocable planning decisions are made by government and industry, it seems important to ensure that careful coastal community development thinking be added to the mix of considerations.[350]

In British Columbia, unlike the Arctic, the policy problems of coastal community development are aggravated by the coexistence of both Native and non-Native coastal communities. Generalized policies are unlikely to accommodate the diverse cultural values and attitudes involved.[351] Moreover, distinctions have to be drawn among the various Indian tribes represented in the coastal communities of northern British Columbia. Indeed the fact that most of these Native coastal communities are affected, directly or indirectly, by Native land and offshore claims[352] seems to underline that most contemporary thinking about these communities is not so much communal, in the proper sense, as tribal or subcultural.[353]

It is in the Atlantic region that most thought has been given to the problem of coastal community development per se. More than one-quarter of the population of the Atlantic provinces live in small coastal communities, and more than half of these have been classified as having single-sector, fishery-based, economies.[354] The recent Task Force on Atlantic Fisheries (1982) identified no fewer than 1,339 small fishing communities in Atlantic Canada.[355]

Traditionally, there have been two responses to the unsolved problems of coastal community development in Atlantic Canada: vocational pluralism and migration. But the first of these responses, combining two or more seasonal or part-time jobs, serves to illustrate the marginality of the work force in the region more than it suggests a long-term solution to the problem of marginality; and, in any event, the structure of unemployment insurance and other welfare programs is such that it tends, unintentionally, to eliminate or at least reduce some of the seasonal employment options in the coastal community.[356] Migration, the second traditional response, must also be seen as part of the problem, rather than

as a solution; and during the current recession we are reminded that inter-regional shifts of the unemployed simply displace a serious social problem and add to the strains of a highly regionalized nation.[357]

Long-term solutions to these socio-economic problems do not come easily to mind, but it may be useful to suggest that solutions should be sought both in the economic and sociological approaches to coastal community development. On the economic side, some analysts in the 1950s concluded that the best systemic solution would be community resettlement for many of the outports of Newfoundland.[358] Enforced or negatively induced resettlement is unlikely to be politically acceptable as a social solution within the culture, but the strategy of human development is probably sound if it takes the form of positively sanctioned and imaginatively designed skills training programs in designated non-traditional areas such as aquaculture,[359] specialized farming,[360] small-scale ocean technology (manufacture and repair),[361] offshore services,[362] and recreation and tourism.[363] Diversity seems the best objective. Moreover, some of the traditional skills developed in the coastal communities of Atlantic Canada might be adapted to the needs of developing countries overseas and made available under Canadian international development programs.[364]

On the sociological side of the problem, more consideration should be given to developing a humanistic approach to fishery planning, which would be based on a higher degree of community participation in fishery decision making.[365] Most sociologists are convinced that too much reliance has been placed on the spectre of the "tragedy of the commons" in fishery policy thinking since the 1960s,[366] and that this has led to grossly excessive interference by government in the small-scale fishing community. Much more use, they argue, should be made of local custom and usage in the allocation of fishing space.[367] Some of the tensions in the fishing communities of the region in recent years have resulted in violent as well as non-violent forms of civil disobedience.[368] Much of this kind of social unrest might be ascribed to the clash between internal and external authority patterns, which will not be resolved until a more "central" and controlling role is defined for local customs and practices in the process of fishery management.[369]

Marine Technology Development

One of the important potential growth areas, at least in the coastal regions and especially in Atlantic Canada, is that of marine technology. It is useful, and normal, to distinguish three sectors of marine technology: the traditional sector ancillary to the fishing industry; the traditional sector ancillary to shipping; and the new sector, misnamed the ocean industry sector, which is emerging from other, more recent and prospective uses of the sea. Marine

technology development policy, like technology development policy in general, is partly a component of ocean science policy, which is dealt with in the following section. But, more basically, technology development should also be a function of industrial strategy, and an important facet of overall national economic planning.[370]

Canada has not yet achieved a significant status as a supplier of fishing equipment and services. The world fishing industry, including the Canadian industry, is still largely dependent on American, European, and Japanese technology.[371] In recent years Canadian industry, prodded and cajoled by federal and provincial agencies,[372] has made a bid to capture a proportionate share of the fishing technology market[373] but despite having a large domestic industry to supply, Canadian equipment manufacturers and dealers do not yet have a reasonably secure foothold at home, much less in the established fishing states overseas. Perhaps the best prospect lies in gaining a share of new or developing markets in the Pacific Rim and Caribbean regions, where Canada enjoys a good political reputation and might be expected to compete effectively in the development and marketing of "intermediate" technology for the fishing countries of these two regions.[374]

In the modern era Canada has not been a major supplier of shipping technology and services. The story of Canadian shipbuilding in recent decades has been one of more downs than ups.[375] Shipbuilding policy is closely related to merchant marine policy, since the Canadian shipbuilding industry could never survive on the strength of foreign orders. The relatively small size of the Canadian shipping industry, largely confined to coastal and inland waters, has been the major factor in limiting the growth potentiality of Canadian shipbuilding. In the world market, dominance in shipbuilding is passing from Japan to South Korea and other newly industrialized countries.[376] The future growth of Canadian shipbuilding seems to depend on that of the Canadian merchant marine,[377] and on the specialized need for excellence in ice-breaking technology, which is an essential part of the need for national excellence in Arctic navigation and transit management.[378]

But it is in the third area of ocean technology, designated the ocean industry sector by the former Department of Industry, Trade and Commerce, that Canadian prospects may be brightest. This sector is composed of those firms that manufacture equipment or provide services for all commercial and scientific activities associated with the new and prospective uses of the sea: offshore petroleum exploration and production; ocean mining; energy production from wave and tidal action; aquaculture; and marinas and other developing forms of recreation. These new uses are very rapidly generating requirements for new types of equipment and services for offshore drill and supply ships, submarine production systems (e.g., pipelines and cables), submarine surveying systems, and manned

and remotely controlled submersibles. In the late 1960s this area of technology in Canada generated only a few million dollars; by 1976 it had yielded over $200 million; and now it provides over double that amount. With proper encouragement this could soon become a multibillion dollar industry.[379]

The biggest problem facing Canadian manufacturers and suppliers in the ocean industry sector is the familiar one of combatting foreign competition, especially that of the United States. In the offshore petroleum industry, U.S. service and equipment supply companies have achieved a dominant position internationally due to their early start in the development of platform technology off the coast of California and in the Gulf of Mexico.[380] Over the years these U.S. manufacturers and suppliers have established close working relationships with the major oil companies around the world, and today the technological (and financial) infrastructure around offshore petroleum is huge, complex, and ferociously competitive. In the last decade U.S. dominance in this sector has been challenged by the best technologists and entrepreneurs of western Europe, as governments and corporations have come to recognize the potentially long-term industrial benefits available from offshore petroleum activity in the North Sea.[381] Both multinational and domestic oil companies in Canada are understandably reluctant to change their traditional (non-Canadian) suppliers. In determining how far to go with legislative requirements for Canadian technology, Canadian economic planners will surely wish to give a fair chance to Canadian offshore equipment manufacturers and Canadian suppliers of offshore services.[382]

Outside the area of offshore petroleum, Canadian opportunities seem brighter, without special government support, precisely because it is still too early for foreign competition to have reached unduly formidable dimensions. In the area of underwater technology, for example, there is really no reason why Canada should not become a world-class manufacturer and supplier. The proposed establishment of the Canadian Underwater Center in Halifax, promoted by the federal Ocean Industry Development Office (OIDO) in coordination with the Canadian Oil and Gas Lands Administration (COGLA), is the kind of initiative that should help to place Canada in the vanguard of this particular area of marine technology.[383] Aquaculture is another area of special promise for Canadian technology, since relatively little American capital or ingenuity has been invested in this area, but a serious government effort is needed to raise Canadian consciousness of the potentiality for aquacultural development in this country.[384]

However, since much of the interest in these areas of technological development is most evident at the regional level, especially in Atlantic Canada, it seems important not to shackle the relevant regional government offices and small-scale regional entrepreneurs with a highly central-

ized system of policy making based in Ottawa. Indeed DRIE (the Department of Regional and Industrial Expansion) may not be the appropriate agency to promote the development of ocean technology unless it is required to decentralize its operations in this sector. Moreover, the process of developing ocean technology and bringing innovation to ocean-related equipment and services is likely to be retarded in Canada unless the federal government attaches a higher and more visible priority to the promotion of ocean engineering and related skills through special fellowship and training programs.[385]

Ocean Science Policy

The term ocean science is a convenient shorthand reference to the entire cluster of marine sciences and technologies that must be included within any general framework of ocean policy planning. Conspicuous among the marine sciences are the following categories of investigation:

- physical oceanography and physics of sea water and ice;
- chemical oceanography and marine chemistry;
- biological oceanography and marine biology (including marine fisheries);
- geological oceanography and marine geology;
- marine geophysics and geochemistry;
- air-sea interaction studies;
- hydrodynamics related to the ocean;
- hydrography; and
- shoreline dynamics.[386]

The marine technologies have been defined as the devices and techniques for:

- the study of the marine sciences;
- the exploration and exploitation of marine resources; and
- engineering for the marine environment.[387]

However, within the general context of science policy, it is possible to define ocean science even more broadly, so as to cover completely all points on the spectrum of scientific activities: basic or fundamental research, applied research, development, and innovation.[388]

Most Canadians are probably unaware of their country's prominence in the field of ocean science. Particularly in the basic and applied research areas, Canada ranks among the top four or five countries in the world by almost any test: number of university graduates or professional scientists in the field, amount of money spent on research, level of technical support, amount or quality of equipment and facilities, amount of ship time available to researchers, volume and quality of publications, or

amount and quality of scientific advice available to decision makers in government and industry.[389] As noted in the previous section of this study, Canadian prominence is less marked on the technological side of the spectrum, and yet there is evidence that a strengthening in the areas of development and innovation is also taking place.[390] In view of the rapidly growing importance of Canada's interests and responsibilities in almost all sectors of ocean development and management, it is now a matter of national priority to bring long-term vision as well as everyday perception to the assessment of the nation's requirements in ocean science for the next two decades.[391]

The principal oceanographic institution in Canada is the Bedford Institute of Oceanography (BIO) located in Dartmouth, Nova Scotia. By most of the measurements that can be made of such complexes, the BIO is approximately the same size as the Woods Hole Oceanographic Institution in Massachusetts. In size each of these institutions may be exceeded only by the Scripps Oceanographic Institution in California, the world's largest.[392] In the last 10 to 15 years the BIO facilities have almost doubled in size, and the Institute now has a total staff of over 1,100 employees (including fleet crews as well as shore-based personnel). BIO operates a fleet of three research vessels, together with several smaller craft. The two largest vessels, *Hudson* and *Baffin*, have global capability, extremely long endurance, and are Lloyd's Ice Class I vessels able to work throughout the Canadian Arctic. The BIO facilities (buildings, ships, computers, workshops, library, etc.) are operated by the Department of Fisheries and Oceans (DFO), but the Institute itself is composed of several laboratories under three different federal departments: four under the Department of Fisheries and Oceans (Canadian Hydrographic Service, Atlantic Oceanographic Laboratory, Marine Ecology Laboratory, and Marine Fish Division), one under Energy, Mines and Resources (Atlantic Geoscience Centre), and one under Environment Canada (Seabird Research Unit).[393]

In addition to the BIO, the federal government of Canada maintains two smaller but very important oceanographic institutions in other parts of Canada; the Institute of Ocean Sciences (IOS) at Patricia Bay, B.C.,[394] and an expanded program in Quebec which is now being reorganized. The federal government also operates dozens of fisheries research laboratories and other programs in specialized marine sciences. In addition, most of the provinces have established nonprofit research councils or foundations with the aim of fostering research in areas of economic importance, and at least two, those of British Columbia and Nova Scotia, have instituted important projects in ocean science, especially at the technological end of the spectrum of scientific activities.[395]

A considerable volume of the nation's ocean science research is also done in the universities and by consulting firms, stimulated by large amounts of public funds. The largest teaching-and-research programs in

oceanography are located at three universities: UBC, Dalhousie, and Quebec (Rimouski).[396] Because of the emphasis on "missionary" research in government and research council laboratories, a significant amount of "undirected" ocean science research is done on campus. But since a large and increasing proportion of university research in the sciences is funded federally, through strategic grants by the Natural Sciences and Engineering Research Council,[397] there is a tendency for university-based researchers to be attracted to the more easily funded "missionary" areas in accordance with the government's current conception of national priorities. Those able and willing to resist the pull to this part of the spectrum [398] are usually required to demonstrate an established reputation for true excellence — a requirement which may be very difficult for a young scientist to satisfy.[399]

Most of the major issues in Canadian ocean science policy have remained unchanged since the last major study of these problems was undertaken in the early 1970s.[400] The emergence of new uses of the ocean has accentuated the need for resource and environment problem solving. The ocean is no longer perceived in spatial terms. Technology has dramatically enhanced the economic, and therefore social and political, significance of the seas, introduced the prospect of conflict of uses, and underlined the role of government in ocean development and management.[401] Since most ocean scientists in Canada are government employees,[402] and almost all of the others are largely dependent on government grants to finance their research, Canadian government policy controls — or at least is capable of controlling — the volume of expenditure on ocean science, the choice of emphasis on designated subject areas or modes of investigation, the degree of problem orientation in funded programs and projects, the standards of competence, the uses of the data derived, and, to a lesser extent, the availability of the findings within and beyond Canada.[403] With the dramatic extension of the seaward limits of national jurisdiction in the 1970s, Canada now has an opportunity to derive new and substantial benefits from its world class standing in ocean science. Now, more than ever, it seems essential to maintain the current levels of national investment in ocean science and to review the need for increased investments in selected areas of priority.

It is virtually impossible to get unanimity within the Canadian scientific community on any of the basic issues of ocean science policy. Each scientist is influenced by his own training and orientation.[404] Some, but by no means all, argue that government and research council laboratories have a public responsibility to focus, more or less exclusively, on ocean development and management problems of more immediate national interest: for example, in fishery, petroleum, and other ocean resource contexts, in the general context of environmental protection, and in the special context of the Arctic Ocean. This viewpoint comes close to justifying recent

trends in Canadian ocean science policy.[405] But others, pointing to the indispensability of government vessels and facilities in Canadian oceanography and related fields, argue that it is essential to maintain a balance between "free" and "targeted" categories of basic (or discipline-oriented) research and between basic and applied.[406]

Some scientists emphasize the significance of the trend, especially in Arctic investigations, to more sophisticated expeditionary methods of research, involving integrated cross-disciplinary teams, vessels, aircraft, satellites, ice or artificial island stations, and other expensive modes of technology.[407] Others draw a more diversified picture of ocean science requirements, including an important support role for less specialized scientists, and even skilled lay observers belonging to the local community.[408]

Many Canadian ocean scientists, conceding the need to design research programs and projects around specific economic, environmental and social problems, favour a larger investment in the areas of technology and product development.[409] Others, pointing to existing gaps of knowledge, emphasize the need for rudimentary information in remote areas under Canadian jurisdiction and advocate a crash program in hydrography.[410]

Again, many Canadian ocean scientists feel strongly about their potential role in helping developing countries deal more effectively with their ocean development and management problems; and, not surprisingly, there is a wide variance of opinions on the best way to organize or reorganize Canadian ocean science capabilities. But these issues can only be evaluated within the larger contexts of international development and government reorganization.[411]

Legal Development

Rather like ocean science, or science in general, legal development should not be unduly valued as an end in itself, but held out rather as a crucial means to a variety of social ends. Today law is no longer perceived as a mystery or as an evolutionary process, or even as a set of universal rules. Law is a complicated set of social and institutional arrangements, which are, more or less consciously, developed in response to general or special social needs by officials elected or appointed for that purpose. In view of the nation's new opportunities and requirements in ocean development and management, careful thought must now be given to the development of Canadian ocean law.

In this context, Canadian legal development requirements begin with the need to accept the importance of a much more systematic approach to ocean law. Much of the existing law related to the ocean is of pre-modern origin and has grown up in a haphazard way, often without much thought for the general social or economic purposes to be served. The federal Fisheries Act,[412] for example, is one of the oldest Canadian statutes in existence,[413] and despite innumerable amendments and a proliferation of

regulations[414] is badly in need of overhaul.[415] The Canada Shipping Act,[416] another bedrock component of Canadian ocean law, is of even earlier origin and is based on a foreign model.[417] On the other hand, the Arctic Waters Pollution Prevention Act[418] is a fairly recent enactment designed along modern, functionally specific lines,[419] but no comparable legislation exists for the protection of the Canadian marine environment in the Atlantic and Pacific Oceans. The Canada Oil and Gas Act[420] provides another modern approach to the development of Canadian ocean law, related to offshore exploratory activities for certain administrative purposes, but Canada falls far short of the need for a national legal regime over the entire process of offshore development.[421] No legislation exists for the promotion of coastal zone (or shoreline) management in Canada,[422] and we are just beginning to see the emergence of legislation to facilitate the development of aquaculture.[423] Canada has not yet introduced any modern legislation on the delineation of the baselines around its coasts, which it is entitled to draw under the new law of the sea;[424] and indeed one looks in vain for any legislative enactment formalizing this country's entitlement to a 200-mile exclusive economic zone (as distinguished from an exclusive fishing zone).[425]

The case for overhauling Canadian ocean-related legislation (and regulations) in a comprehensive and systematic fashion is stronger now than ever before. Canada has signed the UN Convention on the Law of the Sea, and is expected — certainly should be expected — to ratify the famous treaty in the near future. As a prospective party Canada has a responsibility not only to bring its existing laws into conformity with the Convention, but also to take a wide range of legislative and administrative, as well as diplomatic, initiatives in order to implement its provisions. Indeed, as one of the largest and most capable coastal states, Canada might be said to have incurred "maximal response" responsibilities under the Convention.[426] With a treaty of such extraordinary size and diversity, the tasks of implementation go far beyond what is normally regarded as legal development. Yet these tasks begin, though they do not end, with legislative enactments and revisions.

One of the most immediate needs for ocean-related legislation in Canada today arises in the context of shipping. This particular area of legislative requirements has relatively little to do with UNCLOS III and predates by many years Canada's signature of the 1982 UN Convention on the Law of the Sea. These legislative requirements flow from a number of international shipping agreements which Canada has either not yet signed or ratified, blocking recourse to implementation through national legislation, or has not yet, for other reasons, completed the internal process of implementation.[427] In a few cases it is not yet clear whether the Canadian government believes it is in Canada's interest to become a party,[428] but in most of the other situations there is, or should be, no objection on policy grounds. Perhaps the most notorious scandal is the failure to promulgate

the Maritime Code Act, which was enacted by Parliament in 1978 — a failure due quite simply to the nonexistence of a national shipping policy and the lack of any political will to find one. As a result it must be said, sadly but truly, that Canadian maritime legislation is in a "sorry state" and that the lack of legislative action is a "national disgrace."[429]

There are, of course, a host of difficulties — constitutional, political, technical, diplomatic, and even psycho-cultural — that complicate the task of developing Canadian ocean law in a systematic fashion. In this section it is not possible to do more than comment on these difficulties.

Perhaps the most obvious hurdle in this path, at least in the mind of most lawyers, is the federal-provincial framework within which Canadian legal development occurs. Despite important constitutional innovations in recent years, nothing has been done to alter fundamentally the division of legislative powers between the Parliament of Canada and the provincial legislatures. Under section 91 of the old British North America Act, Parliament has exclusive legislative authority over a number of subjects directly and wholly related to the ocean, such as navigation and shipping, ocean fisheries, interprovincial and international ferries, and beacons, buoys, lighthouses, and Sable Island, as well as others indirectly and partly related to the ocean, such as defence, trade and commerce, taxation, and criminal law and other undesignated areas of law making required for the "peace, order and good government" of Canada. On the other hand, under section 92 of the same legislation, the provincial legislatures have exclusive law-making powers in several broad areas, such as those of "property and civil rights in the province" and "all matters of a merely local or private nature in the province," which may be infringed upon by several sectors of national ocean policy.

Even in some of these areas which seem to have been demarcated fairly clearly under the Constitution Act, 1867, political sentiment has intruded to force a shifting or sharing of federal and provincial responsibilities. Some degree of duality in government regulation of the fishing industry has emerged for a mixture of political and administrative, rather than strictly legal, reasons. Joint federal-provincial management schemes for offshore petroleum exploration and production are likely to prevail, again for a mixture of political and administrative reasons. Such cross-jurisdictional arrangements may be defensible, or even unavoidable within the Canadian political culture, but they certainly complicate the task of legislative consolidation. Arguably the need for such finessing of our constitution is fatal to any systematic effort to develop a national legal regime in the field of ocean law.

Technically, it can be objected that any radical legislative effort to restructure existing Canadian ocean law, with a view to bringing it into line with new enactments, would create unprecedented difficulties of interpretation for the judiciary, at a time when it is burdened with difficulties of adjustment to the new Constitution. To offset such fears it is necessary

to have a good deal of faith in the technique of mirror (or parallel) legislation and in the political acceptability of such proposals.[430]

Another complication arises from the fact that new areas of national waters, namely those areas beyond the 12-mile limits of the territorial sea, fall outside the domain of the coastal state's territorial sovereignty, and cognizance must be taken of the rights of other states in these areas, as determined by the new international law of the sea.[431] Indeed even inside the territorial sea (and internal waters) of the coastal state, many legal issues have an international aspect, either under customary international law or under the 1982 UN Convention on the Law of the Sea, or both.[432] Any systematic approach to the development of Canadian ocean law would require the negotiation of bilateral arrangements with neighbouring and transit states which include provisions for notifying or consulting other states or international organizations.[433] A comprehensive legal framework would also involve acceptance of the need to comply with internationally prescribed dispute management procedures.[434]

Finally, it might be argued that the Canadian nation is not institutionally structured or culturally conditioned for heroic undertakings, such as a holistic, integrated, comprehensive legal regime for the regulation of ocean-related activities. Under this argument, one may be beaten back to much less imaginative, less sophisticated exercises in legal development, which are judged to be more feasible or realistic. In psychocultural terms, one is left to balance out the question of how bold or cautious the Canadian legislative development strategy should be, and what priority should be given to ensuring that Canadian ocean law is properly designed to serve the national interest in ocean development and management.

In the end, a modest, sensible or realistic approach to an ocean law development strategy in Canada may be inadequate. An orthodox, sectoral approach to legal development might be condemned to failure, if such an approach to policy making in ocean development and management is no longer sufficient. Already, for example, it is evident that policies must be developed for efficient and equitable handling of conflicts of uses: to deal with conflicts between fishing and offshore development, between waste disposal and beach protection, between industrial and recreational uses of coastal waters, and so forth. Fragmented and ad hoc legislation dealing with these different uses of the ocean provides no hope of a satisfactory legal basis for resolving such disputes. Sooner or later, the world's largest (or second largest) coastal state will have no choice but to proceed systematically to the development of a sophisticated ocean law regime.

Federal-Provincial Relations

The difficult and often fractious relationship between federal and provincial levels of government is a major problem in the development of a national ocean policy, as in so many other contexts of Canadian socio-economic planning. It may be a problem without a solution. Two "philosophic" viewpoints can be taken. Either the problem of federal-provincial antagonism is seen as a cultural phenomenon, reflecting a basic and irreconcilable disparity between national and regional perceptions of Canadian society, or it is seen as a dominant but remediable flaw in the institutional design of the state. On the assumption that the problem is institutional, and therefore soluble, how might it be dealt with in the context of ocean development and management? Surely we cannot surrender to the notion that an emotional or attitudinal problem of this kind is simply not amenable to rational treatment.

Of the four sectors of ocean industry reviewed above, shipping and deep ocean mining are unlikely to become contested between federal and provincial levels of government.[435] Fishing, on the other hand, has been a target for provincial politicians, especially in Newfoundland, and in recent years a good deal has been heard of the argument for a sharing of federal and provincial responsibilities. Unfortunately the argument has usually been couched in rhetorical terms, within the constitutional context of resource jurisdiction, thereby concealing the possibility of more specific, and less emotive, proposals for cooperative programs that might be seriously considered. At its least credible, the rhetorical line of argument has led to poorly considered demands for carving up Canada's exclusive economic zone (or, more accurately, exclusive fishing zone) into provincial compartments. This kind of balkanization of Canada's offshore water has, deservedly, been ridiculed by the federal government.[436] The advent of the 200-mile EEZ has underlined the need for a strong central government role in directing the drive for foreign markets for increased Canadian catches, and in many other ways reinforced the crucial importance of a unified national management policy.[437] But the special interest and responsibility of the coastal provincial governments should be conceded in the context of coastal community development, if not in that of national fishery development. It might be suggested that a more imaginative approach by both levels of government should be taken to the design of cooperative federal-provincial programs for the benefit of the small inshore fishing communities. A separate (federal-provincial) approach to these, essentially sociological, problems[438] would be likely to save these vulnerable small coastal communities from some of the consequences of a tough industrial approach, which the federal government might be justified in directing for the offshore fishing industry in the wake of UNCLOS III.[439]

Offshore petroleum development has also become embroiled in federal-provincial controversy in recent years. It is still too early to predict the success or otherwise of joint federal-provincial management schemes for offshore mineral exploration activities, much less for production purposes.[440] But as these early experiments get underway, it would be timely for a joint federal-provincial study team to examine closely the experience of cross-jurisdictional or intergovernmental experiments of a comparable kind in other regions, even in countries with unitary, instead of federal, state structures.[441]

If we return to the six sectors of ocean development and management reviewed earlier in this section, we discern extremely variable impacts of federal-provincial relations. In two of these sectors, *transit management* and ocean science, it is difficult to find any sound reason for interfering with the present situation, where the federal government has the dominant role. In the case of *transit management*, it is unthinkable that anything other than a unified national system should be developed for Canada's Atlantic and Pacific offshore waters. In the wake of UNCLOS III, it is difficult enough to design a single national system which will meet Canada's new requirements as a managing coastal state under the UN Convention on the Law of the Sea.[442] In the special case of the Arctic, as Canada proceeds to the long-term design of a transit management system for the Northwest Passage, there is of course a territorial, not a provincial, government in place to share the coastal perspective, but the lack of provincial government removes the discussion from the area of provincial entitlements. Local community (Inuit) inputs are certainly crucial in the design of a transit management for the Northwest Passage, but it is difficult to see why these inputs should be fundamentally altered if, or when, the Northwest Territories acquire provincial status.[443]

Somewhat similarly, the field of *ocean science* should not be fundamentally reorganized, in a jurisdictional sense, between the federal and provincial levels of government. The case for intergovernmental cooperation should continue to be made out in the terms of specific federal-provincial programs, especially on the technological side of the spectrum of scientific activities related to development and innovation.[444]

On the other hand, *coastal community development* seems to be a sector of ocean development and management especially well suited to the provincial level of government. Not least in the Atlantic region, a redoubled effort should be made to generate new ideas for the attraction of ocean technology development opportunities to the small coastal communities under the appropriate provincial government agencies, in conjunction with the federal National Research Council, the provincial research council, and the relevant sectors of industry and small-scale business.[445]

Progress in two other sectors of ocean development and management seems to depend primarily on joint federal-provincial initiatives. *Marine*

technology development must be advanced at different levels, from the highest level of sophisticated equipment and techniques applicable to large-scale industry to intermediate and even lower levels applicable to small-scale firms and individuals operating in the small and modestly endowed coastal community. Because of the range and diversity of opportunities, it seems essential to maintain the broadest interaction between industry, science, and government, including provincial as well as federal agencies. A continuing development of federal-provincial cooperative programs is pivotal in the Canadian strategy for marine technology development.[446]

Similarly, it seems obvious that the purpose of *offshore development* will not be met in an efficient manner without the joint involvement of federal and provincial levels of government. One suspects — perhaps unfairly — that some politicians, both federal and provincial, have derived enjoyment from the thrust-and-parry politics of the offshore, and it is the kind of spectator sport that tends to divide the electorate into partisan factions. But the winner-takes-all politics of offshore development is an expensive sport, and it is doubtful that the Atlantic region can afford this particular luxury. Indeed, the kind of intergovernmental cooperation that is required goes far beyond a few bilateral federal-provincial schemes of the kind now beginning to emerge. What is needed is a comprehensive and operationally effective management system designed (and funded) to draw upon all the requisite knowledge and experience in government, industry, and the academic community in Canada, and in other countries with the most relevant expertise.[447]

Finally, the difficult and challenging field of *ocean management* poses a special difficulty for federal-provincial relations. The order of difficulty varies with the way one envisages ocean management. If one aims at a single, all-encompassing, omnifunctional national system of management for all ocean areas within the newly expanded limits of Canadian jurisdiction, the difficulties are very nearly overwhelming. But if these vast areas are divided into distinct kinds of ocean management areas the federal-provincial implications can be distinguished and more easily analyzed. In the case of binational ocean management offshore areas, shareable with the United States, Denmark/Greenland, and France/St. Pierre and Miquelon, the federal government must be required to assume a dominant role, not least because of the foreign policy implications involved in the operation of such a management system.[448] On the other hand, in the case of uninational ocean management inshore or coastal areas, the need for close federal-provincial cooperation seems very clear indeed. Whether bilateral federal-provincial management arrangements would be sufficient depends, among other things, on the spatial and functional definition of this kind of ocean management area. A narrowly defined coastal zone, say between Sydney and Lunenburg, Nova Scotia, might be managed efficiently through bilateral federal-provincial arrangements. A coastal zone defined to include the Northumberland Strait might be managed on the

basis of federal-provincial arrangements involving the three coastal provinces (Nova Scotia, Prince Edward Island, and New Brunswick) as well as the federal government. But if the definition is extended to cover a much larger area, such as the entire Gulf of St. Lawrence, it would be preferable to establish a truly regional, as distinct from federal-provincial, mechanism to conduct effective management on such a scale.[449]

GOVERNMENTAL REORGANIZATION

Just as the federal structure of government is particularly ill suited to meet the modern requirements of ocean development and management in a vast coastal state such as Canada, so is the present distribution of Canadian government departments, at both federal and provincial levels, an inadequate system for applying the nation's talents and resources to these tasks. In most states it may be felt that ocean development and management is still too new or too peripheral to the nation's primary concerns to justify a massive restructuring of government departments, but thoughtful Canadians will hesitate before assigning the ocean to the periphery. Significantly, France has recently reorganized its central bureaucracy and established a ministry for ocean affairs with a view to enhancing governmental efficiency in ocean development and management in the age of extended coastal state jurisdiction.[450] It behooves Canada, as another major gainer from UNCLOS III, to give equally serious thought to this and alternative options in governmental reorganization.

Normally, at least in theory, the question of governmental reorganization should arise near the end of a particular line of reasoning triggered by policy revisions of some significance. By this kind of logic, governmental reorganization should be postponed until answers have been given to the kinds of ocean policy questions raised in this study. But this assumes that government departments are nothing more than vehicles for the implementation of policy within a relatively unchanging framework of basic law and established agency mandates. In reality, ocean development and management is too dynamic and proactive a process to fit this reactive model of government action. Government departments are also the principal forums for thinking out policy and management options, for conducting the appropriate research and analysis, and for advocating the forms of action that they and other institutions should undertake. As in other contexts, the first organizational question in ocean development and management assumes the form of the familiar chicken-and-egg dilemma. Therefore, the matter must be perceived as one of judgment, not logic. To the extent that structure will influence these various processes, the political leadership must decide, at least in general terms, what new directions or priorities of policy it wishes to set before authorizing a significant restructuring of government.[451]

A few comments on the purposes of reorganization might be offered.

First, it seems useful in this context to maintain a distinction between "ocean development" and "ocean management". The first term should be reserved for the process of deriving benefits from various productive uses of the sea: the traditional uses of fishing and shipping, the newer ones of offshore petroleum production and aquaculture, and prospective uses such as ocean mining, the generation of tidal power, and ocean thermal energy conversion. In these areas, where linear thinking tends on the whole to be conducive to efficiency of production, sectoral logic should perhaps prevail as a major influence on the response to questions of governmental organization. Ocean management, on the other hand, seems to require something more than linear thinking. It must be thought out, and constantly adjusted, within a more complicated framework of cross-sectoral considerations that reflects the managerial reality of conflicting uses, competing values, and contending orders of legitimacy. A holistic view of the ocean environment and a quest for integrative solutions to specific management problems should be dominant influences in the area of ocean management, and these requirements should be reflected in government structure devoted to ocean management purposes.

Ocean management, then, poses the most difficult problems of government reorganization. To the extent that ocean development should be subject to ocean management constraints and considerations, Canada ought to be taking an imaginative initiative, albeit on an experimental basis, in the reorganization of its ocean management capabilities. On the face of things, there are three clearly distinguishable approaches: "superministry," lead agency, and regional commissions.

The *superministry* notion — the French model — is particularly attractive, because it promises to yield optimal efficiency through policy-making coherence, consolidation of information, avoidance of duplicated effort, and clarity of command. If the superministry (or cluster of agencies) is properly designed, virtually all relevant kinds of ocean management ideas and information are available within one unit of government. It is difficult, however, to envisage an effective national superministry of ocean affairs, given the cross-jurisdictional aspects of national ocean policy within our federal structure. Most areas of ocean management seem to fall within federal jurisdiction under the present constitution, but at least coastal community development falls — and should fall — within provincial jurisdiction. Even a strictly federal superministry of ocean affairs would involve an amalgamation of Fisheries and Oceans with massive segments of at least five other federal agencies (Transportation; Environment; Energy, Mines and Resources; National Defence; and Indian and Northern Affairs) and smaller components of several others (e.g., Regional and Industrial Expansion and Science and Technology).[452]

The second approach involves naming one major department as *lead agency* with overall responsibility for coordinating the process of national ocean policy making and creating a network of interdepartmental linkage

procedures and arrangements with other ocean-related departments. This approach is the least disruptive of existing mandates and practices, but it requires the political leadership to find appropriate criteria for choosing the lead agency. By virtue of current management capabilities Fisheries and Oceans would be considered a strong contender, but a case can also be made for an expanded Environment Canada by reason of its overall responsibility for the natural environment and its holistic and integrative perspectives. Both of these departments have given a good deal of recent thought to their new or expanded responsibilities under the UN Convention on the Law of the Sea.[453]

The boldest of the three options would involve the creation of several *regional ocean management commissions*. This is perhaps the most logical arrangement, if one thinks of the managerial advantages that would accrue from a division of the vast ocean areas under Canadian jurisdiction into carefully defined regional ocean management areas. As suggested above,[454] two kinds of such ocean areas should be instituted: six binational management areas and a corresponding number of uninational management areas interspersed between the binational. These regional ocean management commissions, composed of federal, provincial and nongovernmental appointees, would be a multifunctional version of the existing regional fisheries councils in the United States,[455] subject to whatever institutional variations are necessary or desirable for legal, administrative, or other reasons; but the idea is based essentially on a similar system of spatial (geographical) allocation around the coast. To avoid unnecessary confusion and undue divergence of policy making, it would, of course, be necessary to stipulate clearly the areas of management responsibility assigned to the regional commission level, and to vest in a *national ocean policy council*, as proposed in the following section, the power to prescribe policy guidelines that would be binding on all commissions, though subject to differing interpretation when applied to each region. Such an arrangement would certainly be more complicated than the first two, but it would also be potentially the most flexible and also the most democratic.

Conclusions

An effort has been made in this section to review, and comment upon, most of the major national ocean policy issues and developments confronting Canada at this stage in the rebuilding of the international law of the sea. These issues and developments have been described in terms of ocean development and management requirements within a broad interdisciplinary framework. Yet it is recognized that however broadly one defines ocean policy, the subject must be fitted into the much larger context of long-range economic and social planning. The primary purpose of this section has, therefore, been to set out at some length the many

facets of national ocean policy and to show some of the ways that national ocean policy and general economic and social policy impinge upon each other.

The growth of ocean technology is certainly one of the most dramatic worldwide phenomena over the last 20–30 years. The Canadian tragedy in the next two or three decades may be a national failure to appreciate the role that Canada, as one of the great coastal states, can and should play in ocean development and management. There is no guarantee that words, here or anywhere else, will have any effect on perceptions and interests in the national capital and other centres of inland Canada. It is an irony of Canadian history and geography that any centralized ocean policy thinking in this great coastal state must be done 1,000 miles removed from the Atlantic seaboard, over 2,000 miles from the Pacific, and over 3,000 miles from our Northern waters. Despite the impressive volume of ocean-related expertise available in Ottawa, within appropriate sectors of the federal government bureaucracy, the chief *mental* barrier to a systematic development of national ocean policy is likely to be the *physical* remoteness of these problems and opportunities from the locus of decision making in central Canada.

It is not enough to talk of this problem of remoteness as if it were soluble through further experiments in the decentralization of government. The establishment of regional ocean management commissions may be a useful contribution to the development of effective national ocean policy in this country, but Ottawa — and to a large extent Toronto and Montreal — will continue to dominate virtually all sectors of national economic and social planning in Canada for the foreseeable future. The major ocean-related policy decisions will have to be made within that larger context, inside and outside the political system, by influential individuals psychologically remote from the world of ocean affairs.

To a large extent the problem is one of public information. Despite the fact that the national as well as the regional media in Canada gave better-than-average coverage of UNCLOS III, report regularly on fishery issues (the most politicized aspect of ocean development and management), and exploit the newsworthiness of blowouts, sinkings, and other tragedies at sea, it remains true that the general public have little exposure to the broader range of ocean policy issues in Canada.

What we need is both a national process and a national product. Because of the limitations of any document, however impressive, the first priority is the initiation of some kind of procedure which would be designed to bring together the best informed and most imaginative minds in the field of ocean development and management, drawn from government, industry, and the academic community. The most important requirement is that only the best qualified persons should be eligible for appointment to what must become immediately recognizable as a genuinely prestigious and influ-

ential body of opinion. The organization of the best possible judgment is, after all, one of the most important tasks of government in an open society such as ours, which is based essentially on the freedom of choice. If the right individuals can be drawn in, it is a secondary, though not unimportant, matter how and at what scale they should be organized, or what powers are entrusted to them. The process should, however, be permanent and continuously administered by a professional staff.

A permanent national ocean policy council of this kind should, of course, be required to undertake the tasks of public information, especially those tasks that cannot be undertaken effectively by the media. The products of a national council should range from annual reports, overview planning documents (e.g., national and/or regional ocean management action plans), and more technical working papers (in various sectors of ocean development and management), to brochures, press releases, newsletters, and explanatory briefs for circulation to schools, public libraries, and other interested institutions.

Only with the establishment of a continuous process of thought and overview, involving individuals of genuine excellence, is there any assurance that the national requirements in ocean development and management will be given appropriate weighting within the larger context of national economic and social planning.

Basic Foreign Policy Issues After UNCLOS III

The Third UN Conference on the Law of the Sea (UNCLOS III) was the longest, biggest, most expensive, most heterogeneous, and, by general acknowledgment, most ambitious intergovernmental conference in diplomatic history. The entire process, including the UN Seabed Committee which prepared the way for UNCLOS III proper, lasted 14 ½ years, from the summer of 1968 to December 1982. Most sessions of UNCLOS III proper (1973–82) attracted 2,000–3,000 delegates. Between sessions most of these delegates spent much of their time, and many spent all of their time, on activities more or less directly related to the Conference. Although some of the features of UNCLOS III can, of course, be traced to earlier diplomatic conferences,[456] and others can be attributed to contemporary influences at work elsewhere,[457] there is little doubt that UNCLOS III will be viewed by posterity as a diplomatic landmark.

But the story of the new law of the sea is more than the story of a single conference, even one of unprecedented magnitude. The transformation of ocean law and policy reflected at UNCLOS III was brought about on many fronts. Even within the world of conference diplomacy, UNCLOS III was only the largest of a number of important global ocean-related conferences, especially in the contexts of shipping and environmental protection,[458] and a proliferation of regional fishery and other ocean-related arrangements also contributed to the reshaping of the law of the sea.[459] Moreover, the "revolution" in ocean law, policy and management was also assisted in no small measure by ingenious and creative exercises in bilateral diplomacy.[460]

In a few countries the new law of the sea has already begun to affect foreign policy priorities and can be expected to present new opportunities in the international community as well as at home. Canada, preeminently, is one of these few.

Canada as a Coastal State

A nation's general orientation to the international community can be seen to be derived from its perception of itself. In various ways, both subtle and obvious, self-imagery has an important influence on a nation's "set" and posture in foreign policy and on its style of conducting foreign relations. Almost invariably, a national government wishes, above all, that its foreign policy will put the country, its culture and institutions in what it perceives to be a favourable light. What are judged to be its strengths, not its weaknesses, are put on display. Those who approach foreign policy from the viewpoint of specific benefits to be gained may be sadly disappointed if they do not give equal attention to general impression.

At this initial level of analysis, Canada has been permanently, and

perhaps profoundly, affected by recent events in law of the sea diplomacy. However, it is difficult to make this argument for the period before 1968. The diplomatic activities culminating in UNCLOS I and UNCLOS II, held in 1958 and 1960 respectively, cast Canada in the role of a moderately progressive, cautiously reformist, Western middle power, less interested in deriving conspicuous national advantage than in providing intermediary services in a global effort to codify and develop this particular area of international law.[461] Only 50 or so countries attended, and for most of them it was essentially a meeting of technical specialists, which was both politically and intellectually dominated by the developed countries and their closest allies in the developing regions.

At UNCLOS III almost everything was different. Virtually every nation on earth attended, and most of them were able to participate in a meaningful way, to the maximum extent possible within the limits of their interest and capability. As never before, each active participant was on display, both literally and metaphorically, warts and all, before all the national governments, for a period of almost 15 years. Thousands of professional careers were made — and not a few broken — during that period, and the most prominent and distinguished of the UNCLOS III negotiators certainly now constitute much of the elite of the diplomatic corps around the world. In a minority of countries, including the most advanced industrial states like Canada, only a certain proportion of the brightest and best were assigned to UNCLOS III, but the point to be stressed is that the ablest diplomats in the majority of nations now have more or less permanent perceptions of Canada that are profoundly influenced by their experience at UNCLOS III.[462]

It is important, therefore, for Canadians to understand the image that our representatives projected over these 15 years on the UN Seabed Committee and at UNCLOS III proper. The image was that of an acquisitive, enormously capable, somewhat immodest, frequently aggressive, coastal state, willing to embrace fairly radical ideas and to forge new linkages and alignments with a wide range of friends, both old and new, if it served its immediate national interest to do so. The issues themselves dictated that UNCLOS III would be a highly acquisitive, self-interested undertaking for virtually all states, but the exceptionally high stakes for Canada forced the Canadian government to invest an enormous amount of capability in this extraordinary exercise in conference diplomacy. To play the game successfully, Canada's representatives had to depart, more or less abruptly, from the modest, unaggressive, conciliatory style of diplomacy cultivated in earlier years, featured by more altruistic Canadian initiatives in peacekeeping and other forms of intermediary UN diplomacy. Unlike the earlier postwar conferences of comparable magnitude, UNCLOS III and other major UN conferences held in that 15-year period coincided with the salience of North-South, rather than East-West, issues, and the ideological significance of law of the sea

diplomacy after 1967 was of a very different sort from that of the peacekeeping period of Canadian diplomatic history.[463]

The main division at UNCLOS III was between coastal states, on the one hand, and maritime (shipping or distant fishing) states, on the other. On most issues — certainly on all the so-called jurisdictional issues — Canada's position coincided with its interest as a coastal state, in a context where coastal states' interests were opposed by the interests of the maritime states. To the extent that the latter interests were forced to yield to the former at UNCLOS III, Canada was a major actor in the rise of the coastal state in the 1970s.[464] Because most of the coastal states were (and are) also developing states, and most of the noncoastal states were perceived (and described) as maritime powers, the imagery of UNCLOS III ensured that Canada would, if it played its hand skilfully, gain a favourable impression as a champion of the developing world at the same time that it zealously pursued its own national interests as a coastal state.

The implications of this coincidence of advantages in the new Canadian diplomacy are fairly obvious. Today most developed states, certainly most developed middle power states, would like to discover how to have the best of both worlds: their own and that of the developing countries. Especially for a country like Canada, which inherited a favourable reputation for good works and fair dealing in the developing world between 1950 and 1965, it has become a matter of priority to develop a type of foreign policy that seems to justify that reputation within the contemporary context of North-South issues without incurring sacrifices of national interest that would be difficult to justify to the Canadian people. In coastal state diplomacy Canada seems to have discovered a new area of foreign policy operations that permits precisely this kind of balancing of considerations.

Inherent in the concept of the coastal state, as developed at UNCLOS III, are several kinds of creative tensions:

- between development and management;
- between rights and responsibilities;
- between state and society;
- between technology and nature;
- between industry and community;
- between domestic and international initiatives; and, not least,
- between common interest and special interest.

At UNCLOS III much of the publicized effort was directed at the realization of *developmental* opportunities for the coastal state within its expanded limits of national jurisdiction, such as the development of the living and non-living resources of the exclusive economic zone. Yet much of the diplomatic energy was expended, more quietly, on the design of regimes and systems for the *management* of these resources. Canada seems as well equipped as any country to make major contributions, in various

international forums, to the synthesis of ocean development and ocean management ideas.

On the development side, the emphasis tends to be placed on the concept of *rights*; on the management side, the tendency is to stress the central concept of *responsibility*. At UNCLOS III the Canadian delegation deservedly earned a good reputation for its concern with the need to balance new resource development rights with commensurate environmental management responsibilities, albeit often in a context where Canadian initiatives were suspected by cynical observers of being designed to serve the sinister purpose of creeping jurisdiction.[465] Now, after the negotiations, Canada has an opportunity to demonstrate that its earnest invocations to the responsibilities of the managing coastal state were based on something more substantial than a fleeting sense of opportunism.

In orthodox legal and political thinking, the new law of the sea represents an expansion of *state* authority (and public administration) into extensive and fairly distant areas of the ocean. To that extent it introduces fairly fundamental questions about the scope and form of government regulations in what until recently was regarded as an area of the planet relatively free of regulation. At the same time these newly expanded areas of national space are an extension of human *society*. Significantly, these national gains were made within the framework of international law for reasons associated with human, not merely statist, goals, such as the production of food and energy. Indeed the frequent emphasis on the special entitlement of developing coastal (and even noncoastal) states underlines the primacy of human needs as much as the priority of certain states. Ideologically, Canada has found within its own national experience an especially interesting middle ground in matters of regulatory philosophy, and has much to contribute in these particular areas of human need, from the sea as well as the land.

The realization of a coastal state's potentiality in ocean development and management, particularly that of a developing coastal state, will require frequent, if not massive, infusions of marine *technology*. As argued above, Canada has a splendid opportunity to become a world-class supplier of certain kinds of ocean technology,[466] and of the marine science that provides the requisite information.[467] At the same time, Canada has attracted worldwide attention, and some admiration, as a defender of *nature* and the human environment, and not least as an advocate for strict controls over the marine environment.[468] A continuing effort at coastal state diplomacy seems appropriate in a country like Canada with a combination of these particular credentials.

By the same token, Canada is now in a position to become a world leader in at least three of the four ocean industries, and yet is forced within its own political culture to become sensitive to the impacts of *industry* on the small coastal *community*, especially in the Arctic and Atlantic regions

but also in northern British Columbia. Within the framework of coastal state diplomacy Canada should be able to hold the balance between the claims of industry and community for purposes of ocean development and management.

The concept of coastal state management consists, almost equally, of *domestic* and *international* responsibilities. A marvelous economy of effort, serving national and foreign policy requirements simultaneously, can be achieved by a single but systematic approach to the development of ocean management systems within our expanded limits of jurisdiction.

Finally, through coastal state diplomacy Canada would be seen to be conducting its foreign policy, in the relevant sectors, in a manner which required it to keep a balance between the *special interest* claims and prerogatives of an individual sovereign state and the *common interest* considerations of the international community as a whole. Through constant prominence in this context of international issues Canada would be enabled to make frequent, important and carefully balanced contributions to the development of world public order.[469]

Canada and the United Nations

Reappraisal of the United Nations system is probably a continuous process, if not a full-time industry, within the Department of External Affairs. It is a matter that must be considered from every conceivable angle of perception. The UNCLOS III angle is only one of many, and in some respects an angle that might tend to distort the view. If UNCLOS III was indeed a unique phenomenon, we should be careful not to draw too many lessons from it. But to the extent that UNCLOS III reflects the age we live in and reveals certain trends in conference diplomacy, and in international relations at large, what can we learn from it about the role of the United Nations today in world affairs? Three points in particular might be made.

First UNCLOS III was very largely a delegation affair. Despite the many important services rendered by the UN Secretariat, most of them were either of the management or maintenance type or were research or other services requested by the delegations. The participating governments were constantly on guard against intrusions from the UN Secretariat, and even more so against interventions from other sectors, such as the UN special agencies, other intergovernmental organizations, and above all the nongovernmental organizations monitoring the Conference. Indeed, their common exclusion from positions of major influence tended to bind these disparate sectors together into a kind of Greek chorus, whose murmured comments on the unfolding drama were occasionally made audible to the participants. This romantic statist approach to policy making and legal development in the United Nations, which means a decline in world government influence at the policy-making level, is likely to be taken in other UN forums in the years ahead.[470]

Second, the maintenance of control over the Conference by the participating governments added enormously to the financial cost, human energy input, and logistical complexity of the entire process. Since these burdens fall on the governments, the effect of UNCLOS III may be to discourage massive undertakings of this sort in the years ahead. Given the additional deficiencies of the UN system, the member states — and especially the developed states which contribute most of the UN budget — may now feel that megaconferences of this sort should be discouraged. Yet UN experience suggests that even the most rational and practical arguments of this sort, urging a simpler and more expeditious way of doing things, may not prevail over the emotional forces within the UN system behind the concept of world participatory democracy. Moreover, thousands of national government officials around the world have now discovered the excitement of full-scale UN conference diplomacy — many of them previously unattached to foreign ministry matters — and career interest has almost certainly become a potent force in support of further excitements of the UNCLOS III variety.

Third, the modern concept of development shows no signs of abating in UN circles, despite the fact that it has now lost much of the clarity of meaning that it ever possessed as a policy goal. To save the concept of ocean resource development from degenerating into a vague, rhetorical reference to nation building, some expertise at UNCLOS III was devoted to the effort to synthesize developmental ideals with more specific management principles and practices. Mainly because of the need to negotiate a compromise on basic jurisdictional issues in the form of the EEZ regime, some success was achieved in the synthesis of development and management thinking. In retrospect, it may appear that this was the most important intellectual achievement of UNCLOS III and that it will assist the development "movement" of the United Nations, both in oceanic and nonoceanic contexts, by providing a first model framework of thought for refinement and consolidation.[471]

How should Canada now respond to these probable trends within the UN system in light of its experience at UNCLOS III? Again, it may be enough to offer three comments.

First, Canada's prominence in coastal state diplomacy at UNCLOS III was made possible by utilizing and coordinating very considerable national resources in the field of ocean development and management. As a result, Canada — especially the federal government bureaucracy of Canada — possesses a pool of human and other resources that can and should be drawn upon for UN-related purposes: to enable the Canadian government both to supply initiatives and to respond to the initiatives of others in various UN forums charged with responsibilities in the field of ocean development and management. Canada has no reason to shrink modestly from the world standard of excellence in this field. There is simply no reason why Canadian officials should not, in all UN sectors, be included

almost invariably among the leading thinkers and doers in ocean policy affairs, as they are, for example, in the field of environmental affairs. Even the cynics, who permit only a self-interested approach to foreign policy, will have to concede that Canada, as one of the world's great managing coastal states, has much to gain domestically from deep and constant involvement in UN-directed activities in ocean development and management problems around the world. Moreover, the Canadian government's involvement in UN ocean affairs should be intensified not only through delegation initiatives and responses at intergovernmental conferences and other official meetings but also through secondments to UN agency secretariats. All of these things are already happening: they should be supported and intensified, through appropriate incentive arrangements, if necessary.

Second, the Canadian government should present itself publicly, on all appropriate occasions, as a prominent champion of the UN Convention on the Law of the Sea and related developments. The Convention is certainly one of the most impressive accomplishments of the United Nations, and whatever criticisms one may wish to make of the UN system in other contexts, there would be no excuse if Canada allowed itself to be interpreted as acquiescing in unwarranted policies and practices directed against the Convention. Not only should Canada itself ratify the text as expeditiously as possible, and urge others (especially other developed states) to follow suit, but it should also continue to participate in the sessions of the Preparatory Commission, which is authorized to carry forward the plans for deep ocean mining under the Convention in the period prior to its coming into force.[472] If the coming into force of the Convention should be unduly delayed,[473] the Canadian government should be ready to assist the United Nations in other ways to advance the purposes of the Convention, and preferably to take leadership initiatives in the appropriate UN agencies.

Third, Canada's negotiating success at UNCLOS III (and the earlier UN Seabed Committee) and its central involvement in preparations for the Stockholm Conference on the Human Environment (and subsequent UN environmental activities) equip the Canadian government well for a major role in other, non-oceanic UN contexts of resource management (development-environment) issues: for example, Antarctica, space, deforestation, transboundary pollution, long-range transportation of atmospheric pollutants, waste disposal, and the transportation, handling, and storage of hazardous substances. These are all areas in which Canada can contribute exceptional expertise, not only from the government service, but also from industry, professional consultants, and the academic community. At least in these areas — and perhaps in others too — the federal government should be encouraged to constitute its national delegations, as the U.S. federal government does, from a larger, truly national pool of capabilities. For UNCLOS III a serious federal effort was made to

include provincial government and industry representation on the Canadian delegation, but in other respects Canada's delegation was less representative of the nation than those of some other democratic states. Admittedly internal coherence is conducive to a delegation's diplomatic effectiveness, but special interest representation is not always a sufficient guarantee of the public interest in the pursuit of Canadian foreign policy in the arena of UN conference diplomacy. Now, in the wake of UNCLOS III, may be an appropriate time to re-examine the "exclusionist" tendencies still prevailing in the Department of External Affairs.

Canada and the Law-Making Process

This is not the place to attempt an evaluation of UNCLOS III as a contribution to the international law-making process, but perhaps this section should begin with a reference to what appear to be the novel features of the UN Convention on the Law of the Sea, viewed as a law-making treaty.[474]

First, the UN Seabed Committee and UNCLOS III proper took place during the emergence of what might be described as the "romantic" period in the development of international law. That is, the remaking of the law of the sea took place at a time when legal development has been taken over, in large part, by the diplomatic arena, where classical virtues such as structural clarity, completeness, universality, consistency, and order tend to yield to romantic virtues such as spontaneity, imaginativeness, diversity, and sensitivity. It is a time when the process may be judged to be more important than the product.[475] The 1982 UN Convention on the Law of the Sea is the definitive example of a product of the romantic approach to law-making. Just as the factors going into the process are different from the traditional factors, so the expectations raised by the product should be different. The tasks of implementation arising out of such an extraordinarily diversified treaty instrument are themselves exceedingly diverse, going beyond what is normally judged to be mere implementation.[476]

Second, when the language of the Convention is studied closely, it is seen to consist both of language tending to be conducive to uniformity of practices by conforming parties and of language tending to be differential, embracing double or multiple standards and making special provisions or allowances for states in designated categories. This combination of convergence and divergence language will presumably have a mixed effect on the pattern of state practices around the world. Some countries will have an interest in invoking or emphasizing the uniform language, others the differential language.[477]

Third, content analysis of the text shows extreme variance in the concept of duty or responsibility. Traditionally, law-making treaties were expected to create obligations, and these obligations were normally

expected to be couched in rule-making language which was sufficiently "hard" that it would be fairly clear in practice if a violation had occurred. Despite the almost invariable use of "shall", not "should", throughout the Convention, the majority of normative provisions are "soft" in the sense that the nature of the obligations, in this strict juridical sense, are blurred. Often, what is created by a section of the Convention is a set of official responsibilities rather than a listing of immediately binding legal duties. More often than not, the responsibility points the way to a future course of action, and could therefore be said to be couched in the language of legal development rather than legal obligation.[478]

Fourth, consonant with the third feature of the Convention just described, the expectation underlying many of its provisions is not so much the resolutive expectation of dispute settlement as the developmental expectation of conflict avoidance. Elaborate institutional and procedural arrangements are provided for the orderly regulation of ocean development and management around the world.[479]

Finally, the complicated process of negotiating and resolving issues at UNCLOS III, involving the new conference diplomacy technique of consensus,[480] has created new strains on the theory of consent,[481] not least the doctrine of ratification which has traditionally been regarded as pivotal in the law of treaties, especially as applied to multilateral law-making conventions.[482] UNCLOS II has precipitated the need for new thinking about consent as a process rather than as an act.[483]

Of course, neither Canada nor any other country has any special responsibility to suggest improvements in the law-making process generally. But to the extent that Canada does have a special international responsibility in the field of ocean development and management in the wake of UNCLOS III, Canadian government lawyers might be prepared to develop a proposal for UN review of current ocean-related legal developments that seem antithetical to the 1982 UN Convention on the Law of the Sea.[484] Indeed, if future events suggest that the viability of the Convention is likely to be sapped by nonratification practices of a few crucial maritime powers or a few major coastal states, it may be useful to propose a UN review of the law of treaties applied to multilateral law-making conventions in general.[485]

Again, if the coming into force of the Convention is unduly delayed, and even then seems likely to leave important maritime and coastal states outside the Convention, Canada would be an appropriate country to suggest alternative ways of dealing with ocean-related disputes and conflicts between parties and non-parties. Given the dissenting policy of the present U.S. government, the Canadian government must give its mind to this kind of problem in the context of Canadian-U.S. relations. Some of the settlement or avoidance techniques developed for these bilateral purposes might prove to be useful more generally, and become the basis of a Cana-

dian initiative in the Sixth (Legal) Committee of the UN General Assembly.[486]

Finally, whatever happens to the Convention in the years ahead, all legal and institutional developments related to ocean policy, both national and international, should be closely monitored with a view to their compliance or noncompliance with the provisions of the Convention. Anything that could be said to constitute evidence of customary international law of the sea, whether or not in the traditional form of state practice,[487] should be subject to some kind of "glossatorial" procedure.[488] It is difficult to see why Canada should not be deeply involved in any effort to provide an important juridical service of this kind to the international community.

Canada–U.S. Relations

It is not always easy to be a friend and neighbor of the United States. Even a capable country like Canada, with personal and institutional linkages with every sector and at every level of U.S. society, is at a chronic disadvantage in any dealings with the state across the border. There is, of course, the disadvantage of being so much smaller in population, and having to deal every day with the most competitive nation in the world. But the problems are governmental rather than cultural. Ironically, the compatibility of the two national cultures seems to aggravate the resentments and frustrations that often arise in official interactions between these two North American states.

At UNCLOS III, unlike the situation at the earlier conferences in 1958 and 1960, it became evident that Canada and the United States approached several important law of the sea issues from different directions. To virtually all jurisdictional issues Canada's approach was quite clearly that of a coastal state, whereas the U.S. position was complicated by the need to balance a wider variety of domestic and international interests and to effect a compromise between coastal and maritime considerations. Reconciling these diverse viewpoints within the U.S. government, and securing a national position for the U.S. delegation to advance in UNCLOS III negotiations, proved to be the most difficult exercise in internal diplomacy associated with the new law of the sea.[489]

The most important substantive differences between Canada and the United States arose in five areas of the agenda: limitation of the prescribed levels of production for the mining of manganese nodules on the deep ocean floor;[490] coastal state regulatory authority over shipping and navigation within limits of national jurisdiction;[491] coastal state regulatory authority over the fishing of "highly migratory" species within limits of national jurisdiction;[492] coastal state regulatory authority over the conduct of marine scientific research within limits of national jurisdiction;[493] and boundary delimitation between opposite and adjacent

states.[494] On the first of these five substantive issues, Canada–U.S. differences were sharpened by a fundamental divergence on the underlying *symbolic* issues between North and South; whereas Canada was relatively sympathetic, or at least acquiescent, with respect to the LDC (Group of 77) proposals for a global regime over deep ocean mining (under the aegis of the proposed International Seabed Authority), the United States was unsympathetic, and eventually hostile. Moreover, there was originally a fundamental (philosophical) difference between the two governments on the all-embracing question of extended coastal state jurisdiction (beyond a 12-mile territorial sea). But by 1974, after strenuous internal negotiations, the U.S. delegation was able to announce its qualified support for the general principle of a 200-mile exclusive economic zone regime, and the debate thereafter focussed more sharply on specific features of the regime related to the coastal state's authority over navigation, "highly migratory" species, and marine scientific research.

Canadian and U.S. negotiators clashed frequently, and sometimes bitterly, over some of these issues.[495] Particularly after the Reagan Administration took a hard-line stance in the final stages of the Conference, the differences between the two delegations were occasionally put on public display. By this time, however, the differences on the jurisdictional issues had been resolved or papered over,[496] and the basic cause of Canada–U.S. conflict was the hard-line stance of the U.S. government on UNCLOS III as a whole, and on the deep ocean mining provisions of the Convention in particular. Canadian resentment of U.S. policies after 1980 was, therefore, shared by almost all other delegations, and it is somewhat misleading to talk of Canada–U.S. differences thereafter in bilateral terms.

Two years after announcement of the U.S. refusal to sign the Convention, most of these substantive and symbolic disputes continue to haunt Canada–U.S. relations. Only one, the issue of marine scientific research, has become a non-issue. The seabed production issue is part of the larger question of seabed mining, which is a general problem in international relations and not essentially a bilateral dispute between Canada and the United States. But the other law of the sea issues must still be included among the many official irritants between the two governments.[497] How should they be dealt with?

On the face of things, there are three principal methods of treatment: avoidance, negotiation, and adjudication. Each has its own merits and shortcomings. The *avoidance* method of treatment is nonprovocative and may make short-term sense if the issue is particularly sensitive and cannot be treated satisfactorily in any other way. The navigational issue is perhaps the most likely to be viewed in this light. The Canadian government's present reluctance to promulgate baselines and to make jurisdictional claims in the Arctic may be interpreted as a policy of avoidance. But the baselines cannot be negotiated and need not be adjudicated, and Northwest Passage issues will eventually have to be dealt with by the Cana-

dian government through a variety of techniques, including consultation with prospective user states like the United States. Eventually the Canadian government will also have to decide how rapidly it intends to develop vessel traffic control or other forms of transit management within designated areas of its EEZ in the Atlantic and Pacific Oceans.[498]

On the highly migratory issue the positions are reversed. The ball is in the U.S. court. It is the Americans who wished to secure access to Canadian waters for tuna fishing, and succeeded in negotiating such arrangements with Canada.[499] Now that the West Coast salmon access issue has been resolved,[500] and the question of entitlement to access by Canadian scallop fishermen to Georges Bank clarified with the Gulf of Maine boundary award by the International Court of Justice,[501] it may soon be easier to compare the respective merits of negotiation and adjudication as alternative modes of treatment for ocean resource development and management issues.

The Gulf of Maine boundary award will, of course, be closely examined with a view to the wide range of boundary delimitation and related transboundary issues that must be resolved in all four of the transboundary (binational management) ocean areas shared by Canada and the United States: the Gulf of Maine, the Beaufort Sea, the Dixon Entrance inshore and offshore areas, and the Juan de Fuca Strait offshore area.[502] *Negotiation* proved to be an unsuccessful method of treatment in the Gulf of Maine, despite many years of investment of diplomatic skill and ingenuity.[503] Regardless of "winning" or "losing" in a legal battle before the International Court of Justice, it is by no means evident that it lies in the interest of either country to use *adjudication* as a method of resolving boundary-making issues at sea. In all four areas, and especially in the Gulf of Maine, these delimitation issues are intricately linked with vital transboundary issues of access and management. Inevitably, a boundary delimitation award is just a new beginning for the next round of negotiations on these vital issues. It remains to be seen in the next two or three years whether the boundary award will help or hinder these negotiations in the Gulf of Maine, and therefore whether the two governments will wish to resort to further adjudication of issues in this or any of the other three boundary areas.[504]

It is difficult to take a happy view of the impact of the new law of the sea on Canada–U.S. relations. The highly acquisitive nature of most law of the sea issues forced both countries, like every other, to focus very sharply on the prospect of national gain, not only extensively in terms of space but also very specifically in terms of resources. In the hard-headed area of ocean development and management there has been little room for traditional loyalties or cultural and ideological affinities. The best hope for harmony at sea is that Canadians and Americans, in thinking together about their shared problems in ocean development and management, will discover that their management interests are complementary: that more

is to be gained than lost on both sides by designing a variety of joint or consultative management arrangements in these shared ocean areas.[505] But there should be no illusion that this will be an easy course to follow. There are basic differences in the public administration structure and style of the two countries,[506] and also in the attitudes of their coastal communities to the role of government.[507] If anything, these gaps are widening. At least it is clear that ocean development and management must have a high ranking on the list of priorities for Canada–U.S. diplomacy for many years to come.[508]

International Trade and Ocean Development

Canada has always been a trading country, and yet most thoughtful Canadians, unlike Americans, lack confidence in their own commercial vitality. Today the question of Canada's future role in the international economy has raised the need to challenge conventional views about the nation's industrial strategy and its contribution to technology development. As noted above,[509] most of the ocean-related industries present export development opportunities: fishing, offshore natural gas, tidal energy, and much of the new ocean technology industry.

As to fishing, which in Canada has always been primarily an export industry, the problems of export development are technical, attitudinal, and political. Much of the Canadian offshore fishing industry is controlled by large companies, but since the financial restructuring of the industry in 1983, the two largest companies are at least partly controlled by the federal government.[510] In recent years the industry has made fairly bold and sophisticated efforts to develop new markets in Europe for increased Canadian landings, and to offset the risk of displacement from the traditional U.S. market for Canadian fishery exports, but there are still unsolved technological problems of quality control,[511] and the corporate effort has, of course, been hampered by financial and structural uncertainties. There is also an educational problem in the attitudes of many Canadian workers and managers, who have not yet adjusted to the modern necessity for more professional practices in the harvesting as well as the processing of fish intended for highly selective and discriminating markets overseas.[512] Even more frustrating are the political and diplomatic problems associated with the negotiation by government of long-term marketing arrangements for Canada's fishery products, which cannot be entirely divorced from other international trade issues with Western Europe and the United States.[513]

Canada has also a surplus supply of natural gas, like fish, and much of the natural gas produced in the Canadian offshore is intended for export to the United States. The first supply, from the Sable Island area off the coast of Nova Scotia, is likely to be delivered by undersea and overland

pipeline to New England.[514] After some years of doubt and recalculation, it now seems likely that the New England states will ask Canada to proceed with this project, but the national energy policy of the United States is not yet sufficiently clearly defined to indicate the extent of future U.S. dependency on Canadian supplies of offshore petroleum.[515]

Similarly, it is still unclear whether, or to what extent, the United States will wish to incorporate the proposed Fundy tidal power project into its long-term energy import strategy. Obviously, Canada cannot proceed with the construction of this extremely expensive (and moderately controversial) undertaking without a long-term commitment by U.S. government and industry.[516] Although there is a continuing prospect of European financing for Fundy tidal power development, it is likely that there will be U.S. funding on a fairly massive scale if it is intended to play an important role in the New England region.[517]

As noted earlier, it is difficult to find any short-term Canadian interest in mining manganese nodules for export purposes,[518] but on the other hand there is an opportunity to develop certain sectors of the newly evolving ocean technology at the regional, and to a lesser extent the national, level.[519]

The other side of the trade question is whether ocean development can help Canada reduce its traditional dependency on imported goods and services in other sectors of the economy. One of the most notorious examples of Canadian overdependence, as emphasized earlier,[520] is in the area of shipping: shipping services, shipbuilding, and related invisible service sectors such as marine insurance and banking. In the new age of ocean development and management, Canadians in industry and government should be given better training in these sectors, abroad if necessary. Hundreds of millions of dollars are "wasted" every year in Canada, spent on foreign suppliers of shipping, shipbuilding, underwriting and banking services to Canadian importers and exporters. It may be questioned whether the Canadian import-export economy will ever be rescued from its present vulnerable state until, among other things, Canada has secured a degree of control over the marine sector of its delivery system. Until Canadian government and industry together have developed a degree of national capability in these risky areas of service to our international traders, we shall have no share at all in the control of the infrastructure of international trade.[521]

International Development and the New Law of the Sea

One of the chief motivating factors behind UNCLOS III, without which the Conference could not have survived fifteen difficult years of negotiation, was the prospect that under the new law of the sea the developing coastal (and perhaps even non-coastal) states would acquire security of access to

previously unavailable ocean resources. Rather than have to compete with the ocean technologies of the industrially advanced nations, they hoped to gain control of an extensive area of national ocean space, whose resources could then become part of the base of the national economy. In the years since Arvid Pardo first envisaged a new order of ocean development and management in his famous speech of 1967,[522] several new ideas have emerged in response to the need to derive significant international development benefits from the new law of the sea.

The problem was first conceived essentially in terms of professional training and technical assistance requirements. From the late 1940s to the mid-1960s, in the "foreign aid" period, the primary emphasis tended to be placed on the development of Western-style knowledge and skills and the donation of Western-style equipment and facilities, mostly under various kinds of UN programs and projects. As far as ocean requirements were addressed, this approach was sectoral, confined in the early years to the sector of fisheries and aquaculture under FAO auspices[523] but later extended to that of shipping under UNCTAD sponsorship.[524] In retrospect these sectoral efforts now seem to have been of rather limited effectiveness. Often these well intentioned contributions were less a reflection of the recipient country's requirements than of the donor country's own surplus capacity. In most cases neither the recipient nor the donor was well placed to assess the recipient's requirements. Moreover, the problem was complicated by uncertainties about the design of such programs and projects. Foreign aid agencies had difficulty in evaluating the respective merits of bilateral and multilateral aid, and of national and regional initiatives.[525] This was the period when global idealism was strong in the developed world and many first-class Western fishery scientists were deeply involved in the work of the United Nations. It was also the period when regional fishery commissions — some inside, some outside, the FAO family — were dominated by conservation rather than development concerns and staffed by Western or Western-trained scientists.[526]

By the mid-1960s it had become apparent that a new approach had to be taken to the problem. Pardo's vision of ocean space had the effect of revelation in many developing countries, holding out an oceanic, or at least a coastal, dimension to national economic planning. Under this new influence, developing coastal states began to give increasing emphasis to the need for a larger and more instructive framework for nation-building purposes: to make an inventory of problems, resources, and opportunities; to establish objectives; to set priorities; to identify strategies; to prescribe time limits; to assign tasks; and to convert ideas into action. But in most developing countries, national development planning, with or without an ocean component, had to be assisted at the international level. This period, in the late 1960s and early 1970s, was also the period of global, cross-sectoral perspectives on the problems of the human environment, and the UN Stockholm Conference, held in 1972, provided the world with its first

truly comprehensive Action Plan.[527] Assisted by the holistic perspectives of environmentalists, development planners found a better balance between developmental and environmental requirements. Given the catholicity of its range, Stockholm served to draw attention to the developmental importance of the marine environment in particular, and helped to sensitize some governments to the continuing need for conservation policy within the framework of ocean development and management.[528] Since Stockholm, the United Nations Environment Program (UNEP), located in Nairobi, has continued to hold the balance between environment and development through various programs directed at the ends of eco-development. Prominent among these UNEP initiatives is the much acclaimed Regional Seas Program, based in Geneva, which has had considerable success, despite financial constraints, in the promotion of Regional Action Plans and other arrangements in ten designated regional seas in all parts of the developing world. All strongly influenced by the original global Action Plan approved at Stockholm, these regional ocean action plans have combined elements of environmental management, resource development, and species and habitat conservation.[529]

The third (and current) stage of thinking about the ocean in the context of international development was, of course, triggered by the concept of a 200-mile EEZ regime and its quick acceptance in state practice around the world since the mid-1970s. But it was quickly apparent that, in most cases, these new spatial gains by developing coastal states would not necessarily result in substantial benefits without effective new ideas in the context of international development. Most of the relevant language in the 1982 UN Convention on the Law of the Sea focussed on the concept of transfer of technology,[530] which was fashionable in the United Nations throughout the 1970s and still has many adherents. But the Conference failed to break through the barriers, technical as well as political, which have obstructed real (as distinct from nominal) progress in the transfer of technology from developed to developing countries.[531] Perhaps the most useful idea on international development promoted at UNCLOS III was that of regional and national centres for the development of marine science and technology,[532] but it is too early to predict the success of such initiatives under the Convention.

Two other new ideas are worth noting. First, most developing coastal states have begun to experiment with joint ventures, that is, some form of bilateral cooperative arrangement with a public or private enterprise of a developed, and usually distant, state with expertise and advanced technology in some area of ocean development and management. Most of these joint ventures are concerned either with a fishery or an offshore petroleum resource within the developing coastal state's limits of national jurisdiction. The jury has not yet returned a verdict on the developmental effectiveness of these experiments.[533] Second, by the late 1970s, many developing coastal states had begun to realize the importance of ocean

management training, if they were to take advantage of new ocean development opportunities within the EEZ. By this term one means an exposure to virtually all aspects of ocean affairs with a view to assisting in government planning and administration, not an in-depth immersion in any one technical area of ocean development or management.[534] This extensive, cross-sectoral approach to training is totally different from the intensive, sectoral approach emphasized in the 1950s and 1960s. The success of ocean management training, which depends on many factors,[535] is not yet proven, but it certainly supplies what the governments of many developing coastal states demand and seem to require.

Canadian efforts in this context depend mostly on three organizations: the Canadian International Development Agency (CIDA), the International Development Research Centre (IDRC), and the International Centre for Ocean Development (ICOD). CIDA is, of course, the official arm of the Canadian government, whereas IDRC and ICOD, though financed with Canadian public funds authorized by Parliament, have their own international boards and staffs and operate independently of the Canadian government. CIDA has expended hundreds of millions of dollars on ocean-related projects since its inception, mostly in the sectors of fishery development and aquaculture, but by and large it was not strongly ocean-conscious until the importance of ocean development and management became widely apparent in the final stages of UNCLOS III.[536]

IDRC has a much more limited budget and more narrowly defined objectives, but this has enabled it to focus quite usefully on types of needs that are somewhat neglected by larger organizations, and at times to embrace experimental and unconventional ideas. Like CIDA, however, IDRC is new to the field of ocean development and management, as distinct from the traditional sectors, and with the recent establishment of ICOD in Halifax, Nova Scotia, devoted exclusively to these purposes, it remains to be seen what IDRC's ocean-related role will be in the coming years.[537]

ICOD, modelled to some extent on IDRC, was established early in 1984, and it is the result of the personal desire of (then) Prime Minister Trudeau to offer Canadian assistance to developing countries in ocean development and management, as a suitable way of acknowledging the benefits gained by Canada at UNCLOS III.[538] ICOD's mission is to "cooperate with and support developing countries in the *comprehensive management* of their ocean resources" (emphasis added).[539] Seven objectives have been enumerated.

1. to encourage cooperation between the people of Canada and those of developing countries in the field of ocean development;
2. to identify, initiate, develop and support improved and innovative approaches to the use of ocean resources of developing countries, particularly as a source of food;

3. to foster the development of expertise and to promote and support the extension of experience on cross-sectoral, integrated ocean use management, and to make this available to developing countries;
4. to use relevant capabilities and expertise of people and institutions from Canada, developing countries and other countries to fulfill ICOD's mandate;
5. to develop and sponsor appropriate training programs, technical assistance and advisory services;
6. to develop and sponsor the gathering and dissemination of information; and
7. to sponsor a limited amount of necessary research consistent with the mandate and mission of ICOD.

With sufficient funding and appropriate direction, ICOD seems certain to strengthen Canadian contributions to the enhancement of ocean management capabilities of many developing coastal (and island) states around the world.

Conclusions

After this review of Canadian foreign policy implications of the new law of the sea, the main conclusion to be drawn is fairly obvious. The national ocean policy council, which should be created to maintain an overview of ocean development and management for the domestic reasons discussed earlier in this study, should also be authorized to undertake the task of monitoring this area of Canadian foreign policy and to make appropriate recommendations. Domestic and foreign policies and practices in ocean development and management should be held together by a common understanding of Canadian needs, opportunities and responsibilities. There is no reason to believe this will happen by some kind of osmosis. It has to be arranged, and arranged in the conviction that Canada's future will be profoundly affected by the ocean.

Conclusion: Canada in the Age of Ocean Development and Management

We live in an age of miracles. At 50, many of us look back in amazement at the changes introduced into our lives. Marvelous information machines have created a new complex of "sunrise" industries. We live longer and less painfully because of the triumphs of modern medicine, and accept the risks of the gathering revolution in genetics. We seek, and gradually attain, new levels of sophistication in energy production, pollution control, and the conservation of nature. We legislate more determined demands for equality. Yet quietly, almost unnoticed, we have embarked on another important voyage of discovery. We have entered the modern age of ocean development and management.

How will Canada fare on this voyage? On the face of things, Canadians are blessed by ocean geography, ocean resources, and ocean-related talents. Carelessly, we might even profess to be "destined" to play a central role in ocean development and management. We are literally surrounded by the opportunities. But the potential role of the ocean in Canada's second century has nothing to do with destiny. Instead it calls for a special blend of national vision, judgment, and attitude.

The vision offered in this study may not be that of the decision makers in Canadian government and industry. Indeed, vision, in the sense of a *general* view of the future, may rarely be a factor in the decision-making process. Though forced to engage in planning within a short time frame, both government and industry behave more comfortably and more characteristically as mechanisms for effective response to existing situations. Typically, government responds especially to issues and problems, and the relevant opportunities; industry to opportunities, and the relevant issues and problems. But rarely does either wish to invest substantially in anything as easily assailable as a vision of the future. Yet the government and industry of Canada must take stock of the solid realities behind the vision of ocean development and management, if they are to serve the Canadian people.

Canada is governed from the centre. The ocean is, literally, peripheral to the perceptions and concerns of government. Most Canadian decision makers, indeed most Canadians, may view the ocean as a regional matter in the affairs of the state. Yet ocean policy is no less national in significance than agriculture or manufacturing. The regional impacts of ocean policy are no more localized than those of other resource sectors of the Canadian economy. There is only a national vision of Canada's ocean frontier; there is only a national policy to be developed, albeit one in which all levels of government have a role to play.

There is also a question of judgment. This frame of reference, Canada and the new international law of the sea, is much too large to deal with

specific questions that call for hard-headed judgment. How much should Canada be willing to invest in a transit management system for the Northwest Passage or in the Fundy tidal power megaproject? More than for Churchill Falls? Three times as much as for the Olympic Games? How should they be compared with the DEW line, the St. Lawrence Seaway, or the original Canadian Pacific Railway? How should we weight the elements of Canadian fishery policy suggested in the Kirby report? How far, precisely, should Canadian government and industry go toward the development of our own shipping and shipbuilding capabilities? How much more should government and industry spend on the exploration of offshore petroleum deposits? What new ocean management tasks should be shared by the federal and provincial governments? How should they be asked to cooperate for the purposes of regional ocean management? And what foreign policy risks, expenditures and sacrifices are justified as Canadians begin the national voyage of discovery into the ocean?

Policy questions such as these call for a high order of political vision before they become a matter of judgment. But eventually they must be answered, and the answers will be shaped by popular attitudes and perceptions. Sadly, there is no guarantee that Canadians are ready to give the ocean a high priority on the national agenda. Our sentiments turn inward to the national centre. The most serious threats to our identity are seen to come from the land to the south, as Ontario mounts guard in defence of our "national" culture. The most urgent internal challenge to our political unity has usually arisen in Quebec. Regional discontent is highest in the prairies of Alberta and beyond the mountain ranges to the west. Dreaming of the future, we fasten on the wastelands to the north. But are we ready to turn and face outwards to the ocean?

We have always been rich in natural resources. As long as our abundance was limited to the land, we might have been excused for our obsession with the soil and the riches it has yielded to the nation. Depleted in these resources, we face the need to restructure our economy and our self-image. Yet in the new age of ocean development and management, our natural resource wealth is even more abundant, ostentatiously displayed before the world. The ocean is the newest part of the Canadian reality, but it has not yet been entered into our national dream.

Are we ready for our future?

Notes

This paper was written during the summer of 1984, although a few small items were updated in 1985 as it was going through the publication process.

Although the views presented in this study are entirely my own, I wish to acknowledge my indebtedness to many friends and colleagues in the Halifax-Dartmouth district who have helped me to understand Canada's ocean development and management problems. My gratitude extends to those who have commented on my original draft or supplied me with documents or references, and also to those who have been of special assistance with the extensive footnotes provided in support of the text. In particular, I wish to thank the following: Taska Carrigan, Dalhousie Law School; Lloyd Dickie, Bedford Institute of Oceanography (BIO); Lawrence Edelstein, Ocean Industry Development Office; Christopher Garrett, Dalhousie Institute of Oceanography; Ian Townsend Gault, Dalhousie Ocean Studies Programme (DOSP); Edgar Gold, DOSP; John Gratwick, Canadian Marine Transportation Centre, Dalhousie University; Arthur Hanson, Institute for Resource and Environmental Studies, Dalhousie University; Cynthia Lamson, DOSP; Norman Letalik, DOSP; Clive Mason, BIO; Donald Patton, Centre of International Business Studies, Dalhousie University; and David VanderZwaag, DOSP.

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1. A. Malahoff, "The Ocean Floor, Our New Frontier" (1982), 16 *Marine Technology Society Journal* 3.
2. For some recent innovations, see Chuck McCabe and Teena Campbell, "New Technical Ideas and Equipment" (1985), 18 *Ocean Industry* 16; Monik Taluani, "New Geophysical Techniques for Offshore Exploration" (1983), 26 *Oceanus* 17; and Maretta Tubb, "New Drilling Rigs" (1984), 19 *Ocean Industry* 13.
3. For a recent listing, see Ted L. McDorman, Kenneth P. Beauchamp, and Douglas M. Johnston (eds.), *Maritime Boundary Delimitation: An Annotated Bibliography* (1983), at pp. 157–95.
4. For a complete listing up to 1979, see Douglas M. Johnston and Edgar Gold, "Extended Jurisdiction: The Impact of UNCLOS III on Coastal State Practice" in Thomas A. Clingan, Jr. (ed.), *Law of the Sea: State Practice in Zones of Special Jurisdiction* (Proceedings of the Thirteenth Annual Conference of the Law of the Sea Institute, 1979) (1982), 3–56, at pp. 27–50.
5. Of the 27 contentious proceedings before the International Court of Justice since the late 1940s seven have centred on law of the sea issues. Four of the seven cases have been decided since 1969: between West Germany, Denmark and the Netherlands; between Iceland, West Germany and the United Kingdom; between Tunisia and Libya; and between Canada and the United States.
6. UN Doc. A/CONF. 62/122 (October 7, 1982), reproduced in 21 *International Legal Materials* 1261 (1982).
7. The Convention remains open for signature, in accordance with Article 305(2), until December 9, 1984. By March 20, 1984 the Convention had been signed by 134 states and the Final Act by 149 states. UN Doc. LOS/PCN/INF. 14.
8. Eighteen states had deposited instruments of ratification by the middle of April 1985.
9. The Convention is subject to ratification, and therefore under the law of treaties one cannot become legally bound by the Convention as a whole merely by signature. To be bound, either one must first sign and then deposit an instrument of ratification under Article 306, or after expiry of the period of signature deposit an instrument of accession under Article 307. Under Article 308, the Convention will come into force 12 months after the date of deposit of the sixtieth instrument of ratification or accession. It is difficult, of course, to predict how long it will take for 60 ratifications or accessions to be deposited. Most multilateral conventions take 7–10 years to come into force. John King Gamble, Jr., "Reservations to Multilateral Treaties: A Macroscopic View of State Practice" (1980), 74 *American Journal of International Law* 372. But there are diverse views whether the coming into effect of the UN Convention on the Law of the Sea will be quicker or slower than usual with instruments of such importance. This author

believes there is only a 50 percent probability it may be in force — for 60 or more parties — by late 1987 (i.e., within five years of signature), but that as many as 90 states and other entities (such as international organizations) may have become bound by 1990.

10. Despite the immensity of the undertaking at UNCLOS III, some important ocean matters were "neglected," overlooked, or deliberately excluded, for a variety of reasons. See, generally, John King Gamble, Jr. (ed.), *Law of the Sea: Neglected Issues* (Proceedings of the Twelfth Annual Conference of the Law of the Sea Institute) (1979).
11. Most of the other important treaty-making exercises that had to be "orchestrated" along with UNCLOS III were in the marine pollution context, such as the 1972 London Dumping Conference and the 1973 IMCO Conference on Pollution from Ships.
12. The classic example is the 1972 Stockholm Conference on the Human Environment, which had an important formative influence on the environmental thinking at UNCLOS III.
13. The "action plan" approach to the development of "soft law" was pioneered within the UN system in the late 1960s, and resulted in the adoption of a global action plan for the human environment at the 1972 Stockholm Conference. This method has been used successfully as a first step to the production of legally binding treaties and protocol — as well as significant governmental action — in 13 different regions designated under the Regional Seas Programme of the United Nations Environment Programme (UNEP), which was established by the UN General Assembly in 1973 as a follow-up after the Stockholm Conference.
14. See, generally, Douglas M. Johnston (ed.), *The Environmental Law of the Sea* (International Union for the Conservation of Nature and Natural Resources, 1981).
15. UNCLOS I produced four law-making treaties: Convention on the High Seas, 450 *U.N.T.S.* 11; Convention on the Territorial Sea and the Contiguous Zone, 516 *U.N.T.S.* 205; Convention on the Continental Shelf, 499 *U.N.T.S.* 311; and Convention on Fishing and Conservation of the Living Resources of the High Seas, 559 *U.N.T.S.* 285.
16. The Second UN Conference on the Law of the Sea, also held at Geneva, was confined to the two issues left unresolved at UNCLOS I: the breadth of the territorial sea and the breadth of an exclusive fishing zone. UNCLOS II narrowly missed reaching a two-thirds majority agreement on these issues. The Final Act is reproduced in United Nations Conferences on the Law of the Sea, *Official Records*, published by William S. Hein and Co. in 1980.
17. See, for example, Barbara Johnson, "Canadian Foreign Policy and Fisheries," in Barbara Johnson and Mark W. Zacher (eds.), *Canadian Foreign Policy and the Law of the Sea* (1977), 42–99; and A.E. Gotlieb, "The Canadian Contribution to the Concept of a Fishing Zone in International Law" (1964), 2 *Canadian Yearbook of International Law* 55.
18. The idealistic or altruistic element of UNCLOS III is found mostly in the proposal to confer the status of the "common heritage of mankind" on the deep ocean floor beyond the limits of national jurisdiction: that is, beyond the redefined seaward limits of the regime of the continental shelf. In its idealistic capacity, UNCLOS III set itself the task of creating an elaborate institutional apparatus to allocate this "international area" among producers, to regulate all aspects of ocean mining, and to apportion the revenues from these activities among the most deserving of the developing countries.
19. M.W. Mouton, *The Continental Shelf* (1952).
20. The 1958 Convention on the Continental Shelf provided, in Article 1, that the term "continental shelf" referred: "(a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands." This definition consisted of three distinct elements: depth (the 200-metre isobath), exploitability and adjacency. The first criterion was certain but inflexible, the second flexible but totally uncertain, and the third vague. In particular, the rapid march of platform and drilling technology soon rendered the definition useless. By general consent, the shelf had to be redefined at

UNCLOS III, but the difficulty lay partly in the fact that by the late 1960s several broad margin states, such as Canada, had made claim to jurisdiction over extensive areas of their continental margin and, in some cases, had issued exploratory permits in distant offshore areas.

21. Because of the common danger of appearing unduly acquisitive in the eyes of other delegations, the wide margin states — nicknamed the "margineers" — banded together and attempted to establish a common front for the purpose of negotiating the issue of seaward limits. Robert E. Hage, "The Third United Nations Conference on the Law of the Sea: A Canadian Retrospective" (1983), 40 *Behind the Headlines* (Canadian Institute of International Affairs), at pp. 12–13.
22. On the origin and evolution of the EEZ, see Douglas M. Johnston and Edgar Gold, *The Economic Zone in the Law of the Sea: Survey, Analysis and Appraisal of Current Trends* (Law of the Sea Institute, Occasional Paper Series No. 17, 1973).
23. On both of these matters the Convention confirms the coastal state's "jurisdiction" under the EEZ regime, but because of the way other provisions are worded the coastal state acquires a higher degree of *control* over marine scientific research than over the protection and preservation of the marine environment.
24. See Lewis M. Alexander and Robert D. Hodgson, "The Impact of the 200-Mile Economic Zone on the Law of the Sea" (1974–75), 12 *San Diego Law Review* 569 at p. 574 (Table 2), where Canada is ranked fifth behind United States (1st), Australia (2nd), Indonesia (3rd), and New Zealand (4th).
25. Under various provisions of the Convention it is possible for a coastal state, in certain geographical circumstances such as those of the Arctic waters, to "close off" extensive coastal and offshore areas under the regime of *internal* waters by drawing baselines of various kinds: along deeply indented coastlines, around "fringes" of islands, and across the mouths of bays. Vast areas of the Canadian Arctic might be characterized as constituting archipelagic configurations. Closing lines encompassing extensive areas of internal waters might also be justified on the ground of "historic rights," by analogy to "historic bays," or by reference to the "sector theory." For an excellent analysis, see Donat Pharand, *The Waters of the Canadian Arctic Archipelago in International Law* (1985). See also David L. VanderZwaag and Donat Pharand, "Inuit and the Ice: Implications for Canadian Arctic Waters" (1983), 22 *Canadian Yearbook of International Law* 53.
26. Given that by the second ("internal waters") test Canada's gain in total surface water area would be much greater than that of Australia and New Zealand, it seems possible that with the addition of this third (three-dimensional) test, Canada's total cubic gain might be even greater than that of Indonesia and/or the United States. Unfortunately there does not seem to be any reliable study attempting a measurement of cubic gain, but the Canadian cubic gain would certainly rank extremely high in view of the water depth within Canada's Pacific EEZ and in the outer reaches of its continental margin beyond 200-mile limits in certain areas of the Northwest Atlantic.
27. On the estimated value of these resources, see the subsections *Fishery Interests* and *Energy Interests*.
28. The other major constituents are cobalt and manganese.
29. Barry Buzan and Danford W. Middlemiss, "Canadian Foreign Policy and the Exploitation of the Seabed," in Johnson and Zacher, *supra*, note 17, 1–51 at pp. 13–30.
30. Hage, *supra*, note 21, at pp. 15–20.
31. FAO, *1982 Yearbook of Fishery Statistics*, Table A-1(c).
32. The actual marketed value in 1981 for the entire Canadian fishery (including freshwater as well as sea fisheries) was $1.9 billion. Canada controls 19.4 percent of the world's catch of scallop, 18.6 percent of lobster, 14.5 percent of sole, 10.9 percent of salmon, and 1.5 percent of haddock and cod. Statistics Canada, "Canadian Fisheries" (*Annual*, 1981, vol. 14), Table 2.
33. The total annual product of the Canadian fishing industry (approximately $2 billion) is small compared with that of Canada's largest industries: for example, the annual value of Canada's total mineral production is almost $20 billion. A fairer comparison

would be with the pulp and paper industry, whose total shipments in 1977 were valued at over $2.27 billion.

34. Whereas the Japanese get over 60 percent of their animal protein from seafood, Canadians get only 4 percent, which is no more than one-third of the world average.

35. Figures for 1981 indicate that there are 78,760 registered fishermen and another 27,486 are engaged in fish processing. By these figures the fishing industry as a whole in 1981 employed 106,246 Canadians.

36. Arthur J. Hanson, Leonard Kasdan, and Cynthia Lamson, "Atlantic Coastal Communities: Problems and Prospects," in Cynthia Lamson and Arthur J. Hanson (eds.), *Atlantic Fisheries and Coastal Communities: Fisheries Decision-Making Case Studies* (Dalhousie Ocean Studies Programme 1984), 235–42.

37. In a comparison of fish consumption levels in eleven countries, completed in 1976, Canada ranked eighth (7.9 kilograms per capita), behind Iceland (first with 39.1 kilograms), Japan (36.4), Denmark (35.5), Spain (17.0), Norway (11.5), U.S.S.R. (10.2), and the United Kingdom (8.2), and tied with France (7.9). Of the countries compared, only the United States (with 5.9 kilograms) and West Germany (3.9) fell behind Canada in fish consumption.

    For many years the Canadian government has made periodic efforts to encourage fish consumption through advertising campaigns and innovative marketing strategies, but with very limited success. E.P. Weeks and Anne Sommerville, *The Future of the Atlantic Fisheries: An Interim Report* (1982), at p. 44.

38. Fishing accounts for only 2.13 percent of total Canadian exports. *Ibid.*, at pp. 43–47.

39. See the subsection *Fishery Interests*.

40. Draft Articles on Exclusive Economic Zone (Kenyan proposal), UN Doc A/A.C. 138, S.C. II, L. 10 (July 1982 session of the UN Seabed Committee).

41. The chief architect of Canada's successful phase-out fishery diplomacy, Ambassador Legault, recognized in 1977 that the establishment of Canada's 200-mile exclusive fishing zone in that year represented both "a happy ending and an unhappy beginning." Leonard H. Legault, "The Impact of Canadian Fisheries Diplomacy," in Donald J. Patton, Clare Beckton, and Douglas M. Johnston (eds.), *The Future of the Offshore: Legal Developments and Canadian Business* (1977), 47–54 at p. 54. For similar comments by others, see *ibid.*, 54–89, and the speech by Romeo LeBlanc, then Minister of Fisheries, entitled "Beyond the 200-Mile Limit," *ibid.*, 91–99.

42. Fishery scientists and administrators within the Canadian government service were divided on the merits of unitary fishery management within extensive, globally uniform, and scientifically questionable limits. For most, it came down to the question of whether to accept the need to abandon a "failed" ideal of rational management in favour of a suboptimal, but politically popular, alternative. Moreover, some Canadian fishery scientists and administrators were still faithful to the principle of international (cooperative) fishery management, despite the admitted failures or shortcomings of most regional fishery commissions. Although it is fashionable to criticize former organizations like the International Commission for the Northwest Atlantic Fisheries (ICNAF), they played an important role in the pooling of data and ideas and in holding up scientific standards in the field of fishery management and conservation.

43. This "nationalist" position was the one which the Canadian delegation advanced at the first substantive session of UNCLOS III held at Caracas in 1974. Hage, *supra*, note 21, at pp. 8–9.

44. Other issues on which the Canadian delegation was entitled to feel vulnerable and in need of support included: the seaward limits of the continental shelf beyond those of the EEZ, and the related question of revenue sharing beyond 200 miles; the rights and privileges of the coastal state for the prevention and control of ship-generated marine pollution within the EEZ; the question of special pollution control authority for the coastal state within the Arctic Ocean ("ice-covered waters"); the definition of "innocent passage" under the regime of the territorial sea; the entitlement of the state of origin in the management and conservation of salmon (an anadromous species); boundary delimitation; and, in the context of deep ocean mining, the issues of production limitation and representation for the benefit of major land-based producers.

45. Johnson, *supra*, note 17, at p. 54.
46. L.H.J. Legault, "Maritime Claims," in R.St.J. Macdonald, Gerald L. Morris, and Douglas M. Johnston (eds.), *Canadian Perspectives on International Law and Organization* (1974), 337–97; and Douglas M. Johnston, "Legal and Diplomatic Developments in the Northwest Atlantic Fisheries" (1977), 4 *Dalhousie Law Journal* 37.
47. This original Canadian position put forward in 1971 has been described as a "spillover from the 1958 and 1960 Conferences" (i.e., UNCLOS I and II). Johnson, *supra*, note 17, at p. 72.
48. The differential approach was summarized by Ambassador Alan Beesley as an approach based on the principle that "different species require different methods of management." *Ibid.*, at p. 73.
49. The general view was that the EEZ approach was "not incompatible with Canada's functional line, and it had the clear advantages of both relative simplicity and increasingly powerful political momentum." Barry Buzan, "Canada and the Law of the Sea" (1982), 11 *Ocean Development and International Law* 149 at p. 158.
50. "While giving up the notion of exclusive coastal state control of 'coastal species' beyond 200 miles, the Canadian delegation sought to make the 200-mile EEZ more acceptable to the maritime states by promoting the concept that exclusive coastal state fisheries management within the zone must be coupled with duties of sound conservation and sharing of any fish surplus." Hage, *supra*, note 21, at pp. 8–9.
51. The new official policy framework was summarized in Department of the Environment, *Policy for Canada's Commercial Fisheries* (1976).
52. For a detailed critical appraisal, see Cyrille de Klemn, "Living Resources of the Ocean," in Johnston, *supra*, note 14, 71–192.
53. UN Convention on the Law of the Sea, Art. 56(1)(a).
54. Art. 61.
55. Art. 62(2).
56. *Ibid.*
57. Art. 62(1).
58. Art. 62(4).
59. Art. 64.
60. Art. 66. This problem of anadromous species was, for Canada, by far the most important of these "special" problems. The Canadian delegation conducted an aggressive campaign in the mid-1970s to publicize the significance of the Atlantic salmon management dispute between Canada and Denmark. The final text of Article 66 gave the "state of origin" the leverage that Canada was seeking to protect Canada's investment in the conservation and management of these valuable stocks when they return to spawn in Canadian waters after years at sea off the west coast of Greenland. Hage, *supra*, note 21, at p. 9.
61. Art. 67.
62. Art. 63.
63. Art. 65.
64. That is, "organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil." Art. 77(4).
65. Arts. 116–120.
66. Arts. 286–296.
67. In these cases, if all other (voluntary) procedures fail to produce a settlement, then the dispute must be sumitted to *conciliation* under Annex V, section 2. But it is provided that "[i]n no case shall the conciliation commission substitute its discretion for that of the coastal state" and that the conciliation commission's report "shall be communicated to the appropriate international organization." Art. 297(3).
68. On recent developments in wind and wave power, see T.E. Langford, *Electricity Generation and the Ecology of Natural Waters* (1983); Amos A. Jordan, *Facing the Interna-*

tional Energy Problem, 1980–2000 (1979); and *Proceedings of International Symposium on Wave and Tidal Energy* (1978).

69. H. Gary Knight, J.D. Nyhart, and Robert E. Stein (eds.), *Ocean Thermal Energy Conversion: Legal, Political and Institutional Aspects* (1977). On recent technical developments, see David L. Hurwood, "Ocean Thermal Energy Potentials and Pitfalls" (1981–82), 10 *Ocean Development and International Law* 13.
70. Fundy Tidal Power Corporation, *Fundy Tidal Power Update '82* (1982). See also Andrew S. Harvey, W. Stephen Macdonald, and K. Scott Wood, *Socio-Economic Aspects of Tidal Power Generation* (Institute of Public Affairs, Dalhousie University, 1982).
71. Prior to UNCLOS III Canada claimed "internal waters" status for the Bay of Fundy on historic grounds, but this claim was never accepted by the United States. Legault, *supra*, note 46, at pp. 383–87. The advent of the EEZ regime extending out as far as 200 miles from the baseline of the territorial sea precludes any argument that the waters of the narrow Bay of Fundy come under the regime of the high seas. The fact that the United States has declined to sign the UN Convention on the Law of the Sea is irrelevant, since it has accepted the EEZ regime outside the framework of the Convention.
72. U.S. National Academy of Sciences, *Petroleum in the Marine Environment* (1975).
73. The latest official "optimistic" estimates of offshore reserves are more than 75 percent higher: namely, 7639 million cubic metres and 12,478 billion cubic metres for oil and gas, respectively.
74. *Safety in the Off-Shore Petroleum Industry* (International Labour Office, 1976).
75. The production of hydrocarbons from an offshore area is dependent not merely on the volume available, but also on the concentration of the mineral in fields large enough to warrant commercial exploitation. Each petroleum field on Canada's continental shelf will require massive investment to bring to production. This sum will be in excess of $2 billion for the Hibernia oil field alone. The commercial viability of a field depends on its location (all parts of the Canadian offshore are more costly than, say, the Gulf of Mexico), and on factors such as the world's price of oil and the availability of other supplies of gas. Thus, while there appear to be far from insignificant amounts of gas on the Scotian Shelf, and of oil in the Beaufort Sea, the industry has apparently yet to discover it in commercial quantities.
76. An appraisal of all aspects of the National Energy Program by the Senate of Canada began in January 1984. See Senate of Canada, *Proceedings of the Standing Senate Committee on Energy and Natural Resources*, (Second Session, Thirty-second Parliament, 1983–84).
77. The National Energy Program (NEP), initiated in October 1980, seeks to place control over all aspects of exploration, production and distribution of hydrocarbon on "Canada lands" (including the offshore) in the hands of the federal government. The three basic objectives of the Program are self-sufficiency, Canadianization, and fairness. With a view to the second of these objectives, the state is assuming not only stronger regulatory control over the industry but is itself directly participating in petroleum exploration, production and distribution through Petro-Canada, the state-owned oil company established in 1974. In this initiative, Canada is acting in the same way as almost all petroleum-producing countries in the world, including Norway, France and the United Kingdom; Australia and the United States are the chief exceptions. Among the important offshore-related provisions of NEP is a system of generous investor incentive grants called the Petroleum Incentives Program (PIP) grants, which may cover as much as 90 percent of the costs of offshore exploration incurred by the operators. Ian Townsend Gault, *Petroleum Operations on the Canadian Continental Margin: The Legal Issues in a Modern Perspective* (Canadian Institute of Resource Law, Working Paper No. 2 1983), at pp. 82–86, 91–94. The PIP system, like NEP in general, is criticized by many within the Canadian petroleum industry on a number of grounds. Most of these objections are based on ideological opposition to the existence or scale of government intervention and participation in the industry, or on regional (Western) resentment of the government's determination to reduce the nation's dependence on Western

sources of supply by developing alternative, non-conventional sources in other regions (Arctic and the Atlantic offshore). Some of the critics argue that PIP should be replaced by a tax-based system of investor incentives which, they say, would provide more support to smaller (Western-based) members of the petroleum industry. Because of the high cost of offshore exploration, PIP grants are available only to the larger operators. See *Proceedings of the Standing Senate Committee on Energy and Natural Resources*, *supra*, note 76, (April 10, 1984), at pp. 20–35.

78. Hibernia, by far the largest of Canada's known reserves of offshore oil, lies 180–190 miles off the coast of Newfoundland. Venture, which will be the first gas reserve to be piped ashore, lies approximately 160 miles off the coast of Nova Scotia.
79. As geologists use these terms, the "shelf" is that part of the seabed which slopes gradually away from the shoreline, representing the immediate underwater extension of the continental landmass. The "slope" is the area of the seabed further seaward which drops much more sharply downward. The "margin" is the outermost area of the seabed, where it bottoms out into alignment with the deep ocean floor.
80. Art. 76(4), for example, provides:
    a) For the purpose of this Convention, the coastal state shall establish the outer edge of the continental margin wherever the margin extends beyond 200 nautical miles from the base-lines from which the breadth of the territorial sea is measured, by either:
        (i) a line delineated in accordance with paragraph 7 by reference to the outermost fixed points at each of which the thickness of sedimentary rocks is at least 1 percent of the shortest distance from such point to the foot of the continental slope; or
        (ii) a line delineated in accordance with paragraph 7 by reference to fixed points not more than 60 nautical miles from the foot of the continental slope.
    b) In the absence of evidence to the contrary, the foot of the continental slope shall be determined as the point of maximum change in the gradient at its base.
81. Art. 76(8).
82. *Ibid.* In the interest of compromise diplomacy the kind of authority vested in the Commission on the Limits of the Continental Shelf was left intentionally obscure. Most wide margin coastal states, such as Canada, are likely to take the position that this is a system of consultation, not of approval, that the Commission's function is supervisory, not judicial or quasi-judicial.
83. There were two distinct revenue-sharing issues at UNCLOS III: one applied to petroleum production under the regime of the continental shelf, *within* limits of national jurisdiction; the other applied to mining under the concept of the common heritage of mankind, on the deep ocean floor *beyond* the limits of national jurisdiction.
84. Art. 82(1).
85. Art. 82(4).
86. Art. 82(2).
87. *Reference Re The Seabed and Subsoil of the Continental Shelf Off-Shore Newfoundland* (1984), 5 D.L.R. (4th) 385.
88. *Reference Re Offshore Mineral Rights of British Columbia*, [1967] S.C.R. 792.
89. *Attorney-General of Canada v. Attorney-General of British Columbia* (1984), 4 W.W.R. 289, confirming the decision of the Supreme Court of British Columbia Court of Appeal in the Strait of Georgia Reference, 1 B.C.L.R. 98 (1976).
90. On the wording of the *Canada Oil and Gas Act*, as it applies to "submarine areas," see Gault, *supra*, note 77, at pp. 43–46.
91. *Ibid.*, at pp. 94–97.
92. *Ibid.*, at pp. 61–64.
93. Manganese nodules contain almost thirty elements altogether. For a listing according to weight, see Jack N. Barkenbus, *Deep Seabed Resources: Politics and Technology* (1979), at pp. 5–7. The four constituents of most commercial value are nickel, manganese, copper and cobalt.
94. These "dependent" states fall into two categories: those with overall, chronic, economic dependency on foreign countries, and those major industrial users of these strategic

materials which are dependent on large-scale and expensive importations from foreign (and sometimes politically unstable) sources of supply. On the dominance of certain countries as suppliers and exporters of commercial metals, and the fear of a manganese nodule cartel, see *ibid.*, at pp. 67–74.

95. The most famous and most influential of these early proposals was that of Ambassador Arvid Pardo of Malta, whose speech before the 1967 session of the UN General Assembly was chiefly responsible for the establishment of the UN Seabed Committee and the convening of UNCLOS III. Barry Buzan, *Seabed Politics* (1976), at pp. 67–79. For alternative proposals in the late 1960s, see (in chronological order) John L. Mero, *The Mineral Resources of the Sea* (1965); William T. Burke, *Ocean Sciences, Technology and the Future International Law of the Sea* (1966); L.F.E. Goldie, "The Contents of Davy Jones's Locker — A Proposed Regime for the Seabed and Subsoil" (1967), 22 *Rutgers Law Review* 1; and Francis T. Christy, Jr., "Alternative Regimes for the Minerals of the Sea Floor" (1968), 1 *Natural Resources Lawyer* 1.

96. Developing countries among the leading producers and/or exporters of hard minerals are: Zambia (copper, cobalt); Zaire (copper, manganese, cobalt); Peru (copper); Bolivia (tin); Chile (copper); Malaysia (tin); Morocco (phosphates, manganese, cobalt); New Caledonia (nickel); Nauru (phosphates); Mauritania (iron ore); Jamaica (alumina and bauxite); Guyana (bauxite); Gabon (manganese); India (manganese); Cuba (cobalt); Niger (uranium); Togo (phosphates); Mexico (copper); China (copper); Sierra Leone (iron ore); Rwanda (tin); the Philippines (copper); Ghana (manganese); Brazil (manganese); Haiti (bauxite); Tunisia (phosphates); Senegal (phosphates); and Jordan (phosphates).

97. The United States, Japan, the United Kingdom, the Federal Republic of Germany, France, Belgium and Italy.

98. Edward Miles, "An Interpretation of the Geneva Proceedings (Part I)" (1976), 3 *Ocean Development and International Law* 187 at pp. 193–94. The "radicals" among those advancing the "symbolic" approach to deep ocean mining issues were Algeria, Tanzania, Mauritania and China.

99. For a detailed analysis of "seabed politics" at UNCLOS III, see Buzan, *supra*, note 95. Contrast with the politics of ocean (i.e., water column) politics. Edward Miles, "The Dynamics of Global Ocean Politics," in Douglas M. Johnston (ed.), *Marine Policy and the Coastal Community: The Impact of the Law of the Sea* (1976), 147–81.

100. In addition to several of those developing countries listed in note 96, this category included a number of developed mineral producing states: Argentina, Australia, Burundi, Chile, Columbia, Cuba, the Dominican Republic, Gabon, Guatemala, Indonesia, Ivory Coast, Nigeria, the Philippines, Peru, Zambia, Zaire and Zimbabwe, as well as Canada. This group was put together by Canada at the fifth session of UNCLOS III in 1977. Hage, *supra*, note 21, at pp. 16–17.

101. On the diplomatic difficulties confronting Canada and the rest of the land-based producer group, see *ibid.*, at pp. 17–21.

102. Judith Kildow et al., *Assessment of Economic and Regulatory Conditions Affecting Ocean Minerals Resource Development* (M.I.T., 1976). Uncertainty is increased by the fact that many industries are finding substitutes for metals. The automobile and aircraft industries, for example, are turning to fibreglass, graphite, and various composites in place of metals and alloys. As a result, sectors of the metals industry, such as iron and steel, are contracting, especially in high labour cost economies such as those of North America.

103. *Canadian Minerals Yearbook, 1981* (Department of Energy, Mines and Resources, 1982), at pp. 28–29.

104. *The Future of Nickel and the Law of the Sea* (Ontario Ministry of Natural Resources, 1980), at p. 3.

105. Cobalt, valuable because of its high strength and durability, is used in super alloys to make turbine blades in aircraft engines as well as ultra-hard cutting tools. At the present rate of demand, the total world land reserves of cobalt are only enough to last another 40 years, and from a strategic perspective the relative scarcity of cobalt is the most pressing single reason for resorting to ocean mining. Copper, universally prized

because of its strength, malleability and electrical conductivity, serves a wide range of industrial uses, but it is widely available on land and unlikely to become captive to any worldwide cartel.

106. In 1981 Canada imported 120,000 tonnes of manganese ore. *Canadian Minerals Yearbook, 1982*, at p. 27. South Africa is the world's main supplier. Others are Australia, Brazil, Gabon, Ghana, India, Morocco and Zaire. Because so much of the world's supply comes from a small number of nations, several of whom are politically unstable, cartelization of the manganese producers is a definite possibility, especially since this mineral is a vital element in the manufacture of high-grade steel.
107. UN Doc. A/6695, SSII, August 18, 1967.
108. Buzan and Middlemiss, *supra*, note 29, at p. 14.
109. At present, INCO holds a 25 percent share of one consortium, along with Domco (Japan), Sedco (United States), and Arbeitsgemeinschaft Meerestechnischgewinnbare Rohstoffe (Federal Republic of Germany). Noranda has a 12.5 percent interest in another, which is mostly supported by Kennecott Copper (United States).
110. Buzan, *supra*, note 95, 65–210.
111. Most of the "mining code" provisions were brought together in Annex III ("Basic Conditions of Prospecting, Exploration and Exploitation"), but equally difficult technical details had to be dealt with in negotiating some of the main articles, such as Article 151 on production policies.
112. Several of the most important mining states, such as the United States, the Federal Republic of Germany and the United Kingdom, had not signed, much less ratified, the Convention by December 1984.
113. For a review of the earlier proposals, see Evan Luard, *The Control of the Sea-bed: An Updated Report* (1977), at pp. 169–200.
114. Art. 153.
115. Art. 136.
116. Art. 141.
117. Art. 140(1).
118. Art. 137.
119. Art. 140(2).
120. Hage, *supra*, note 21, at p. 16.
121. Art. 160.
122. Art. 162(1).
123. Art. 162(2).
124. Art. 164.
125. Art. 165.
126. Arts. 166–167.
127. Art. 170.
128. Arts. 186–191.
129. Art. 189.
130. Art. 161.
131. Hage, *supra*, note 21, at pp. 16–18. See also Linda Filardi, "Canadian Perspectives on Seabed Mining: The Case of the Production Limitation Formula" (1984), 13 *Ocean Development and International Law* 457.
132. Leigh S. Ratiner, "The Law of the Sea: A Crossroads for American Foreign Policy" (1982), 60 *Foreign Affairs* 1013.
133. For text see 21 *International Legal Materials* 1254 (1982).
134. Australia, Austria, Canada, Denmark, Finland, Iceland, Ireland, the Netherlands, New Zealand, Norway, Sweden and Switzerland.
135. Ratiner, *supra*, note 132, at p. 1016.
136. This account is based on Hage, *supra*, note 21, at pp. 19–21. For a variety of reactions to the sad and bitter conclusion of UNCLOS III, see Douglas M. Johnston and Norman

G. Letalik (eds.), *The Law of the Sea and Ocean Industry: New Opportunities and Restraints* (Proceedings of the Sixteenth Annual Conference of the Law of the Sea Institute, 1982) (1984), at pp. 103–26.

137. In 1969 the unladen oil tanker SS *Manhattan*, registered and owned in the United States, made a transit through the Passage to prove its feasibility as a commercial tanker route. The transit was made with the knowledge, concurrence, and ice-breaking assistance of the Canadian government. But this highly publicized event raised the spectre of severe oil spills in ice-covered waters where clean-up procedures would be especially difficult and expensive. Alarmed by the lack of strong coastal management rights in international law, Canada took a number of steps including the unilateral initiative of enacting the *Arctic Waters Pollution Prevention Act*. This provoked strong reactions, especially in the United States. See, for example, Wolfgang Friedmann, *The Future of the Oceans* (1971), who interpreted the Canadian Arctic legislation as "a further move in the unilateral extension of national jurisdiction at the expense of the rights of the international community and the traditional freedoms of the sea" (at p. 45). For a defence of the Canadian action, see L.H.J. Legault, "The Freedom of the Sea: A Licence to Pollute?" (1971), 21 *University of Toronto Law Journal* 211. See also R. Michael M'Gonigle, "Unilateralism and International Law: The Arctic Waters Pollution Prevention Act" (1976), 34 *University of Toronto Faculty of Law Review* 180.
138. Douglas M. Johnston (ed.), *Arctic Ocean Issues in the 1980's* (Law of the Sea Institute, 1982).
139. See, generally, Donat Pharand, *The Law of the Sea of the Arctic with Special Reference to Canada* (1973); and Donat Pharand, *The Northwest Passage: Arctic Straits* (1984).
140. For some of the problems confronting Canada in the design of a "transit management" system for the Northwest Passage, see Cynthia Lamson and David VanderZwaag (eds.), *Transit Management in the Northwest Passage: Problems and Prospects* (1985).
141. Since the 1940s the international community has acquiesced in Canadian claims to territorial sovereignty over the Arctic *islands* conventionally regarded as falling under Canada's administrative control.
142. On the polar regions as a "neglected issue," see Gamble, *supra*, note 10, at pp. 163–244.
143. For a description of the various possible routes for a Northwest Passage, see Pharand (1984), *supra*, note 139, at pp. 6–21.
144. For example, Barrow Strait, Prince of Wales Strait, Peel Sound, Franklin Strait, Queen Maud Gulf, Dease Strait, Coronation Gulf, Rae Strait, Rasmussen Basin, Simpson Strait, Bellot Strait, and Fury and Hecla Strait.
145. Year-round navigation seems a long way off, except for submarine vessels with highly sophisticated navigational capabilities. On the prospect of such technology, see Ernst Frankel, "Arctic Marine Transport and Ancillary Technologies," in Lamson and VanderZwaag, *supra*, note 140. Although year-round navigational capabilities for transit of the Passage do not yet exist, year-round navigation was the objective of the now-suspended Arctic Pilot Project, which depends on a fleet of class 10 ice-breaking LNG carriers, and it is also the objective of current plans for hydrocarbon production in the Beaufort Sea.
146. Arts. 7–14. The most important of these is the "straight baseline" method, which was reformulated in Art. 7.
147. Arts. 46–54.
148. UNCLOS III did not deal with the claims that many states, including Canada, might make to a special status as a "coastal archipelagic state." This does not, of course, preclude such states from resort to argument by analogy.
149. Art. 38.
150. For a recent study, see Fielding Sherwood, "Canada-Denmark Fisheries Relations in Davis Strait: Domestic and International Management of a Sub-Arctic Fishery" (LL.M. thesis, Dalhousie University, 1984).
151. See the subsection *Energy Interests*.
152. *Ibid.*
153. Canadian interest is focussed chiefly on the Alpha Ridge, which runs from the tip of

Ellesmere Island to the East Siberian Sea. There is also geological interest in the Lomonosov Ridge, which runs further "seaward" from the Canada Basin and stretches across the North Pole to the New Siberian Islands. Both ridges are believed to be the location of very significant reserves of petroleum, but a Canadian claim to "sovereign rights" over these Arctic mineral resources would depend on scientific proof that the ridges form part of the continental margin extending seaward as the underwater projection of the Canadian continental landmass. On preliminary results of the Alpha Ridge research, see Wallace Immen, "Thawing Icy Secrets of Sea Ridge" *Globe and Mail* (July 10, 1984), p. 14.

154. Art. 234.

155. Buzan, *supra*, note 49, at p. 157.

156. For an extensive study of the many aspects of the environmental law of the sea, see Johnston, *supra*, note 14.

157. For an in-depth analysis of the response of the international community to these problems, see R. Michael M'Gonigle and Mark W. Zacher, *Pollution, Politics, and International Law: Tankers at Sea* (1979).

158. Douglas M. Johnston, "International Environmental Law: Recent Development and Canadian Contributions," in Macdonald, Morris, and Johnston, *supra*, note 46, 555–611. These guidelines and principles are reproduced in James Barros and Douglas M. Johnston (eds.), *The International Law of Pollution* (1974), at pp. 323–27.

159. Jan Schneider, "Pollution from Vessels," in Johnston, *supra*, note 14, 203–17.

160. This formulation of these concepts was contained in the third of the "Ottawa Principles." *Report of the Second Session of the Intergovernmental Working Group on Marine Pollution*, UN Doc. A/Conf. 48/ IWGMP. II/5, at 12–13 (1971). The concepts were advanced several times by Canada's Ambassador Beesley at sessions of the UN Seabed Committee and UNCLOS III. See Jan Schneider, *World Public Order of the Environment: Towards an International Ecological Law and Organization* (1979), at pp. 108–10.

161. For an account of these IMCO (IMO) treaties, see M'Gonigle and Zacher, *supra*, note 157; and Edgar Gold, *Maritime Transport: The Evolution of International Marine Policy and Shipping Law* (1981), at pp. 284–94.

162. See Norman G. Letalik, "Pollution from Dumping," in Johnston, *supra*, note 14, 217–30; Martine Rémond-Guilloud, "Land-Based Pollution" *ibid.*, 230–45; Martine Rémond-Guilloud, "Pollution from Seabed Activities" *ibid.*, 245–58; and James N. Barnes, "Pollution from Deep Ocean Mining" *ibid.*, 259–71.

163. Art. 217.

164. Art. 220.

165. The "port state" is the state within whose port a vessel has sailed after a discharge has occurred which seems to warrant investigation and other proceedings. The significance of this provision is that the port state may undertake such investigations even if the discharge has occurred *beyond* the limits of its national jurisdiction. The "coastal state," by contrast, is the state *within* whose limits of national jurisdiction the discharge has occurred.

166. Art. 211.

167. Art. 211(6).

168. Edgar Gold and Douglas M. Johnston, "Ship-Generated Pollution: The Creator of Regulated Navigation," in Clingan, *supra*, note 4, at pp. 156–97.

169. Arts. 17–32.

170. The Canadian delegation fought hard but unsuccessfully to strengthen the language of Article 19, which enumerates the activities which will be considered "prejudicial to the peace, good order or security" of the coastal state and therefore outside the definition of "innocent passage." In the final text, contrary to the Canadian position, the environmental activities deemed to constitute such a threat are limited to "any act of *wilful and serious* pollution contrary to this Convention" [emphasis added]. Even more serious from a Canadian viewpoint, was the provision in Art. 21(2) excluding from the coastal state's legislative authority the right to adopt laws applicable to "the

design, construction, manning or equipment of foreign ships unless they are giving effect to generally accepted international rules or standards." Hage, *supra*, note 21, at pp. 7–8.

171. Art. 43.
172. Art. 41.
173. Arts. 52 and 53.
174. Art. 56(1)(b).
175. Arts. 55, 56, 58, 59, 60 and 87.
176. Arts. 245–257.
177. Compromise was reached through the provision that in normal circumstances the coastal state would grant consent to foreign requests to conduct research activities within the EEZ or over the continental shelf, except in certain designated circumstances which brought the matter under the coastal state's discretion. Art. 246(5). Canada was less happy with a revision of Art. 246(6) dealing with research on the shelf beyond 200-mile limits. Hage, *supra*, note 21, at pp. 11–12. See also Buzan, *supra*, note 49, at pp. 167–68.
178. *Ibid.*, at p. 168.
179. David L. VanderZwaag, *The Fish Feud: The U.S. and Canadian Boundary Dispute* (1983). See also Kenneth P. Beauchamp, "The Management Function of Ocean Boundaries: Prospects for Co-operative Ocean Management between Canada and the United States" (LL.M. thesis, Dalhousie University, 1981).
180. On reasons for the decision to adjudicate, see VanderZwaag, *supra*, note 179, at pp. 89–94. The decision by the five-member panel of the International Court of Justice was handed down in the fall of 1984.
181. Articles 74 and 83 simply call on the parties to such a dispute to negotiate an agreement "on the basis of international law . . . in order to achieve an equitable solution," and failing such an agreement "within a reasonable time" to resort to dispute settlement procedures under the Convention.
182. Buzan, *supra*, note 49, at pp. 170–171.
183. In 1970, when it was embarking on the new and controversial initiatives associated with the *Arctic Waters Pollution Prevention Act*, the Canadian government felt obliged to submit a new reservation to Canada's acceptance of the compulsory jurisdiction of the I.C.J. For the rationale behind this policy, see (1970) 9 *Canadian Yearbook of International Law* at pp. 284–85.
184. Arts. 286–296.
185. Arts. 279–285.
186. Arts. 297–299.
187. Art. 298(1).
188. These issues do not seem to have been included in the list of Canada's top ten priorities. Buzan, *supra*, note 49, at pp. 153–54.
189. Arts. 266–278.
190. In 1966 the Commission on Marine Science, Engineering and Resources was established under act of Congress "to make a comprehensive investigation and study of all aspects of marine science in order to recommend an overall plan for an adequate national oceanographic program that will meet the present and future national needs."
191. Douglas L. Brooks, *America Looks to the Sea: Ocean Use and National Interest* (1984), at pp. 8–10.
192. *Our Nation and the Sea: A Plan for National Action* (Report of the Commission on Marine Science, Engineering and Resources, 1969).
193. For an assessment of U.S. coastal zone management in the early years after 1972, see John M. Armstrong and Peter C. Ryner, *Coastal Waters: A Management Analysis* (1978). Since the accession of President Reagan in 1981, this federal government program has been phased out. For another comprehensive view of U.S. national ocean policy requirements, see Robert E. Osgoode et al., *Towards a National Ocean Policy: 1976 and Beyond* (National Science Foundation, 1975).

194. The idea of a new presidentially appointed commission on national ocean policy was put forward in the House of Representatives in the winter of 1983, partly in response to the Reagan Administration's refusal to sign the UN Convention on the Law of the Sea. But for a variety of reasons, including political uncertainty regarding the electoral significance of these issues, the proposal was reactivated in the House, but in the spring of 1985, its fate is still unknown.

195. See, for example, Douglas M. Johnston, A. Paul Pross, and Ian McDougall (with Norman Dale), *Coastal Zone: Framework for Management in Atlantic Canada* (Dalhousie Institute of Public Affairs, 1973).

196. For example, after playing a major role in the formulation of ideas and draft proposals for the 1972 UN Conference on the Human Environment in Stockholm, Canadian government officials have been active in helping to sustain momentum in the United Nations Environment Programme, especially in the area of "legal planning." See Johnston, *supra*, note 158; and Douglas M. Johnston, "International Environmental Law: A Canadian Perspective on Recent Developments," in Alistair Lucas and Peter Finkle (eds.), *Environmental Law in the 1980s* (Canadian Institute of Resources Law, 1982), 207–20.

197. Francis T. Christy, Jr. and Anthony Scott, *The Common Wealth in Ocean Fisheries* (1965), at 6–16.

198. In the early 1960s the quest for international economic efficiency seemed to require that one of three alternative approaches be adopted: exclusive use for the coastal state; national quotas within a network of international agreements; or the "internationalization" of fisheries. It was, of course, the first of these approaches, in the form of the EEZ, that was finally adopted at UNCLOS III; but, as the economists warned, the creation of extensive exclusive fishing zones does not of itself eliminate the need for limited entry arrangements. "Nationalization" merely displaces the level of authority at which limited entry arrangements have to be worked out.

199. Six economists in particular deserve credit for pioneering the economic theory of modern fishery policy: S.V. Ciriacy-Wantrup, H. Scott Gordon, Ralph Turvey, Anthony Scott, James Crutchfield and Francis Christy, Jr. (listed in chronological order of major works).

200. On the merger of economic and biological theory, see Geoffrey Waugh, *Fisheries Management: Theoretical Developments and Contemporary Applications* (1984). The meeting of minds between fishery economists and fishery biologists was facilitated by the commonly perceived need to provide practical solutions to the management problems encountered by fishery administrators on a daily basis.

201. What happened in the 1960s was that the biological theory of conservation merged with the pivotal concept of productivity, providing a "neo-classical" bi-disciplinary theoretical basis for "rational" fishery management.

202. For a variety of viewpoints on the effect of the EEZ on fishery development and management, see Lee G. Anderson (ed.), *Economic Impacts of Extended Fisheries Jurisdiction* (1977).

203. In 1973 Japan's total landings were 9,913,900 metric tons and the Soviet Union's were 7,762,800 metric tons. In 1978 these figures were 9,956,051 and 8,189,994 respectively. In 1982 they had advanced to 10,557,083 and 9,153,163 metric tons respectively. In all three years the third largest harvester was far behind these two: Norway in 1973 with 2,910,100 metric tons; Peru in 1978 with 3,458,752 metric tons; and the United States in 1982 with 3,914,874 metric tons. At a slightly lower level in the major rankings are Chile, Peru, China, South Korea, Denmark, Greenland, Thailand, Indonesia, North Korea, India, Mexico and the Philippines. But some of the distant fishing states have prospered more than many expected under conditions of extended jurisdiction. See, for example, Seo Hang Lee, "Distant-Water Fishing Nations' Response to Extended Fisheries Jurisdiction: The Experience of South Korea" (1984), 6 *Marine Policy Reports* No. 4.

204. The last decade has witnessed increasingly severe financial difficulties for most of the fishing companies, especially in Atlantic Canada. By the early 1980s some of them were virtually on the edge of bankruptcy. After much painful negotiation, the industry representatives and senior federal and provincial government officials finally reached

an agreement in 1983 for the restructuring of the industry, featured by a massive infusion of public funds into two giant "hybrid" corporations, one in Nova Scotia and the other in Newfoundland.

But the restructured industry continues to be victimized by a chronic cost-price squeeze. Devaluation has allowed Norway and Iceland, Canada's main export competitors, to undercut its fish prices, causing a build-up of inventories and a further lowering of prices. Bonnie Woodworth, "Did Restructuring Do Anything?" (1984) *Atlantic Business* (June) 13–16.

205. Peter H. Pearse, *Turning the Tide: A New Policy for Canada's Pacific Fisheries* (The Commission on Pacific Fisheries Policy, Final Report, 1982), normally referred to as the "Pearse Report."

206. Michael J.L. Kirby, *Navigating Troubled Waters: A New Policy for the Atlantic Fisheries* (Report of the Task Force on Atlantic Fisheries, 1982), normally referred to as the "Kirby Report." In 1983 this task force also published a document with recommendations for the restructuring of the Atlantic fishing industry.

207. Both reports emphasize, however, that there can be no simple analysis and no single cure of the ailment afflicting the Canadian fishing industry. Criticisms of Canadian fishery policy may reveal less about the problem than about the observational standpoint of the critic. The blame has been placed, variously, on such factors as high interest rates, rising operating costs, sluggishness of prices, inadequate product quality, poor marketing performance, poor plant management, excessive government regulation, and priority of social objectives. *Ibid.*, at pp. 18–19.

208. For a severe criticism of excessive regulation, see Anthony Scott and Phillip A. Neher, *The Public Regulation of Commercial Fisheries in Canada* (Economic Council of Canada, 1981).

209. This paragraph and those following it are based on an unpublished paper: Heather MacKay, "Future Directions of Canadian Domestic Fisheries Policy: A Comparative Analysis of the Pearse and Kirby Reports" (paper submitted in partial fulfilment of requirements for M.E.S. degree at Dalhousie University, 1984).

210. The Pearse Report draws a clear distinction between "habitat management" (*supra*, note 205, at pp. 37–46), and also deals separately with "salmonid enhancement" (*ibid.*, at pp. 47–62). The Report explains that "protecting and managing fish habitat is an especially demanding responsibility on the Pacific coast because salmon depend on estuaries, rivers and streams that are subject to innumerable disturbances and pollution from industrial activities throughout the western watersheds" (at p. 259).

211. For a general account of these issues, see Edward Miles et al., *The Management of Marine Regions: The North Pacific* (1982), at pp. 173–76. It may be feared that the Canada–U.S. salmon interception problem is diplomatically insoluble. Ted A. Smits, "U.S.-Canada Salmon Interceptions" (1984), (abstract in) *Exclusive Economic Zone Papers*, reprinted from *Oceans '84* Conference Proceedings by NOAA Ocean Assessments Division (September 1984).

212. Immediately after the introduction of the 200-mile U.S. and Canadian exclusive fishing zones in 1976, halibut fishermen who had been operating off the other country's coast were permitted to continue to do so, but disagreements and pressures led to the termination of these arrangements. The impact on Canadian fishermen was substantial, because two-thirds of the Canadian halibut catch had been taken off the Alaska coast. Pearse Report, *supra*, note 205. See also Miles et al., *supra*, note 211, at pp. 165–67.

213. Previously, before the advent of extended fishery jurisdiction in the 1970s, the high seas status of the Pacific offshore area, beyond narrow territorial sea limits, meant that all nations had access to these stocks. This made it difficult for the two managing coastal states, Canada and the United States, to impose conservation controls on distant fishing states such as Japan. Douglas M. Johnston, *The International Law of Fisheries: A Framework for Policy-Oriented Inquiries* (1965), at pp. 270–82, 370–84. Since the advent of extended jurisdiction, many of these management problems can be negotiated bilaterally between the two neighbouring coastal states without reference to third party interests. Although this seems to "simplify" the fishery diplomacy involved, it may also complicate the situation if the Canadian–U.S. relationship is strained.

214. Kirby, *supra*, note 206, at pp. 23–24, 115–19.

215. It should be noted that fishery management in North America is undergoing a revisionist re-thinking. See, for example, Peter A. Larkin, "How Much is Enough? An Essay on the Structure of Fisheries Management Agencies," in Brian Rothschild (ed.), *Global Fisheries Perspectives for the 1980's* (1983), at pp. 229–45; and Timothy M. Hennessey, "The Limits of 'Muddling Through' in Natural Resource Management" (paper presented to the Annual Meeting of the Western Political Science Association, April 1984).

216. Before the establishment of 200-mile exclusive fishing zones by Canada and the United States in 1976, the fisheries in the region outside territorial sea limits were managed by the International Commission for the Northwest Atlantic Fisheries (ICNAF). Shortly thereafter ICNAF was succeeded by the Northwest Atlantic Fisheries Organization (NAFO) under a new multilateral treaty. NAFO is designed to conduct management activities outside the newly extended limits of coastal state jurisdiction. But the United States has merely observer status with NAFO, and Canada, though a participating member state, claims the right to exercise certain management controls over "straddling" stocks beyond its national limits.

217. The United States asked the Court to draw the boundary line close to the Fundian (or Northeast) Channel, so that the whole of Georges Bank would be under U.S. jurisdiction. Canada argued for a line to be drawn through Georges Bank, so that there would be a Canadian sector in the North and an American sector in the South.

218. Lamson and Hanson, *supra*, note 36.

219. Significantly, the Kirby Report ignores the case for self-management *per se*, and treats this kind of proposal as an expression of dissatisfaction with existing consultative procedures. "The idea of co-management," it concludes, "has not been developed in detail by those who advocate it and appears for the moment to be more of a catch-phrase than a well-thought-out proposal of substance. The idea is nevertheless intriguing if it means that fishermen's organizations might take more responsibility for the development of and follow through on policies in the harvesting sector." Kirby, *supra*, note 206, at p. 128. The Kirby Report seems to assume the indispensability of a "command and control regulatory approach" to management of the Atlantic fisheries.

220. *Ibid.*, at pp. 49–55, 109–14.

221. *Ibid.*, at p. 60.

222. It is extremely difficult to quantify with any precision the *total* cost of fishery management in the broadest sense, that is, fishery management including all regulatory, administrative, and scientific activities. Just the cost of the federal government's Fish and Marine Programme is over $400 million, and this is just a fraction of the total (direct and indirect) management costs. The total cost may not be far short of $2 billion, which is the total annual value of Canada's fisheries.

223. See, for example, Parzival Copes, *The Resettlement of Fishing Communities in Newfoundland* (Canadian Council on Rural Development, 1972).

224. "There is virtually no limit to how much effort can be proposed for research and management of a fishery. . . . Increasing sophistication of conceptual models inevitably involves more diversified and more intensive data requirements. . . . For most fisheries it is highly doubtful that their worth is sufficient to manage them in accord with the most complex models. . . . The key question for the fisheries manager becomes which conceptual model to use, bearing in mind how rough it may be as a tool and what it will cost in relation to the value of the fishery." Larkin, *supra*, note 215, at pp. 233–34.

225. Many advantages can be seen to flow from a national investment in maricultural development: it is less capital intensive than fishing; problems of productivity and quality control are less difficult; it is compatible with existing Canadian scientific and biotechnological skills; and the coastal waters of Atlantic Canada are relatively clean and environmentally appropriate for these purposes. On the techniques involved, see T.V.R. Pillay, *Aquaculture Development: An Introductory Guide* (F.A.O., 1977).

226. See, for example, Robert Moore, *The Social Impact of Oil: The Case of Peterhead* (1982).

227. Adrian Hamilton, *North Sea Impact: Off-shore Oil and the British Economy* (1978).

228. See, for example, Amos A. Jordan and Robert A. Kilmarx, *Strategic Mineral Dependence: The Stockpile Dilemma* (Center for Strategic and International Studies, Georgetown University, 1979).

229. Traditionally, long before UNCLOS III, Canada claimed that the Bay of Fundy belonged to the legal regime of "internal waters," subject to the unconditional sovereignty of Canada as the coastal state. The United States refused, however, to accept that claim and seemed to hold the view that the waters of Fundy outside three-mile territorial limits belonged to the regime of the high seas. The advent of the 200-mile EEZ in state practice has the effect, of course, of closing off the Bay of Fundy from the high seas, and under the 1982 Convention, Canada, as the coastal state, has "sovereign rights" to the energy resources associated with these waters.

230. The most critical area of the proposed system is across the mouth of Minas Basin in Nova Scotia, in the northeast corner of the Bay of Fundy, where an eight-kilometre hydro-electric dam would be erected to utilize the powerful tidal flow of sea water into the Basin. The upper Fundy area is generally believed to have the highest tide — or one of the highest tides — in the world.

231. Initially, assessment of Fundy tidal power was solely concerned with technical feasibility. By 1966 it was generally conceded that none of the technical (engineering) problems associated with the project was insuperable, and the process of technology assessment moved into the second stage, dominated by questions of economic feasibility.

232. Atlantic Tidal Power Programming Board, *Report on Feasibility of Tidal Power Development in the Bay of Fundy* (3 vols., 12 appendices, 1969).

233. On the difficulties of assessing the economic feasibility of the project, see Cynthia Lamson, *Fundy Tidal Power: A Technology Assessment System Case Study* (Dalhousie Ocean Studies Programme, 1984).

234. The environmental hazards most commonly believed to be associated with the Fundy tidal power project include the scouring of the bed of the river-estuary system, the erosion of adjacent shorelines, changes in the chemical composition of the water, changes in the distribution of species constituting the ecosystem, fish destruction around the dam and other facilities, changes in water temperature, changes in ocean circulation outside the Bay, and the raising of tide levels outside as well as inside the Bay. Some of these early fears have been laid to rest. Christopher Garrett, "Tides and Tidal Power in the Bay of Fundy" (1984), 8 *Endeavour* (new series) 58–63.

235. It is believed that the proposed dam and power-generating plant, which would produce more than 4,000 megawatts of electricity, would cost about $7 billion to construct. Perhaps the most obvious recent analogy with the Fundy megaproject is the Churchill Falls hydro-electric project which cost approximately $1 billion to construct, perhaps not much less than $3 billion in real terms for the probable construction period for Fundy beginning in the late 1980s. Langevin Côté, *Heritage of Power: The Churchill Falls Development from Concept to Reality* (1972).

236. Judith Spiller and John Roanowicz, *Overview of the Adequacy and Analysis of Scientific Information Concerning the Transboundary Effect of Fundy Tidal Power* (Complex Systems Research Center, University of New Hampshire, 1984).

237. The probable adverse environmental effects of the Fundy project on New England have recently been evaluated in a study by Dr. Peter Larsen of the Bigelow Laboratory of Ocean Studies, commissioned by the Maine State Planning Office. Canadians have complained that this study distorts the findings of existing research and proceeds from the unproven assumption that the tides as far south as Cape Cod would be altered by as much as 15 centimetres at both their high and low points. *The Chronicle-Herald* (August 8, 1984), p. 2. A less alarmist view is also taken by many American scientists. See Spiller and Roanowicz, *supra*, note 236.

238. Of the 4,000 megawatts of electricity generated by the Fundy tidal power facility, it is believed that no more than 10 percent would be used by Nova Scotia.

239. But, of course, the total contribution of Fundy tidal energy to U.S. national energy would always be small. Edward Teller, Hans Mark, and John S. Foster, Jr., *Power and Security: Critical Choices for Americans*, Vol. IV (1976), p. 37.

240. On August 25, 1984, Premier John Buchanan of Nova Scotia and federal Energy

Minister Gerald Regan officiated at the opening of the Annapolis Tidal Power Project, the first major tidal power generating station in North America. This pilot project was designed to test a large-scale Straflo turbine for possible use on the massive Fundy project across Minas Basin. The pilot project was built at a cost of $53 million. If the Straflo turbine proves suitable, it would allegedly effect a 10 percent saving in the capital cost of a large-scale tidal development, which might otherwise cost as much as $10 billion. Meanwhile many studies are being conducted with a view to a possible large-scale project. For recent Canadian studies, see David VanderZwaag, *Canadian Law Relating to Tidal Power Development and Oil Terminal Siting and Oil Tankering* (Dalhousie Ocean Studies Programme, 1984); and Peter N. Duinker and Gordon E. Beanlands, *The Characteristics and Role of Scientific Information in the Canadian Environmental Assessment and Review Process* (Dalhousie Ocean Studies Programme, 1984).

241. For a useful, though somewhat dated, overview of Canadian energy policy options, see Lawson A.W. Hunter, *Energy Policies of the World: Canada* (University of Delaware, Center for the Study of Marine Policy, 1975).

242. "Enhanced recovery" refers to "the increased recovery from a pool achieved by artificial means or by the application of energy extrinsic to the pool, which artificial means or application includes pressuring, cycling, pressure maintenance or injection in a well of a substance or form of energy for the sole purpose of (i) aiding in the lifting of fluids in the well, or (ii) stimulation of the reservoir at or near the well by mechanical, chemical, thermal or explosive means." The *Alberta Oil and Gas Conservation* Act, R.S.A. 1970, c. 267, s. 2(1)(15). These techniques involve additional expenditures by industry which will not normally be incurred without incentives in the form of special fiscal concessions or allowances.

243. Petroleum tar sands consist of native asphalt, solid and semisolid bitumen, and bituminous rock, including oil-impregnated rock or sands, from which oil is recoverable only by special treatment after the deposit is mined or quarried. Tar sands development is expensive, but it exists as a Canadian petroleum development option because of the vast size of the Athabasca tar sands in Alberta, the world's largest reserve of this kind.

244. The problem of regional balance in Canadian petroleum development policy may be further aggravated by the potentiality of offshore petroleum reserves off the Pacific coast, but it may be several years before it becomes possible to estimate the size of these reserves.

245. Sections 92(13) ("property and civil rights"), and 109 ("land, mines, minerals and royalties") of the *Constitution Act, 1867*, give the provinces "ownership" of most natural resources located in the provinces. Because of this allocation, the federal government made few and limited challenges to provincial promotion, production and regulation in the field of mineral resources prior to the 1950s.

246. Federal jurisdiction over energy is derived partly from the general "pre-emptive" authority to act in matters of general national concern under the "peace, order and good government" clause of section 91 of the *Constitution Act, 1867*. In addition, the federal government has considerable fiscal leverage over the exploration and development of energy resources, by reason of its general taxing power. Finally, the federal government can also rely on the "trade and commerce" clause of section 91(2). But the Canadian courts "have interpreted the trade and commerce power rather restrictively, holding that it gives the federal government authority over *international* and *interprovincial* trade, but not over *intraprovincial* trade solely within one province. Control over international and interprovincial trade, of course, is a very substantial power, for it allows the federal government to control the *maximum* amount of production in the country. However, the producing provinces control the *minimum* levels of production and presumably could, through such control, cut off export trade. Related to the trade and commerce power of the federal government is s. 121 of the *Constitution Act, 1867*, which *prohibits restrictions on the free flow of trade between the provinces*. Since the producing provinces are eager to maximize their revenues, the federal trade and commerce power, coupled with s. 91, gives the federal government substantial authority over the natural energy resources of the country" [emphasis added]. Hunter, *supra*, note 241, at p. 10.

247. The "Canada lands" are:
lands that belong to Her Majesty in right of Canada, or in respect of which her Majesty in right of Canada has the right to dispose of or exploit the natural resources and that are situated in
(a) the Yukon Territory, the Northwest Territories or Sable Island, or
(b) those submarine areas, not within a province, adjacent to the coast of Canada and extending throughout the natural prolongation of the land territory of Canada to the outer edge of the continental margin or to a distance of two hundred nautical miles from the baselines from which the breadth of the territorial sea of Canada is measured, whichever is the greater.

This definition is provided in *Canada Oil and Gas Act*, S.C. 1980-81-82, c. 81, s. 2(1) and in *Petroleum Incentives Program Act*, S.C. 1980-81-82, c. 107, s. 2(1).

For a map showing the petroleum-bearing areas of the Canada lands, see Gault, *supra*, note 77, at p. 45.

248. *Canada Oil and Gas Land Regulations*, SOR/61-253.

249. "The government [in 1961] was keen to encourage frontier development, government control of operations (in comparison with later developments). There were also generous tax incentives." Gault, *supra*, note 77, at p. 81. These early regulations were replaced by the 1977 *Canada Oil and Gas Land Regulations*.

250. For a brief historical review of early Canadian exploratory activities in Arctic offshore areas, see D. Pimlot, D. Brown, and K. Sam, *Oil under the Ice* (Canadian Arctic Resources Committee, 1976), at pp. 3-5.

251. Gault, *supra*, note 77, at pp. 11-21.

252. Serious interest in the petroleum prospects of the North Sea region was first aroused by a major gas discovery in the Groningen field off the Dutch coast in 1959. The first major oil discovery was made ten years later on the Ekofisk field off Norway. On these early developments see Louis Turner, "State and Commercial Interests in North Sea Oil and Gas: Conflict and Correspondence," in Martin Saeter and Ian Smart (eds.), *The Political Implications of North Sea Oil and Gas* (1975), at pp. 93-110.

253. There is still a wide variance of published opinion on the expected date of commencement of offshore hydrocarbon production off the east coast of Canada. The National Energy Board and several of their consultants have not yet accepted the evidence of commercial quantities of natural gas off the Nova Scotia coast. The Nova Scotia government, on the other hand, is much more optimistic in predicting the commencement of gas production as early as 1988 or by 1990 at the latest. Commercial quantities of oil have, of course, been discovered in the Hibernia area off the coast of Newfoundland, but jurisdictional and political quarrels have delayed the commencement of production for many years. Most of the legal issues have now been resolved by the Supreme Court of Canada in favour of the federal level of government, but since it seems likely that further political negotiations will take place on the issue of management authority, the industrial decision to begin the long preparatory activities prior to production may be further delayed. Offshore oil production is unlikely to begin before 1990.

254. The offshore jurisdictional position as now determined by the courts may be summarized as follows. The Crown in right of Canada has ownership over the territorial sea, and exercises sovereign rights for the purposes of exploring for and exploiting the natural resources of the continental shelf in the offshore of British Columbia, but the province owns the sea, seabed and subsoil of the marine areas between Vancouver Island and British Columbia. Newfoundland exercises proprietary rights over the sea, seabed and subsoil from the ordinary low-water mark of the provinces seaward to the three nautical mile limit. Further seaward, adjacent to the coast of Newfoundland, the Crown in right of Canada has ownership from the three nautical mile limit to twelve nautical miles, and also exercises sovereign rights for the purposes of exploring and exploiting the natural resources of the continental shelf. The Supreme Court of Canada, in a separate reference, also held that the Crown in right of Canada exercised jurisdiction over the resources of the continental shelf, the question of jurisdiction over the marine areas not being part of the question referred to it. The federal government has given notice of intention to appeal part of the decision of the Newfoundland Court of Appeal's opinion concerning Newfoundland's three nautical mile entitlement, while the province

has filed notice of intention to appeal that part of the same court's decision with respect to rights seaward of the three nautical mile limit, to the Supreme Court of Canada. Neither appeal has yet been heard. All other provinces with a coastline maintain claims to offshore mineral jurisdiction.

255. The new Conservative government of Canada, elected in September 1984, is expected to make certain concessions to Newfoundland, and presumably other coastal provinces, on the general issue of offshore jurisdiction, and a private arrangement was made to this end between Mr. Mulroney and Premier Peckford, while the former was still leader of the opposition in the House of Commons. But at the time of writing (September 1984), most observers are skeptical that the new federal government will simply waive federal jurisdiction over the hydrocarbon resources of the offshore. In February, 1985, the federal and Newfoundland governments entered into an arrangement for offshore oil and gas resource management and revenue sharing (The Atlantic Accord).

256. At the time of writing (September 1984), the extent of future changes to NEP is uncertain. The Conservative party has long argued for radical changes to the Program.

257. Department of Energy, Mines and Resources, Report EP80-4E, at pp. 7-9, 22.

258. *Ibid.*, at pp. 16-22, 48-52.

259. *Ibid.*, at p. 22.

260. The Canadian oil industry accepts, by and large, these three objectives of the National Energy Program. See, for example, the testimony of Mr. A.R. Nielsen, Vice-Chairman, Board of Governors, Canadian Petroleum Association, before the Senate Standing Committee on Energy and Natural Resources in the Second Proceedings of that committee, *supra*, note 76, (April 10 1984), at pp. 22-23.

261. The Program is outlined in the *Petroleum Incentives Program Act*, *supra*, note 247, ss. 3-10.

262. The Canadian Petroleum Association has expressed a preference for tax-based, rather than grant-based, investor incentives. See testimony before Senate Standing Committee on Energy and Natural Resources, *supra*, note 76, (April 10, 1984), at p. 20. In the spring of 1985, it was announced that the Petroleum Incentives Program would be phased out of existence.

263. Like NEP in general, the role of Petro-Canada invites political controversy, and might be affected by the outcome of the 1984 federal election. See *supra*, note 256.

264. These provisions, taken together, are intended to constitute a *system* for the regulation of deep ocean mining, and this system is designed to be operated by a new international organization created for that purpose (the International Seabed Authority). The system can only be binding on those nations which choose to participate in it through membership of the organization, and of course only those states which accept the provisions, by signature and ratification of the Convention or later accession to it, are eligible for membership.

265. Articles 309 and 310 of the UN Convention on the Law of the Sea are framed deliberately to preclude any "reservations" or "exceptions," and also any "declarations" or "statements" which "purport to exclude or to modify the legal effect of the provisions of this Convention in their application to" any signing, ratifying or acceding state. Accordingly, it is impossible legally for any party to reject certain provisions but accept the rest of the Convention.

266. Article 308(1) provides that the Convention shall only enter into force "12 months after the date of deposit of the sixtieth instrument of ratification of accession." The first 59 instruments do not have the effect of making the depositing states parties to the convention until the deposit of the 60th.

267. This scenario of a chaotic world consisting of party and non-party states is quite credible in view of current efforts by the United States and other deep ocean mining states to establish relevant treaty arrangements outside the framework of the UN Convention on the Law of the Sea. If these arrangements took the form of a "mini-treaty system" which was incompatible with the UN Convention, then it would represent an alternative approach to deep ocean mining which would certainly be subversive of the Convention. In early August 1984, eight industrialized countries — Belgium, the United

Kingdom, France, Italy, Japan, the Netherlands, West Germany and the United States — signed an agreement designed to avoid conflicts over deep ocean mine sites and to provide for regular consultations with respect to deep ocean mining. The *Globe and Mail* (August 4, 1984), p. B10. Whether this development represents a move in the direction of legal chaos depends on one's interpretation of whether the agreement is consistent with the purposes, principles and provisions of the Convention. The eight signing countries deny any such inconsistency. Several of these countries, it should be noted, have also signed (but not yet ratified) the Convention.

268. By early September 1984, the Preparatory Commission will have met four times since its inception early in 1983. Efforts are being made to establish rules of procedure and to conduct various kinds of preparatory studies prior to the coming into force of the Convention (and the subsequent coming into existence of the Authority under the Convention).

269. The United States does not participate in the work of the Preparatory Commission, and most of the other deep ocean mining states limit their role, in effect, to that of observer states.

270. Much, of course, depends on the rate of recovery from the world recession. After the sharpest downturn in its history, the Canadian mineral industry as a whole saw a return to moderate growth in 1983, but the non-ferrous metals sector of the industry is still in deep travail.

271. A recent federal government report on Canada's non-ferrous metals industry underlines the two main challenges: the improvement of productivity (and thus international competitiveness) and, at the same time, the reduction of sulphur dioxide emissions. These twin objectives will not be easily met while the industry is still reeling from "major structural changes that have taken place in the world nickel and copper markets, the effects of which have been exacerbated by world recession." *Western Miner* (June 1984), pp. 44, 46.

272. Since the first OPEC "oil shocks" over a decade ago, policy planning in the industrialized countries has been increasingly influenced by the problem of securing access to supplies of "strategic materials." For examples of recent American writings on this problem see U.S. Congress, Office of Technology Assessment, *Strategic and Critical Non-fuel Minerals: Problems and Policy Alternatives* (1983); and *ibid.*, *Cobalt: Policy Options for a Strategic Mineral* (1982). This fear of overdependence on uncontrolled sources of supply is reinforced by the older American fear of international cartels. OPEC was seen in this light, and although its effectiveness as a cartel is now declining, these fears were apparently the emotional force behind President Reagan's rejection of the UN Convention on the Law of the Sea, perceived essentially as the legal framework for the International Seabed Authority.

273. Japan and, to a lesser extent, West Germany are especially vulnerable as highly industrialized countries heavily dependent on imported minerals (and other raw materials). The industrial insecurity of Britain, France and Belgium is not quite so acute in view of continuing advantages through the possession of overseas territories or corporate influence in former colonies.

274. Canada has vast untapped mineral resources in the Arctic Islands, Labrador, and other less remote areas of the North. Moreover, some of the largest mineral producers such as Noranda have diversified across a wide range of resources and invested in mineral development opportunities abroad, in politically stable countries such as Australia.

275. From the viewpoint of commercial attractiveness, the most important deposits of manganese nodules are believed to be those of the Pacific Ocean, but significant deposits have also been found in the Atlantic and Indian Oceans, and in the Eastern Caribbean. Most of these deposits are located beyond national limits, but at least four coastal states have commercial quantities of nodules within their exclusive economic zone: France (around Clipperton Island), Mexico (around Clarion Island), Chile (in the Juan Fernandez Archipelago), and the United States (around the Hawaii Archipelago and off the Florida and South Carolina coasts). Roger H. Charlier, "Water, Energy, and Non-living Ocean Resources," in Elisabeth Mann Borgese and Norton Ginsburg (eds.), *Ocean Yearbook 4* (1983), 75–120 at pp. 111 –13.

276. Solutions containing iron, manganese, copper, zinc, lead, cobalt, gold, silver and other metals are discharged by hydrothermal springs along the fracture zones, faults and spreading ridges of the deep ocean floor. Hydrothermal systems actively discharging such solutions have been investigated recently in the Red Sea, in the Indian Ocean, on the Mid-Atlantic Ridge, along segments of the East Pacific Rise and in other parts of the Pacific. Mary Davies, "Canadian Interest in Seabed Mining" (1983) *Western Miner*, p. 26. The Juan de Fuca Ridge is an area of special interest to Canadian and American scientists because of hydrothermal sulphide occurrences.

277. The same may be said of most other minerals in non-nodule form. Charlier, *supra*, note 275, at pp. 95–119. But at least it is clear that the International Seabed Authority will have no jurisdiction over the water column, and therefore those minerals suspended in water. See Article 135 of the UN Convention on the Law of the Sea (1982).

278. Canadian participation in the Preparatory Commission meetings since early 1983 seems to have been low-key, indeed almost that of an observer. The Canadian government is, of course, in support of the proposed International Seabed Authority, but more for reasons of solidarity with the Third World proponents than for reasons of industrial advantage.

279. Canadian export markets for copper are adversely affected by intensified competition from the United States, Papua New Guinea and Indonesia in the case of concentrates, and from Chile, Zambia, Zaire, South Africa and the United States, in the case of processed commodities, as well as by developments in technology (e.g., fibre optics). Our markets for nickel are even more seriously threatened by competition from Australia, Indonesia, the Philippines, South Africa and the United States. Keith A.J. Hay and Robert J. Davies, "Declining Resources, Declining Markets" (1984), *International Perspectives* (March/April) 13–18 at p. 14.

280. In 1981 the total operating revenues of "Canadian domiciled water carriers" amounted to almost $1.9 billion (excluding firms with annual revenues of less than $100,000). Over two-thirds of operating revenues resulted from the transport of commodities. Canadian Transport Commission, *Transport Review: Trends and Selected Issues 1983* (1984), at p. 33.

281. It is a matter of judgment how these two kinds of considerations should be weighted in an objective evaluation of the Canadian government's approach to the question of coastal state jurisdiction over navigation. On the one hand, there is no doubt that many Canadian government officials and several Canadian organizations have been seriously concerned about threats to Canada's coastal environment, not least from vessel-source pollution. On the other hand, sceptical observers are no doubt right in suspecting some officials and some organizations of using the environmental issue in a cynical fashion to advance the general administrative cause of "creeping jurisdiction" (and thus administrative control) under the concept of functional (as distinguished from territorial) jurisdiction.

282. For an explanation of the advantages associated with flags of registry, both regulated and open, see Bernard J. Abrahamsson, *International Ocean Shipping: Current Concepts and Principles* (1980), at pp. 131–36.

283. For a recent reappraisal, see Trevor D. Heaver, "National-Flag Shipping: An Appraisal of Policy Options from a Canadian Perspective" (1983), 10 *Maritime Policy and Management* 199. Much of the following section is based on this analysis.

284. By the end of the Second World War, for example, Canada had the third largest merchant marine service in the world — and also the third largest shipbuilding industry. Today the statistics are a bit deceptive. There are substantial Canadian-owned deep-sea fleets (e.g., Canadian Pacific, CAST, Saguenay, Federal Navigation, Papachristidis), but they are all held through offshore subsidiaries because of the inimical tax and regulatory environment in Canada.

285. For an historical review, see Ted L. McDorman, "The Development of Shipping Law and Policy in Canada: An Historical Examination of the British Influence" (LL.M. thesis, Dalhousie University, 1982).

286. Ted L. McDorman, "Shipping Policy as a British Export Product: The Canadian Case" (1984), 11 *Maritime Policy and Management* 1.

287. Some Canadian defence specialists make the case for a much greater Canadian military presence in the Arctic, involving a significant *military* fleet with ice-breaking capabilities. For a review of Canadian security requirements in the Arctic, see W. Harriett Critchley, "Canadian Security Policy in the Arctic: The Context for the Future," in *Marine Transportation and High Arctic Development: Policy Framework and Priorities* (Proceedings of symposium organized by Canadian Arctic Resources Committee, 1979), 181–209. But, less controversially, it might be argued that for the opening up of the Northwest Passage, Canada as the managing state should have its own *commercial* fleet equipped appropriately for the Arctic environment.

288. See, for example, Heaver, *supra*, note 283, at p. 201.

289. "Only on the east coast is it plausible to argue that the long-run level of unemployment and the maritime tradition are such that increased Canadian deep-sea shipping could contribute to reducing unemployment." *Ibid.*, at p. 202.

290. It is conceded that psychic or symbolic benefits may be important within a general nation-building strategy, but it is very difficult to subject this kind of "development policy" to rational analysis of the cost-benefit variety. On the other hand, some economists are prepared to concede that a high cost service, such as a national merchant marine in Canada would be, may be justifiable in terms of a "collective utility" quite apart from the question of "private utility" for the consumers of the service. P.O. Goss, "Economics and the International Regime for Shipping" (1984), 11 *Maritime Policy and Management* 135.

291. Gold, *supra*, note 161, at pp. 277–83, 346–56.

292. *Ibid.*, at pp. 233–375.

293. This is one of the principal arguments for a selective economic development policy in many developing countries. It accepts that true economic viability (for an industry) is a matter of *competitiveness* in the international market, and therefore justifies short-term state support (through some form of direct or indirect subsidization) by reference to the need to cultivate long-term competitive capabilities in selected sectors of the national economy. The key to solution is seen to exist in the ability and opportunity to take advantage of labour (and other) cost advantages as they present themselves. High labour costs were one of the main reasons for the liquidation of the Canadian merchant fleet after the Second World War, and opponents still point to this problem as one of the drawbacks to a rejuvenated Canadian deep-sea fleet. But this argument is much less compelling than it used to be in view of the current trend to a more capital intensive shipping industry. Due to major technological innovations such as containerization, the proportion of crew costs to overall operating costs in the Canadian shipping industry has recently declined to less than 15 percent. Crew costs in Canada are now comparable to those in Japan, Australia, Northern Europe and the United States, and most of these maritime states have not refrained from a policy of subsidizing their deep-sea fleets on this economic ground.

294. The future demand for foreign shipping services will depend, among other things, on how far the West European (and East Asian) states wish to go in support of their own ailing shipping industries. This debate is already underway, but the outcome is not yet clear. See, for example, Goss, *supra*, note 290.

295. Convention on a Code of Conduct for Liner Conferences, 13 *International Legal Materials* 912 (1974). See Gold, *supra*, note 161, at pp. 349–51.

296. For a recent evaluation, see M.J. Shah, "The UN Liner Code Revisited," in Johnston and Letalik, *supra*, note 136, 152–72.

297. Heaver, *supra*, note 283, at pp. 202–13. But under the Liner Code Canada is permitted to auction off its 40 percent share to the lowest bidders, which would then be designated as Canadian carriers even if they do not fly the Canadian flag. This is a cheaper solution than developing new national shipping capability and gives incentive to cross-traders to keep their prices down. Essentially, what the code does is to entrench "conference" monopolies in which the Third World countries would like to participate.

298. See subsection *Transit Management*.

299. Heaver, *supra*, note 283, at p. 203. The case for developing Canadian Arctic shipping capability can be limited to the "infant industry" argument, which seems particularly

strong in an area such as this, where Canada has an opportunity to begin on the ground floor. With some claim to leadership in satellite technology and electronic equipment, Canada could be in an advantageous position at least in the design, if not the construction, of specialized Arctic vessels, such as ice-breaking LNG and crude carriers. To a lesser extent, the same argument might be made for the design and also the construction of specialized offshore rigs and supply vessels in Canada — that is, for a new generation of such vessels.

300. For an analysis of these interest groups, see Trevor D. Heaver, *A Canadian Merchant Marine: How, Why and When?* (Canadian Transport Commission, Research Seminar Series, Volume 6, 1981).

301. This argument is advanced by the shipbuilding as well as the maritime unions.

302. In addition to calling for direct grants, advocates have urged changes in the Canadian tax system. At present Canada, unlike other maritime nations, taxes profits made in international shipping. Canadian fiscal policies discourage Canadian deep-sea shipowners from flagging their ships in Canada. In a recent brief by the Canadian Shipbuilding and Ship Repairing Association to the Task Force on Deep Sea Shipping established by then Transport Minister Lloyd Axworthy, a number of changes have been proposed: profits made internationally should no longer be taxed; shipowners should qualify for special monetary concessions to build new Canadian-flagged tonnage; a more generous capital cost allowance should be introduced (such as that for the Canadian film industry); and the government should revoke the 1976 decision to eliminate the third party lease financing arrangement.

303. The argument against this position is that short-term cost increases need not be substantial and certainly need not have more than a temporary effect in a period of expanding demand for shipping services. But what has been derided in the world industry as the "Canadian" approach to shipping policy — "letting cheap foreigners carry the lot" — is conceded to be a "superficially attractive argument." *Fairplay* (June 28, 1984), p. 5.

304. Heaver, *supra*, note 300, at p. 27.

305. In its recent brief (*supra*, note 302), the Canadian Shipbuilding and Ship Repairing Association emphasizes again that it does *not* propose the exclusive use of a Canadian deep-sea fleet for the transportation of Canadian goods, nor does it request that a deep-sea fleet be built in Canada: the exporter should remain free to choose what flag to use and the shipowner should continue to have free access to the open market for vessel requirements. Instead it points out that at present Canada spends $5 billion annually in transporting Canadian goods on foreign vessels, creating a $5 billion deficit in Canada's balance of payments for shipment of our overseas trade; and that through policy changes designed to "create a positive environment for the development of a Canadian deep-sea fleet" a "significant portion" of that large sum could be "saved."

306. UN Convention on the Law of the Sea, Art. 211.

307. Under the Convention, a transit management system for the territorial sea would be based on the "innocent passage" provisions in Articles 17–26, and for the exclusive economic zone on the jurisdictional provisions in Articles 211, 217–221, 223–233, and in the case of Arctic coastal states, Article 234. A transit management system for internal waters, on the other hand, would rest primarily on customary international law except for "archipelagic states," to which Articles 46–54 are applicable. A transit management system could also be designed specifically for "straits used for international navigation" on the basis of the "transit passage" and "innocent passage" provisions in Articles 34–45.

308. Gold and Johnston, *supra*, note 168.

309. For non-Canadian comments, see Clingan, *supra*, note 4, at pp. 198–236.

310. Transit through the Northwest Passage would often halve the mileage involved in inter-oceanic voyages. For example, a voyage from Yokohama to Montreal would be reduced from 16,000 to 7,500 nautical miles, and a London-Yokohama crossing would be reduced from 14,650 to less than 8,000. G.R. Harrison, "The Arctic Sea: A Sea of Opportunities," in *New Opportunities in Canadian Maritime Ventures* (Proceedings of Fourth National Marine conference held at Vancouver, November 1981), at p. 50.

311. See, *supra*, note 145.
312. Hal Mills, "The Environment and Renewable Resources," in Lamson and VanderZwaag, *supra*, note 140.
313. Carlisle Mitchell, "The Development of Northern Ocean Industries," in Lamson and VanderZwaag, *supra*, note 140.
314. William J.H. Stuart and Cynthia Lamson, "Canadian Marine Transportation: Present Status and Future Requirements," in Lamson and VanderZwaag, *supra*, note 140.
315. David VanderZwaag and Cynthia Lamson, "Northern Decision- Making: A Drifting Net in a Restless Sea," in Lamson and VanderZwaag, *supra*, note 140.
316. Douglas M. Johnston, "The Designing of a Transit Management System," in Lamson and VanderZwaag, *supra*, note 140.
317. In the process of designing and planning such a system, the Canadian government will find it necessary, and not merely desirable, to consult closely with potential user states. It will be especially important to consult with the United States, which is expected to be one of the major users of the Northwest Passage and which will share with Canada management responsibilities in the Beaufort Sea, the "western approaches" to the Passage. Moreover, a strong case can be made that in such circumstances there exists a *duty* to consult under international environmental law, and specifically under Article 123 of the UN Convention of the Law of the Sea a duty to cooperate with the other littoral states of the Arctic Ocean, viewed as a "semi-enclosed sea."
318. M.W. Janis, "Development of European Regional Law of the Sea" (1973), 1 *Ocean Development and International Law* 275.
319. See, for example, Ian Gault, "The Frigg Gas Field: Exploitation of an International Cross-Boundary Petroleum Field" (1979), 3 *Marine Policy* 302.
320. A.D. Couper and H.D. Smith, "The North Sea: Bases for Management and Planning in a Multi-State Sea Region," in Johnston and Letalik, *supra*, note 136, 63–88.
321. The main impetus was provided by the U.S. Congress in enacting the 1972 *Coastal Zone Management Act*, but many other enactments, old and new, federal and state, contribute to the overall legislative framework for coastal zone management in the United States. See, generally, *supra*, note 193.
322. The idea of a national (federal-state) system of coastal zone management was advocated in the late 1960s by the Stratton Commission. See the Commission on Marine Science, Engineering and Resources, *Our Nation and the Sea: A Plan for National Action* (1969), at pp. 49–81. See also Bostwick H. Ketchum (ed.), *The Water's Edge: Critical Problems of the Coastal Zone* (1972); and Brooks, *supra*, note 191, at pp. 147–72.
323. On the problem of defining the coastal zone, see Douglas M. Johnston and A. Paul Pross, "The Coastal Zone Management Challenge," in Johnston, Pross, and McDougall, *supra*, note 195, at pp. 2–6.
324. See, for example, Harvey A. Shapiro, "Coastal Area Management in Japan: An Overview" (1984), 12 *Coastal Zone Management Journal* 19; Peter Cullen, "Coastal Zone Management in Australia" (1982), 10 *ibid.* 183; and *Comparative Marine Policy: Perspectives from Europe, Scandinavia, Canada and the United States* (University of Rhode Island, Center for Ocean Management Studies, 1981).
325. UNEP was established in 1973 on the recommendation of the Stockholm Conference on the Human Environment. Prior to 1973, there was no intergovernmental agency mandated to coordinate the environmental activities of UN sorties and other organizations, but a network of official and non-official institutions had emerged in the conservation sector. Robert Boardman, *International Organizations and the Conservation of Nature* (1981).
326. Johnston, *supra*, note 196.
327. *Ibid.*
328. Johnston, Pross, and McDougall, *supra*, note 195, at pp. 149–63.
329. In 1979 a "shore zone management" symposium was held under the auspices of the Canadian Council of Resource and Environment Ministers (CCREM), a federal-provincial consultative body, whose objective is to provide a forum for discussion of common problems. See CCREM, *Proceedings of Shore Management Symposium* (1979).

330. For a summary of the "principles for shore management" accepted at the CCREM symposium, see Peter Harrison and J.G. Michael Parkes, "Coastal Zone Management in Canada" (1983), 11 *Coastal Zone Management Journal* 1 at pp. 3–5. See also Anthony H.J. Dorcey, "Coastal Management as a Bargaining Process," *ibid.* 13; M. Sproule-Jones, "A Fresh Look at an Old Problem: Co-ordinating Canada's Shore Management Agencies" (1979), 32 *Western Political Quarterly* 278; and Douglas M. Johnston, "Coastal Zone Management in Canada: Purposes and Prospects" (1977), 20 *Canadian Public Administration* 140.

331. A fair amount of thought has been given in recent years to the need for some kind of binational "consultative management" in the FMG region, regardless of the outcome of the Gulf of Maine boundary adjudication by the International Court of Justice. A great deal is known about this region and both littoral states operate at a high level of sophistication in ocean development and management. But political attitudes and economic interests may postpone any serious effort at Canadian–U.S. cooperation in this context, as in other environment contexts. See John E. Carroll, *Environmental Diplomacy: An Examination and a Prospective of Canadian–U.S. Transboundary Environmental Relations (1983).*

332. Several years ago France made a claim to coastal state jurisdiction, in the form of an exclusive economic zone, over an extensive, pie-shaped area of water around its territory in St. Pierre and Miquelon. Negotiations between Canada and France over this jurisdictional issue have proved difficult, and at the time of writing (September 1984) the two sides are still far from reaching a settlement.

333. Canada and Denmark have concluded a continental shelf boundary delimitation agreement for the Davis Strait, and a northern extension to this boundary may be negotiated. But questions about ocean management principles and procedures in the region have been given new dimensions by the self-rule movement in Greenland, which has resulted in a policy of disengagement from the EEC as well as from Denmark. Special issues have been raised by the native people of Greenland at non-governmental forums attended by Canadian Inuit.

334. All three regions are the site of ocean boundary delimitation disputes between Canada and the United States. The two federal governments have postponed further discussion of these disputes until after the ICJ award on the Gulf of Maine is announced. It is generally assumed that these delimitation issues have to be dealt with, if not finally resolved, before serious official thinking can be devoted to questions of consultative management in these regions.

335. It is somewhat surprising that Action Plan approaches which have been so conspicuous in recent UN treatment of international resource and environmental problems have not also been adopted in "advanced" western countries like Canada. Johnston, *supra*, note 196. The Regional Seas Programme of UNEP has produced ten Regional Action Plans within a type of framework which might be applicable to the problems of ocean management in these national (and binational) ocean areas around the Canadian coastline. Some officials of Environment Canada have expressed an interest in an Ocean Management Action Plan for the Northwest Atlantic, or a less broadly defined area within that region. On the problems of designing a regional ocean management system for Atlantic Canada, see Dalhousie Ocean Studies Programme, *Institutional Constraints and Opportunities for the Management of Marine Environmental Quality in Atlantic Canada* (1984).

336. Under Article 77(1) of the UN Convention on the Law of the Sea, the coastal state "exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources." The "continental shelf" is defined in terms of the "continental margin" in Article 76.

337. These early operations, occurring in the period from the late 1930s to the late 1960s, might be regarded as belonging to the "first generation" of offshore development.

338. Because of the more systematic "planned" approach to offshore "management" adopted in the North Sea after the late 1960s, it seems appropriate to characterize these operations as belonging to the "second generation" of offshore development.

339. PACOD was approved at a conference held at Digby, Nova Scotia, in September 1983 after a series of visits and exchanges of correspondence, beginning in August 1982 with a proposal discussed by Aberdeen and Dalhousie Universities.
340. Early in 1984 a Canadian steering committee was established to facilitate the process of bringing CANPAC into operational existence. The membership consists of representatives of the federal government, the provinces of Nova Scotia and Newfoundland, the petroleum industry, and the Atlantic universities.
341. It seems likely that NORPAC will be designed to operate as an extension of one of the Norwegian government agencies responsible for offshore planning or management.
342. SCOPAC will operate through a corporate organization which has been located at Aberdeen University to facilitate research and other developments with grants from British government and industry sources.
343. The semi-submersible drilling unit *Ocean Ranger*, registered in the United States and owned by an American company, capsized during a heavy storm on the Grand Banks of Newfoundland during the night of February 15, 1982. All eighty-four on board, mostly Canadians, were lost.
344. The Royal Commission on the *Ocean Ranger* marine disaster was established by Order-in-Council P.C. 1980–819, and the Commission of the Lieutenant Governor of the Province of Newfoundland and Labrador in Council dated March 16, 1982. It has the power to compel the attendance of witnesses and the production of documents under the *Inquiry Act*, R.S.C. 1970, c. I-137, part 1, and the *Public Enquiries Act*, R.S.N. 1970, c. 314.
345. Because of its significance for other offshore regions, the inquiry has attracted international attention and many foreign experts have been called in as witnesses and consultants. The first part of the Royal Commission's report, explaining the causes of the disaster, was published in August 1984. Royal Commission on the *Ocean Ranger* Marine Disaster, *Report One: The Loss of the Semi-submersible Drill Rig Ocean Ranger and Its Crew* (1984).
346. It was expected that the second report would be published in mid-1985.
347. See subsection *Fishing*.
348. In looking at the coastal communities of Atlantic Canada, many economists as well as sociologists emphasize the relationship between economic development and social structure. One scholar has underlined the dualistic nature of Newfoundland's economy, partly modern and partly traditional, and warned against irrelevant analogies that are sometimes drawn between small coastal communities and heavily industrialized inland communities. Ottar Brox, *Newfoundland Fishermen in the Age of Industry: A Sociology of Economic Dualism* (Memorial University, Newfoundland Social and Economic Studies No. 9, 1972).
349. For a sympathetic study of the impact of Northern development on the Inuit people, see MacKenzie Valley Pipeline Inquiry, *Northern Frontier, Northern Homeland* (2 vols., 1977) commonly called the "Berger Report."
350. For a general study of the need for Northern planning, see John K. Naysmith, "Land Use and Public Policy in Northern Canada" (Ph.D. diss., University of British Columbia, 1975).
351. On the difficult problems confronting Canada's native communities, see James S. Frideres, *Native People of Canada: Contemporary Conflicts* (2d ed., 1983).
352. Indian-Eskimo Association of Canada, *Native Rights in Canada* (Report of Legal Committee, 1970).
353. The problem of "community development and control" among Canada's native peoples tends to be viewed as a special sub-set of native policy, focussing on the need to promote small business or local industry projects planned and controlled at the community level. Frideres, *supra*, note 351, at pp. 300–315.
354. Single-sector economies are those with fishing and processing plant employment occupying 30 percent or more of the labour force. Kirby Report, *supra*, note 206, p. 23.
355. *Ibid.*

356. Copes, *supra*, note 223, at pp. 68–70.

357. It has been argued in the past that Newfoundland should embrace a policy of outport resettlement which would include extraprovincial as well as intraprovincial migration, so as to eliminate the conditions of labour surplus throughout the Newfoundland economy. *Ibid.*, at p. 171. But the recent recession has shown that in difficult economic conditions the migrants to Ontario, Alberta and the other wealthy regions of the country tend to be the first victims, and find they are forced to return to their native communities in the Atlantic region.

358. Copes, *supra*, note 223.

359. See *supra*, note 225.

360. In parts of Nova Scotia, for example, there is a good prospect for the further development of fruit farming (e.g., strawberries, raspberries, blueberries) and for selective development of grape-growing and wine-making.

361. For example, the manufacture and maintenance of diving equipment and submersible craft could be developed for a variety of industrial and recreational purposes.

362. North Sea experience provides a fairly clear picture of the range of local supplies and services that can be provided by the coastal communities in the wake of an offshore boom.

363. The Tall Ships festivals in Halifax and Sydney in June 1984 proved that waterfront development is an important factor in the growth of recreation and tourism in the coastal communities of Atlantic Canada.

364. The Coady Institute at St. Francis Xavier University has shown that Canadian skills developed in small rural and coastal communities of Atlantic Canada may be converted to the benefit of similar communities in developing regions around the world.

365. Lamson and Hanson, *supra*, note 36.

366. The "tragedy of the commons" refers to the almost inevitable tendency for a commonly owned resource, such as an ocean fishery, to be subject to overexploitation, unless brought under a regulatory system of some kind. Many sociologists resent this line of reasoning because it seems to repudiate the possibility of workable communal arrangements for resource sharing and to justify government intervention in the community. See, for example, Bonnie J. McCay, "Everyone's Concern, No One's Responsibility: A Review of Discourse on the Commons" (paper presented to Society for Applied Anthropology, Toronto, March 1984). For the original thesis of the tragedy of the commons, see Garrett Hardin, "The Tragedy of the Commons" (1968), 162 *Science* 1243.

367. Anthony Davis, "Property Rights and Access Management in the Small Boat Fishery: A Case Study from South West Nova Scotia," in Lamson and Hanson, *supra*, note 36, at pp. 133–64.

368. In 1983 resentment by local fishermen at Yarmouth against federal government fishery policies and practices, or perhaps just "governmental presence," exploded in acts of violence directed against government vessels and officials. These actions resulted in the prosecution and conviction of several fishermen. Anthony Davis and Leonard Kasdan, "Bankrupt Government Policies and Belligerent Fishermen Responses: Dependency and Conflict in the Southwest Nova Scotia Small Boat Fisheries" (1984), 19 *Journal of Canadian Studies* 108 at pp. 114–19.

369. One rather extreme view is that the local community must be put fully in control of designated fisheries upon which they are dependent. Others are willing to settle for a compromise arrangement, whereby the community would be better represented in crucial decision making. Apparently the Conservative government elected in September 1984 is in favour of instituting a system of representational regional councils, whereby fishermen, processors and provincial governments would participate in fishery decision making.

370. The federal government provides support for Canadian technology development across a wide spectrum of programs: tax incentives, financial assistance for research and development, scientific and technical information, training assistance, procurement, institutes, departmental programs, legal protection for intellectual property, fostering

of public awareness, and university-industry cooperative programs. Ministry of State for Science and Technology, *The Government of Canada's Support for Technology Development: A Summary of Federal Programs and Incentives* (1984).

371. Although difficult to quantify, this dependency is conceded within the industry and within the Department of Regional Industrial Expansion (DRIE). It is also visible at Canadian fishery trade fairs, where Canadian manufacturers are almost always outnumbered by foreign competitors.

372. In Nova Scotia, for example, various federal grants and services to ocean industry are available through DRIE and the Ocean Industry Development Office in Halifax, which work closely with the government of Nova Scotia.

373. For a recent listing of Canadian fish processors and brokers, fish processing equipment and suppliers, and fishery-related manufacturers and distributors, see J.C. Burke and J.E. Forrest, *The Canadian Fisheries and Ocean Industries Directory* (1981).

374. Some have argued that the most "appropriate" fishing technology for the small coastal communities of Atlantic Canada is technology which is "intermediate" between the "high-tech" of a modern industrial approach and the simple techniques of the traditional approach. Bonnie McCay, "'Appropriate Technology' and Coastal Fishermen of Newfoundland" (Ph.D. diss., Columbia University, 1976).

375. Robert English, "Shipbuilders are Struggling to Keep Heads above Water," *Financial Post* (July 14, 1984), p. 11.

376. But in South Korea too, the shipbuilding industry has been severely affected by the world recession. P. Sillitoe, "Down But Not Out — and Going It Alone" (1983), 120 *Far Eastern Economic Review* (June 2, 1983).

377. See "Marine Technology Development" in the subsection on strategic planning issues in the section "National Ocean Policy in the wake of UNCLOS III."

378. On problems of systems design associated with transit management in the Arctic, see P.J. Amaria, A.A. Bruneau, and P.A. Lapp (eds.), *Arctic Systems* (Proceedings of a conference held at St. John's, Newfoundland, August 1975 under sponsorship of NATO Special Programs Panel on Systems Science) (1977). See also *Offshore and Arctic Development: Implications for Canadian Shipbuilding and Allied Industries* (papers presented to Technical Section of Canadian Shipbuilding and Ship Repairing Association in February 1981).

379. Assuming that future offshore operations in Atlantic Canada follow the pattern that developed in the North Sea, it has been projected that an annual domestic market worth $2 billion might materialize before the end of the 1980s.

380. The worldwide dominance of U.S. offshore technology is nowhere more evident than at the largest industrial convention, which is held every year at Houston under the auspices of the Marine Technology Society.

381. On the role of government intervention in the development of offshore technology, see Michael Jenkins, *British Industry and the North Sea: State Intervention in a Developing Industrial Sector* (1981).

382. Despite the "Canadianization" objective of the National Energy Program, it is difficult to show that PIP and other NEP-inspired incentive programs have actually resulted in substantial benefits for Canadian manufacturers of (and dealers in) offshore equipment.

383. It is estimated that at the peak of East coast offshore activities some 1300 divers will be employed. To that number must be added thousands of operators for the subsea vehicles which will be required and of maintenance technicians for the underwater facilities which will be installed. Further specialists will have to be trained to operate and maintain underwater technology adapted for the Arctic and Sub-Arctic environment. Recently the Canada Oil and Gas Lands Administration (COGLA) has drafted new diving regulations, which are among the most stringent in the world. Accordingly, the concept of a Canadian Underwater Centre has been developed by COGLA and the Ocean Industry Development Office. It is hoped that such a centre will not only meet Canadian needs, for which it would be designed, but also be available to scientists, engineers, entrepreneurs and trainees from Third World countries.

384. See subsection *Fishing* and *supra*, note 225. In the context of aquacultural development, Canada and most other "developed" countries have a great deal to learn from the experience of "developing" countries. See Elisabeth Mann Borgese, *Seafarm: the Story of Aquaculture* (1980).

385. William S. Gauthier (ed.), *Ocean Engineering Education* (proceedings of a workshop held at the University of Delaware in October 1968).

386. R.W. Stewart and L.M. Dickie, *Ad Mare: Canada Looks to the Sea: A Study on Marine Science and Technology* (Science Council of Canada, Special Study No. 16, 1971), Appendix A, p. 168.

387. *Ibid.*

388. *Basic or fundamental research* has been defined as "a generalized search for new knowledge without specific application in mind. . ."; *applied research* as "the search for new knowledge to provide a solution to a specific problem which is defined at the outset of the research program"; *development* as "a final stage of applied research which is most clearly seen in the evolution of new goods or services"; and *innovation* as "the practical implementation of the results of research and development to provide new or improved goods or services." Science Council of Canada, *Towards a National Science Policy for Canada* (Report No. 4, 1968), quoted in Stewart and Dickie, *supra*, note 386, at p. 169.

389. Very recently an A-Base Review team has attempted to compare the size and effectiveness of the Ocean Sciences Program (of the Ocean Science and Surveys Service of the Department of Fisheries and Oceans) with similar programs in other countries. It finds that the expenditure associated with this ocean science program ($40 million) puts it in fifth place among the OECD countries, behind the United States, Japan, the United Kingdom and Australia. When these expenditures are correlated with gross national product, Canada is tied with the United Kingdom in fourth place behind Australia, Japan and the United States. When they are correlated with the area of exclusive economic zone, Canada is extremely far behind West Germany, the United Kingdom, the United States and Japan. Department of Fisheries and Oceans, *A-Base Review: A Comparison Between Ocean Sciences in Canada and in Other Nations* (1984), at p. 6. With five ocean research vessels over 1,000 tons (plus many smaller vessels), the Canadian oceanographic effort is far behind Japan and the United States in vessel-based capability, significantly behind the United Kingdom, and probably also behind Australia. *Ibid.*, p. 8. It should be noted that *total* ocean science expenditures (including fisheries research and non-DFO research) are very much larger.

390. For example, at the Bedford Institute of Oceanography which is of course chiefly devoted to basic and applied research, dozens of projects are now under way in various "development" categories: sensor development, survey and positioning development, and oceanographic instrument deployment under the Atlantic Oceanographic Laboratory; technology development under the Atlantic Geoscience Centre; and hydrographic development and research and development under the Canadian Hydrographic Service (Atlantic Region). Bedford Institute of Oceanography, *BIO Review '83* (1983), at pp. 85–89. Moreover, the National Research Council provides a link between the scientific interests of government, industry and the universities. Its Industrial Development Office is designed to facilitate "development" and "innovation" in conjunction with industry and with provincial research councils. Significantly, the NRC reports to Parliament through the Minister of Regional Industrial Expansion (formerly Industry, Trade and Commerce). For recent activities, see National Research Council, *Staff Research Activities Directory* (1981).

391. In actual dollars, expenditures on the natural sciences have grown in all federal governments over the last ten years, but DFO, which houses both "fisheries management and research" and "ocean science and surveys," has lagged behind all other science-based departments. For comparisons with Department of Agriculture, Environment Canada, and Department of Energy, Mines and Resources, see *A-Base Review, Ocean Science Program: Ocean Science and Surveys* (1984), at pp. E1–E2.

392. Apart from the difficulty of obtaining reliable data for this kind of measurement, there is also a problem of definition. Whereas the entire BIO complex is governmental, other institutions such as Woods Hole consist both of public and private undertakings.

393. *BIO Review '83*, *supra*, note 390.

394. The research program assigned to IOS is apparently funded by a disproportionately large amount of "soft" grants from commissioning agencies such as Energy, Mines and Resources. The size of the scientific staff at IOS with A-Base funding has been criticized as grossly inadequate. *A Comparison between Ocean Sciences in Canada and in Other Nations*, *supra*, note 389, p. 8.

395. In Nova Scotia, for example, the emphasis is placed on "technology transfer," that is, "the process of transferring scientific and technical knowledge from its source to a location where it can be applied to solve a problem, create a new product or process, or otherwise used to achieve some desired result." Nova Scotia Research Foundation Corporation, *Annual Report 1981–82*, at p. 4. In early 1976 the Corporation initiated a program emphasizing the development of ocean hardware as part of a provincial government effort to develop the ocean industry in Nova Scotia. In addition to product development, a marketing program has been designed to identify user needs and to assist in the initial penetration of markets for newly developed products.

396. Smaller programs also exist at McGill, Victoria, Simon Fraser and Guelph Universities.

397. In 1981 NSERC awarded 56 "strategic grants" for research in the "oceans" sector. Worth $3,267,000, these ocean grants are much less than half of what was awarded in the "energy" sector, but comparable with the awards in "communications," "food/agriculture," and "environment/toxicology." Natural Sciences and Engineering Research Council of Canada, *Report of the President, 1982–83*, at p. 6.

398. The pull of money is assisted by the availability of ship time, since it is impossible for a university researcher to engage in vessel-based oceanographic investigation in Canada except on a Canadian government research vessel.

399. The test of "excellence," particularly by reference to "centres of excellence," is commonly applied to grant proposals in many areas of publicly funded research and scholarship.

400. Stewart and Dickie, *supra*, note 386.

401. On the range of activities influencing the planning of the federal government's ocean science "investments," see *Ocean Science Program*, *supra*, note 391, Appendix F, at pp. F-1–F-6.

402. Approximately 1875 individuals are listed with their affiliations in Canadian Committee on Oceanography, *Directory of Marine Scientists in Canada, 1983* (1983).

403. For a variety of reasons, the U.S. federal government has much less control over these matters.

404. It has recently been suggested that the ocean science community has three distinct orientations: (i) basic (or discipline-oriented) research, both "free" and "targeted"; (ii) applied (or mission-oriented) research; and (iii) research and development. *Ocean Science Program*, *supra*, note 391, Appendix G, pp. G-1–G-2.

405. *Ibid.*, Appendix F. The present emphasis on policy-directed "applied" science was illustrated when then energy minister Gerald Regan announced the inauguration of a multimillion dollar program to gather frontier geoscience information with a view to stimulating offshore exploration and development within the framework of Canada's policy of long-term energy self-sufficiency. *The Chronicle-Herald* (August 8, 1984), p. 1.

406. *Ocean Science Program*, *supra*, note 391, at p. 4.

407. Johnston, *supra*, note 138.

408. For a general discussion of the role of native communities in research, see Social Sciences and Humanities Research Council of Canada, *Community-Based Research* (Report of S.S.H.R.C.C. Task Force on Native Issues, 1983).

409. Ocean "research and development" has recently been distinguished from "basic" and "applied" research on these grounds:
    (a) it draws systematically on known facts from previous research or experience with existing technology;
    (b) it is directed towards the demonstration of feasibility of new products, processes, procedures or systems or feasibility of substantial improvements to existing products, processes, procedures or systems;

(c) it includes
- design or production or prototypes or other models
- pilot plant facilities
- optimization and scale-up of established or new processes or products
- translation of knowledge gained from research into operational regulations or standards; and

(d) it is normally managed on a project basis. *Ocean Science Program*, *supra*, note 391, Appendix G, p. G-2.

410. Especially in Arctic waters a great deal of original hydrographic surveying is required. The case for an expanded program in hydrography is supported most strongly by "applied" researchers concerned with problems related to "transit management," but hydrographic investigation is also of benefit to many scientists in the "basic" and "research and development" sectors. Under the conditions of the new law of the sea, with Canada's extensive limits of national jurisdiction redefined by the world community, now seems to be an appropriate time for a massive national effort under an expanded Canadian Hydrographic Service — an agency which has earned international recognition for its high standards. A-Base Review, *Hydrography* (Report No. 12, 1984). See also T.C. Pullen, *The Level of Client Satisfaction and Effort with the Canadian Hydrographic Service Program* (study commissioned by the A-Base Review, 1984); and Department of Fisheries and Oceans, *National Plan for Oceanography* (1982).

411. See the subsections *Government Reorganization* and *International Development and the New Law of the Sea.*

412. *Fisheries Act*, R.S.C. 1970, c. F-14.

413. The first federal *Fisheries Act* was enacted in 1868. It was based on the comprehensive statute passed by the legislature of United Canada (modern-day Ontario and Quebec) in 1857 and extended to cover the new provinces of Nova Scotia and New Brunswick. See Scott and Neher, *supra*, note 208, at pp. 7–11.

414. Even experienced lawyers have difficulty in keeping track of these amendments and regulations. The latter are particularly voluminous because of the extremely wide discretionary powers vested in the Minister and his officials.

415. The Commission on Pacific Fisheries Policy concluded that "a major overhaul of the Fisheries Act is long overdue; new policies should not be implemented through yet another patchwork of amendments. . . .

1. The Fisheries Act should be repealed and replaced by a modern lucid statute containing the main principles of fisheries policy for Canada. The new Act should:
   (i) Include a clear statement of national fisheries policy objectives;
   (ii) Set out the Department's management responsibilities and planning procedures. The scope of these should be broad, leaving no doubt about the Department's mandate to effectively manage fisheries and fleet development;
   (iii) Commit the Department to integrated resource management and planning, and set out arrangements for dealing with projects and developments that affect fish habitat;
   (iv) Devote a separate part to Pacific fisheries, consistent with the national policy framework;
   (v) Set out the legal authority and procedures to be followed in allocating the sport, commercial and Indian fishing rights recommended in Parts III and IV of this report;
   (vi) Provide for the appointment of the Pacific Fisheries Council recommended in Chapter 17, and create the Pacific Fisheries Licensing Board proposed in Chapter 8;
   (vii) Formally delegate decision-making authority to the licensing board and where appropriate, to regional officials of the Department;
   (viii) Include a clear and consistent structure of penalties, recommended in Chapter 16."

Pearse Report, *supra*, note 205, at pp. 255–56.

416. *Canada Shipping Act*, R.S.C. 1970, c. S. 9.

417. For a detailed study, see McDorman, *supra*, note 285.

418. *Arctic Waters Pollution Prevention Act*, R.S.C. 1970, (1st Supp.), c. 2.

419. This statute does not constitute a territorial claim to Canadian Arctic waters, but it does purport to create "shipping safety control zones." The preamble is somewhat more broadly (and ambiguously) worded, referring to Parliament's "obligation to see that the natural resources of the Canadian Arctic are developed and exploited and the Arctic waters adjacent to the mainland and islands of the Canadian Arctic are navigated only in a manner that takes cognizance of Canada's responsibility for the welfare of the Eskimo and other inhabitants of the Canadian Arctic and the preservation of the peculiar ecological balance that now exists in the water, ice and land areas of the Canadian Arctic."

420. *Canada Oil and Gas Act*, S.C. 1980-81-82, c. 81.

421. This requirement was emphasized by many speakers — industrial, governmental, and academic — at the international workshop held at St. John's, Newfoundland, August 1984 under the auspices of the Royal Commission on the *Ocean Ranger* Marine Disaster.

422. That is, there is no comprehensive or systematic legislative treatment of these problems. Most specialists in this field see no evidence in Canada of a concerted, integrative approach to policy thinking about coastal zone management problems and doubt that it is likely to emerge until some kind of overall framework takes mandatory effect.

423. Bruce Wildsmith, *Aquaculture: The Legal Framework* (1982).

424. Lawrence L. Herman, "Proof of Offshore Territorial Claims in Canada" (1982), 7 *Dalhousie Law Journal* 3; and Lawrence L. Herman, "The Need for a Canadian Submerged Lands Act: Some Further Thoughts on Canada's Offshore Mineral Rights Problem" (1980), 58 *Canadian Bar Review* 518.

425. A coastal state's entitlement to a 200-mile exclusive economic zone does not depend upon any legislation to this effect. It exists in international law, in the terms agreed upon at UNCLOS III and described in the UN Convention on the Law of the Sea (1982). But various legal and administrative matters could be dealt with more easily if EEZ legislation, as such, were enacted in a form familiar to Canadian lawyers in general and Canadian judges in particular.

426. On "minimal" and "maximal" state responses to the obligations contained in the UN Convention on the Law of the Sea, see Ted L. McDorman et al., *The Marine Environment and the Caracas Convention on the Law of the Sea* (Dalhousie Ocean Studies Programme, 1981), at pp. 89-91.

427. For example, the 1978 Convention on Carriage of Goods by Sea, the 1976 Convention on Limitation of Liability for Maritime Claims, the 1969 Convention on Civil Liability for Oil Pollution Damage, the 1971 Convention on the Establishment of an International Fund for Oil Pollution Damage, the 1973 Convention for the Prevention of Pollution from Ships (and its 1978 Protocol), the 1978 Protocol to the Convention for Safety of Life at Sea, the 1969 Convention on Tonnage Measurements of Ships, and the 1969 Convention relating to Intervention on the High Seas in case of Oil Pollution Casualties (and its 1973 Protocol).

428. The Canadian government has decided that the 1969 Intervention Convention and its 1973 Protocol are too restrictive of coastal state powers, and therefore, not acceptable to Canada. Similarly, Canada has decided not to accept the 1971 Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material. It is not yet clear whether Canada will accept the 1978 Convention on Carriage of Goods by Sea (i.e., the Hamburg Rules), but a major study has concluded that Canada should do so. See Hugh M. Kindred et al., *The Future of Canadian Carriage of Goods by Water Law* (Dalhousie Ocean Studies Programme, 1982), at pp. 323-26.

429. *Maritime Code Act*. S.C. 1977-78, c. 41.
Professor William Tetley, in his speech as the retiring President of the Canadian Maritime Law Association in May 1984, put the matter bluntly in these words:

> Attached to this report is a survey of Canadian maritime law — the sorry state of Canadian maritime legislation. Look for example at our carriage of goods law. We adopted the Hague Rules of 1924 in 1936 but have done nothing since, despite the adoption of the Visby Rules 1968, the Hamburg Rules 1978 and the Multimodal

Convention 1980. Similarly we are two or three generations of laws behind in limitation of liability and in pollution control and responsibility.

You will note how many studies have been made, how many reports and surveys deposited, but how little law has been adopted. This is shocking. The maritime code has been over 15 years in preparation. Only two books have been adopted but never promulgated, because apparently they are so inadequate. No work is being done on them now. This is a national disgrace.

Officials from the government have come once or twice per year to our meetings in the last three years, have provided schedules of work in progress, and have promised legislation, but that legislation has never been tabled. Incidentally, it has been said that: "the road to hell is paved with works in progress." I am told by members of the Justice Department that they never receive maritime legislation on time or at all from Transport in order to prepare it for presentation to the House of Commons or to the Senate.

This Shipping Conference Exemption Act, 1979 is a fine example. There have been studies, surveys, reports, cross-Canada hearings, but the bill to prolong and amend the Act was only deposited three days before March 31, 1984, the date when the bill expires by the "sunset" clause. As a result, the 1979 Act had to be extended by Order in Council.

What is the cause of the inertia? The lack of lawyers in Transport and Justice with time to draft? The inability of the Ministers to act? Is the enormous Ministry of Transport too big? Is it a question of incompetence? Is the subject not a glamour subject like the Crow's Nest Pass rates? Have we been at fault for not publicly complaining? Is the C.T.C., an independent body in the heart of the Transport Ministry, part of the problem? Is it a question of appointment of persons to legal positions who do not have legal training?

Whatever the cause, the CMLA should act and should act *publicly*.

The state of our Canadian maritime law is the major problem facing us all: i) the political leaders; ii) the civil servants in Transport, in Justice, in the C.T.C.; and iii) the public which the CMLA, amongst others, represents.

430. The Canada - Nova Scotia offshore agreement was implemented thus: federal legislation: the *Canada - Nova Scotia Oil and Gas Agreement Act*, S.C. 1983-84, c. 43 (implementing the Agreement). Provincial legislation: the *Canada - Nova Scotia Oil and Gas Agreement (Nova Scotia) Act*, S.N.S. 1984, c. 2 (mirroring the federal Act cited above); the *Offshore Oil and Gas Act*, S.N.S. 1984, c. 8 (implementing parts of the *Canada Oil and Gas Act*, S.C. 1980-81-82-83, c. 81); the *Oil and Gas Production and Conservation (Nova Scotia) Act*, S.N.S. 1984, c. 9 (implementing the *Oil and Gas Production and Conservation Act*, R.S.C. 1970, c. 4).

431. See, for example, the careful balancing of coastal states' and other states' interests, rights and responsibilities under the EEZ regime, especially in Articles 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 69, 70, 72 and 73 of the UN Convention.

432. See, for example, Articles 17, 19, 21, 22, 24 and 25.

433. For examples of the duty to consult or notify, see Articles 64 (highly migratory species), 65 (marine mammals), 66 (anadromous species), 76(8) (limits of the continental shelf), 198 (imminent danger of pollution damage), 211(6) (areas for special environmental protection provisons), 231 (enforcement of pollution legislation), and 253 (suspension or cessation of marine scientific research activities).

434. Arts. 279-99.

435. Both sectors are at present conceded to be subject solely to federal jurisdiction. Shipping is governed by ss. 91(2) (trade and commerce), 91(10) (navigation and shipping), and 91(13) (ferries) of the *Constitution Act, 1867*. Mining on land has traditionally been shared between the federal and provincial domains, but deep ocean mining by Canadians can only take place *outside* national jurisdiction and therefore beyond the domain of provincial jurisdiction. Mineral deposits found *inside* Canadian limits, for example, off Juan de Fuca Strait, are unlikely to be commercially exploitable within the foreseeable future.

436. The Task Force on Atlantic Fisheries comments: "If the Atlantic fishery is difficult

to manage now, it would be almost impossible if it were broken down into five separate subregions on the basis of political geography." Kirby Report, *supra*, note 206, at p. 128.

437. The expanded responsibilities of the managing coastal state spelled out in the 1982 UN Convention on the Law of the Sea are, of course, *national* responsibilities. Canada, as a nation state and as a subject of international law, must discharge these responsibilities. As a federal state, Canada may distribute these responsibilities internally as it wishes, but the federal government as the representative of the Canadian nation retains the sole responsibility under the Convention.

438. The Kirby Task Force, in adopting an economic-industrial approach to the inshore-offshore controversy, came close to denying the legitimacy of treating the inshore fishery on sociological grounds.

> At issue is not the distance from land at which fish are caught, but rather the control of resource supply and the timing of its delivery to processors. Integrated, trawler-owning companies (the 'offshore' sector) have sought security of year-round fish supply. This had led them to oppose larger allocations to independent fishermen (the 'inshore' sector) who are generally unable to deliver fish throughout the year because of environmental factors — the weather and fish migrations — and who are not bound to deliver their catch to any particular plant. Sometimes the inshore fishery is portrayed as the "social" fishery while the offshore is thought to be economically efficient. No such general statement can be made. There are many situations where the reverse is true. . . . The terms inshore and offshore are at most a useful shorthand for the more significant distinctions between seasonal and year-round; between independent and processor-owned vessels; between day boats and those that stay out for one or more nights. (Kirby Report, *supra*, note 206, at p. 14.)

But even if we accept the "more significant" distinction between seasonal and year-round fishing, the fact remains that the former is a cause of chronic poverty and social instability in most small fishing communities (i.e., most single-sector small coastal communities) of Atlantic Canada. These problems will not be solved by adjusting the allocations to the inshore and offshore fishermen under the present system of "sector management," whereby the inshore fishermen are given exclusive fishing rights (to certain stocks) in sectors adjacent to their home sector. For new proposals for a new alignment of federal and provincial powers in the field of fisheries, see Bruce H. Wildsmith, "Fisheries, Harmonization and the Economic Union" in *Case Studies in the Division of Powers*, volume 62 of the research studies prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, 1985).

439. The Nova Scotia government in particular has accused the federal government of favouring the inshore fishery at the expense of the offshore, and calls for "deregulation" of the industry as a whole to permit the introduction of new technology and more year-round fishing. See statement by Nova Scotia Fisheries Minister John Leefe, *The Chronicle-Herald* (August 10, 1984), p. 1. These are appropriate industrial objectives for the "integrated trawler-owning companies," if new marketing arrangements can be secured. They *may* also be acceptable to certain small coastal communities, if alternative sources of employment can be developed at the community level.

440. This kind of cooperative experiment was first entered into with Nova Scotia, introducing a federal-provincial management scheme for the development of offshore petroleum resources in the Sable Island area. But production in this area will not begin before 1990 at the earliest. In February, 1985, a somewhat similar scheme was established for offshore petroleum resources off the coast of Newfoundland (The Atlantic Accord).

441. See, for example, the federal-state offshore settlement in Australia: "Offshore Constitutional Settlement — A Milestone in Co-operative Federalism" (Canberra, 1980).

442. See subsection *Transit Management*.

443. In 1982 the residents of the Northwest Territories approved by referendum a proposal for division of the Territories into two separate administrative regions: one in the Eastern Arctic, the other in the Western Arctic. This proposed division is based on ethnic factors: the Inuit make up almost all the population in the East, whereas the Dene form

the largest single group in the more mixed population of the West. In the meantime, the idea of granting provincial status to the Territories as a whole has been suspended. See Fielding Sherwood, "Constitutional Development in the Northwest Territories," in Lamson and VanderZwaag, *supra*, note 140.

444. That is, increased support should be given to cooperative research programs linking the National Research Council with the provincial research councils and federal laboratories such as BIO.

445. This might require a re-thinking of the present portfolio of "municipal affairs" in the coastal provinces of Atlantic Canada, so that special policies and programs could be developed for designated "small coastal communities."

446. The concept of ocean industry development offices should be extended to all coastal provinces with a view to facilitating the development of marine technology on a cooperative governmental-industrial basis.

447. On the PACOD concept, see subsection *Offshore Development*.

448. *Ibid.*

449. The concept of a Gulf of St. Lawrence region for at least preliminary research purposes was advanced by scholars and officials in the mid-1970s, but the idea of cooperative and comparative studies within such a broad cross-cultural framework seems to have fallen victim to political concerns. For a review of different "levels" of coastal zone management, see Johnston, Pross, and McDougall, *supra*, note 195.

450. The French ministry (Ministère de la mer) was established in June 1981, assuming various powers including those previously exercised by the Ministry of Transport in relation to the merchant marine and seaports, and jurisdiction over all government research related to the exploitation of ocean reserves. 1981 *Annuaire européen d'administration publique* 356 (1982).

451. To think out "new directions" and "priorities of policy" it would be useful, indeed almost essential, to appoint an independent and carefully chosen task force or commission. See "Conclusions" in this section. For some institutional options, see McDorman et al., *supra*, note 426, at pp. 91–93.

452. Putting together a superministry of this kind would be a delicate exercise in balancing various, and sometimes conflicting, "interests" and "concerns." Each of these existing agencies with partial responsibility for the ocean has a particular kind of saliency and orientation built into it: some of a developmental sort, others of a managerial sort, and at least one (DFO) attempts to combine the two.

453. See, for example, *Institutional Constraints and Opportunities*, *supra*, note 335.

454. See *supra*, note 451.

455. These councils have not, of course, gone uncriticized, and their composition gives rise to special concerns. See, for example, Jill Bubier, "Conflict of Interest and Fishery Management Councils" (1984), *Territorial Sea: Legal Developments in the Management of Interjurisdictional Resources* (University of Southern Maine, Marine Law Institute), vol. IV, no. 2, at pp. 1–9.

456. For example, to the extent that UNCLOS III was part of the New International (Economic) Order movement within the United Nations, its pattern of delegation alignments was influenced by earlier North-South conferences. This was particularly true of the pattern of negotiations on deep ocean mining issues in the First Committee. Compare Buzan, *supra*, note 95, with Miles, *supra*, note 99. As a modern "romantic" approach to conference diplomacy, UNCLOS III was distinct and yet it had characteristics in common with the 1972 UN (Stockholm) Conference on the Human Environment. The environmental work of the Third Committee was heavily influenced by the Stockholm Conference. See Douglas M. Johnston, "The Environmental Law of the Sea: Historical Development," in Johnston, *supra*, note 14, 17–70 at pp. 46–53. Again, the jurisdictional work of the Second Committee followed, in many ways, the modes of thought developed at UNCLOS I and UNCLOS II.

457. The "Group of 77" has been operating as a "Southern" bloc in many other forums. For documentation, see series published by UNITAR entitled *A New International Economic Order: Selected Documents*. On the contemporary significance of UNCLOS

III within the context of North-South issues, see Arvid Pardo and Elisabeth Mann Borgese, *The New International Economic Order and the Law of the Sea* (International Ocean Institute, Occasional Papers No. 4, 1975); and Lawrence Juda, "UNCLOS III and the New International Economic Order" (1979), 7 *Ocean Development and International Law* 221.

458. The most important of these were the 1972 Stockholm Conference on the Human Environment, the 1972 London Dumping Conference, and the MARPOL Conference of 1973. On the second and third of these, see Letalik, *supra*, note 162, and Schneider, *supra*, note 159, respectively.

459. Douglas M. Johnston and Lawrence M.G. Enomoto, "Regional Approaches to the Protection and Conservation of the Marine Environment," in Johnston, *supra*, note 14, 285–385.

460. For example, on Canadian contributions to bilateral fishery ("phase out") diplomacy in the 1970s, see Johnston, *supra*, note 46.

461. Wilma M.J. Broeren, "Canada's Role in the Law of the Sea, 1927–1975" (M.A. thesis, Dalhousie University, 1977).

462. For insights into the behaviour patterns of delegates at UNCLOS III, see M.C.W. Pinto, "Modern Conference Techniques: Insights from Social Psychology and Anthropology," in R.St.J. Macdonald and Douglas M. Johnston (eds.), *The Structure and Process of International Law: Essays in Legal Philosophy, Doctrine and Theory* (1983), at pp. 305–39.

463. On the factors influencing Canada's new style diplomacy at UNCLOS III, see Barbara Johnson and Mark W. Zacher, "An Overview of Canadian Ocean Policy," in Johnson and Zacher, *supra*, note 17, 356–79 at pp. 360–69.

464. Edgar Gold, "The Rise of the Coastal State," in Johnston, *supra*, note 99, 13–33.

465. Ambassodor Beesley, Canada's chief negotiator at all the UN Seabed Committee and UNCLOS III sessions between 1968 and 1982, advanced the cognate concepts of "custodianship" and "delegation of powers" as the conceptual framework of resource rights and environmental responsibilities. Schneider, *supra*, note 160, at pp. 108–10. But these concepts were not officially adopted at UNCLOS III, apparently because of fears that they would give undue national prerogatives to the coastal state.

466. See the subsection *Marine Technology Development*.

467. *Ibid.*

468. Johnston, *supra*, note 158.

469. For detailed studies of world public order based on the concept of a balance between exclusive and inclusive interest, see the works of Myres S. McDougal and the late Harold Lasswell and their associates.

470. On the new "political" mode of legal development, see Douglas M. Johnston, "The Heritage of Political Thought in International Law," in Macdonald and Johnston, *supra*, note 462, 179–225 at pp. 196–205. To the extent that UN conferences can be differentiated by reference to *dominant attitudes and initiatives*, at least three kinds can be distinguished: (i) those dominated by the UN secretariat and related international agency personnel; (ii) those dominated by national foreign ministries and the government policies they represent; and (iii) those dominated by the diplomats most deeply involved in actual negotiations. Of these three kinds — organizational, political and transactional — UNCLOS III clearly belonged to the third. At future UN conferences where complex and controversial matters have to be negotiated over an extended period and a high degree of trade-off discretion must be left to the negotiators and experts most deeply involved in conference diplomacy, the "transactional" model of UNCLOS II is likely to be found most useful.

471. The need for this kind of synthesis is inherent in the concepts of "eco-development" and "sustainable development" in recent resource management thinking within the UN system. It is reflected, for example, in the World Conservation Strategy, which was developed by the non-governmental International Union for the Conservation of Nature and Natural Resources (IUCN) but endorsed by a number of UN agencies.

472. For its terms of reference, see Resolution I ("Establishment of the Preparatory Com-

mission for the International Sea-bed Authority and for the International Tribunal for the Law of the Sea"), Annex I to the Final Act of the United Nations Conference on the Law of the Sea, in 21 *International Legal Materials* 1245 at pp. 1253–54 (1982).

473. It seems doubtful whether the Convention will have attracted the requisite number of ratifications (60) before the end of 1987. See *supra*, note 9.

474. On "law-making" treaties, see Arnold D. McNair, *The Law of Treaties* (1961), at pp. 749–52. Especially after UNCLOS III, it is not now easy to accept McNair's suggested distinction between "treaties creating constitutional international law" and "treaties creating or declaring ordinary international law."

475. Johnston, *supra*, note 470 at pp. 197–200.

476. "Implementation" of UN Convention of the Law of the Sea embraces an extremely wide variety of tasks and initiatives. For an attempt to identify the *environmental* responsibilities falling on national governments and international agencies under the Convention, see the chart prepared by Dalhousie Ocean Studies Programme in the summer of 1984 at the request of IUCN and subsequently circulated to all governments.

477. This tension between "convergent" and "divergent" trends in the new law of the sea is certain also to be reflected in "state practice" arising out of UNCLOS III. On convergent and divergent trends in ocean boundary making, see Douglas M. Johnston and Phillip M. Saunders, eds. *Maritime Boundary Delimitation: Regional Issues and Developments* (1985).

478. The term "legal development" is broad enough to encompass law reform, crystallization of state practice and customary international law, and even "legal policy making" as well as the more familiar, traditional acts of treaty making and "international legislation."

479. Even the so-called "dispute settlement" provisions of the Convention (Arts. 186–191, 264–265, and especially 279–299) are directed primarily at the goal of conflict avoidance. On the contribution of UNCLOS III to both processes, see Louis B. Sohn, "The Future of Dispute Settlement," in Macdonald and Johnston, *supra*, note 462, 1121–46.

480. Karl Zemanek, "Majority Rule and Consensus Technique in Law-Making Diplomacy," in Macdonald and Johnston, *supra*, note 462, 857–87; and Barry Buzan, "Negotiating by Consensus: Developments in Technique at the United Nations Conference on the Law of the Sea" (1981), 75 *American Journal of International Law* 324.

481. For a general view of these strains, see Bruno Simma, "Consent: Strains in the Treaty System," in Macdonald and Johnston, *supra*, note 462, 485–511.

482. McNair, *supra*, note 474, at pp. 129–47.

483. Over the 15-year period between 1968 and the end of 1982 "consent" was granted and withheld on an almost continuous basis. The consent was, of course, "informal" and "non-binding," granted or withheld for negotiating purposes only. But over such a long period this kind of consent takes on considerable juridical significance in practice, since it has a direct and central bearing on the evolving pattern of state practices, which cannot and do not wait for the conclusion of such negotiations, much less for the signature and ratification of the treaty instrument which may finally emerge from the protracted process.

484. In some degree the Preparatory Commission serves this purpose by providing a semi-annual "sounding board," but to the extent the Commission monitors threats to the Convention it is mostly in the context of deep ocean mining. In any event, it is necessary to combat the attitude that nothing can be done in support of the Convention until it comes into force under the law of treaties, which may not be until 1988 or later.

485. This proposal is analogous to that of the United Kingdom government, which has called for a review of the existing Convention on Diplomatic Privilege and Immunities in light of recent abuses.

486. A good deal of thought has been given by Canadians and Americans to a possible system of bilateral "conflict management" for their two countries, both generally and in the specific context of environmental problems.

487. It seems neessary to re-examine the concept (or "theory") of state practice in interna-

tional law in light of contemporary trends in "legal development," not least those reflected in protracted processes of law-making conference diplomacy.

488. See comments recorded in Gamble, *supra*, note 10, at pp. 509–13, 518.

489. Much of the complexity of U.S. domestic ocean policy issues is reflected in Brooks, *supra*, note 191. For an excellent account of the impingements of these domestic concerns on U.S. negotiations at law of the sea forums, from UNCLOS I to UNCLOS III, see Ann L. Hollick, *U.S. Foreign Policy and the Law of the Sea* (1981).

490. Hage, *supra*, note 21, at pp. 15–19; Buzan, *supra*, note 49, at pp. 164–66; and Filardi, *supra*, note 131.

491. On this issue, see subsection *Transit Management*. Whereas Canada's position was consistently that of a coastal state seeking a significant degree of special and/or discretionary authority on environmental grounds, the U.S. position was almost as consistently that of a maritime power and transoceanic shipping state concerned with the safeguarding of its transit rights inside newly expanded limits of national jurisdiction. U.S. pressure was particularly intense on the issue of transit through straits, but also considerable on the transit issues associated with the territorial sea, archipelagic waters, and the exclusive economic zone. The U.S. delegation was, however, relatively sympathetic to Canada's effort to secure a special provision for ice-covered waters (234). See D.M. McRae and D.J. Goundrey, "Environmental Jurisdiction in Arctic Waters: The Extent of Article 234" (1982), 16 *U.B.C. Law Review* 197.

492. Around 1974, the United States came to accept the general notion that the coastal state should have "sovereign rights" to the living resources within a 200-mile exclusive economic zone, but chiefly because of its deep involvement in tuna fisheries off the coasts of other countries in several regions of the Pacific (including Canada), it continued to press at UNCLOS III for a special provision on highly migratory species within the EEZ which would limit the coastal state's regulatory authority and preserve that of international commissions. The compromise provision finally agreed upon (Art. 64) is open to more than one interpretation — specifically, on the question to what extent Article 64 constitutes an exception to the management authority vested in the coastal state under Article 56.

493. On initial U.S. opposition to the proposal for a "consent regime" over marine scientific research, see Hollick, *supra*, note 489, at pp. 276–80. After 1974 the U.S. delegation was instructed to adopt a more conciliatory approach to this issue.

494. Chiefly with a view to its own ocean boundary delimitation issues with Canada, and especially the Gulf of Maine dispute, the United States decided to oppose any UNCLOS III formula which seemed to give any special role to the principle of equidistance as a method of delimitation. It was seen to lie in the interests of the United States to support a formula which gave weight instead to "equity" or "special circumstances." Canada and the United States were thus drawn into opposing camps on this issue at UNCLOS III.

495. Relations between the two delegations were amicable at the beginning, especially in the early years of the Seabed Committee. See Ann L. Hollick, "Canadian-American Relations: Law of the Sea" (1974), 28 *International Organization* 755. Although the relationship deteriorated after 1974, particularly on deep ocean mining issues, consultation on most other issues, especially those in the Third Committee, continued to be fruitful.

496. Most of the jurisdictional issues in the Second Committee were resolved or papered over by 1978, but the boundary delimitation issue dragged on until 1981.

497. For a review of recent irritants between the two countries see symposium on "Canada–U.S. Relations: Co-operation and Dispute Settlement in the North American Content," 1 *Canada–U.S. Law Journal* 1 (1978).

498. See *supra*, note 491.

499. For a review of the problem up to 1981, see Georges Antoine Léger, "La guerre du thon n'aura pas lieu" (1981), 19 *Canadian Yearbook of International Law* 257.

500. At the time of writing (late September 1984) it seemed likely that the salmon treaty negotiations were close to a successful conclusion. In March 1985, Prime Minister

Mulroney and President Reagan signed an agreement on the exploitation and management of the Pacific salmon fisheries, which was the culmination of many years of difficult negotiations.

501. See *supra*, note 217.
502. It is difficult to predict which of the other three boundary disputes will be dealt with first. The apparent priorities have changed over the years as the resource potentiality of all three areas has risen and fallen. By this test, the Dixon Entrance dispute might be judged to have first priority at the time of writing (September 1984).
503. VanderZwaag, *supra*, note 179.
504. In the spring of 1984 it was announced in the House of Commons that Canada had no intention of resorting to adjudication for a settlement of the ocean boundary delimitation dispute with France in the area around St. Pierre and Miquelon. It might be supposed that this will also be Canada's position vis-a-vis the United States, unless the new Canadian government wishes to change Canada's overall approach to existing disputes between the two countries.
505. "Thinking together" is the key to solving the problems of ocean management in transboundary areas. Fortunately, both countries have the same need to solve the problem of developing and coordinating their national ocean policies and both have much more to gain than to lose by reviewing together the various options facing both countries.
506. These differences are strikingly evident, for example, in the United States and Canadian regulatory systems for fishery management. See VanderZwaag, *supra*, note 179, at pp. 37–87.
507. For a variety of reasons, the Canadian federal government has a much more "intrusive" presence in the small coastal communities of Canada than the U.S. federal government has in the counterpart communities of the United States. On current coastal community attitudes to government in Nova Scotia, see Davis and Kasdan, *supra*, note 368.
508. See for example, Carroll, *supra*, note 331, at pp. 61–93 on East Coast issues. See also Stephen Clarkson, *Canada and the Reagan Challenge* (1982), pp. 204–20.
509. See subsections *Fishery Interests*, *Energy Interests*, and *Marine Technology Development*.
510. See *supra*, note 204.
511. For recommendations on fish quality, see Kirby Report, *supra*, note 206, at pp. 97–100.
512. On the structure of the foreign market for Canadian fishery products, see *ibid.*, at pp. 49–55.
513. The normal difficulties involved in negotiating any long-term marketing arrangements are complicated by the emotive issue of Canadian sealing. Infuriated by the EEC ban on Canadian seal products and the consequent closure of the Canadian sealing industry, many Canadians have demanded economic reprisals in the form of denial of EEC access to Canadian fisheries, a measure which may hurt Canada more than the EEC.
514. At the time of writing (September 1984) seven rigs are operating off the coast of Nova Scotia, and the pace of drilling is expected to be maintained, if not accelerated, in the coming years. Much depends on the results of the appraisal wells being drilled by Mobil and Shell. In addition, Petro-Canada, Texaco, Husky-Bow Valley, Scotia Energy Resources, and Onaping Resources are also involved in offshore exploration in the Sable Island vicinity. *The Mail-Star* (September 1, 1984), pp. 1–2.
515. Most U.S. energy specialists advocate a flexible U.S. energy policy which would involve a diversification of import arrangements to reduce the vulnerability of the United States. See, for example, Joseph A. Yager and Eleanor B. Steinberg et al., *Energy and U.S. Foreign Policy* (1974), at pp. 435–39.
516. Ralph Surette, "Bay of Fundy Full of Surprises" (1983), 103 *Canadian Geographic* 70.
517. On the costs involved, see *supra*, note 235.
518. See subsection *Deep Ocean Mining*.
519. See subsection *Marine Technology Development*.
520. See subsection *Shipping*.

521. Even in the special context of Arctic shipping, which should be seen as a matter of high national priority from any "strategic" perspective, it is not yet clear to what extent the insurance and banking industries of Canada are prepared, even with government backing, to assume any higher-than-usual business risks.

522. For the text of Pardo's 1967 speech "Ocean Space, Seabed, Common Heritage of Mankind," see Elisabeth M. Borgese (ed.), *The Common Heritage: Selected Papers on Oceans and World Order, 1967–1974, by Arvid Pardo* (1975), at pp. 1–41.

523. Early efforts at fishery development assistance, during the first two decades of the United Nations, were chiefly designed to facilitate food production. Johnston, *supra*, note 213, pp. 131–38.

524. Alexander J. Yeats, *Shipping and Development Policy: An Integrated Assessment* (1981).

525. For one reappraisal, see Goran Ohlin, *Foreign Aid Policies Reconsidered* (1966).

526. For a comparative study of regional fishery commissions, see Albert W. Koers, *International Regulation of Marine Fisheries: A Study of Regional Fisheries Organization* (1973).

527. Johnston, *supra*, note 158, at pp. 566–78.

528. *Ibid.*, at pp. 570–71.

529. For a detailed study of these problems in a developing region, see Douglas M. Johnston, *Environmental Management in the South China Sea: Legal and Institutional Developments* (East-West Environment and Policy Institute, Research Report No. 10, 1982).

530. Edgar Gold, "The International Transfer and Promotion of Technology," in Ronald St.J. Macdonald, Douglas M. Johnston, and Gerald L. Morris (eds.), *The International Law and Policy of Human Welfare* (1978), 549–81.

531. For a more optimistic view, see *ibid.*, at pp. 562–67.

532. UN Convention on the Law of the Sea, Arts. 276–77.

533. Some emphasis on joint ventures as a developmental opportunity was reflected in F.A.O.'s "Comprehensive Programme of Assistance in the Development and Management of Fisheries in Exclusive Economic Zones." See Johnston and Enomoto, *supra*, note 459, at pp. 338–39. But unfortunately this program seems to have fallen victim to financial difficulties. See Tony Loftas, "F.A.O.'s EEZ Programme: Assisting a New Era in Fisheries" (1981), 5 *Marine Policy* 229; and Kenneth C. Lucas and Tony Loftas, "F.A.O's EEZ Program: Helping to Build the Fisheries of the Future" (1982), 3 *Ocean Yearbook* 38.

534. The best known example of the cross-sectoral approach to ocean development and management training is that of the International Ocean Institute, which for several years has been conducting lengthy — mostly ten-week — training courses of this kind, designed by Elisabeth Mann Borgese. Several of these have been held on an annual summer-long basis in Canada, on the campus of Dalhousie University, in collaboration with the Dalhousie Centre for Foreign Policy Studies.

535. To avoid superficiality, the cross-sectoral approach has to be designed around the disparate interests and backgrounds of the trainees. Much depends on the trainees' ability and willingness to absorb large amounts of new information, mostly in a foreign language (English), and on the ability of a constantly changing instructional staff to "relate" to the experiences and responsibilities of the trainees in many different regions of the world.

536. CIDA's approach to development aid has always been strongly influenced by the self-perception of the providers as specialists in the extraction of land resources and as builders and engineers. In recent years it has also been influenced by the policy of directing aid in such a way as to produce industrial benefits for Canadian manufacturers and suppliers of services. None of these influences was likely to make CIDA ocean-conscious.

537. In 1981, IDRC, under its Co-operative Programmes division, took the first step toward the large-scale funding of a cross-sectoral project in ocean development and management. The Southeast Asian Project on Ocean Law, Policy and Management (SEAPOL)

was established under the joint auspices of the Institute of Asian Studies of Chulalongkorn University (Bangkok) and Dalhousie Ocean Studies Programme. See Douglas M. Johnston, Edgar Gold, and Phiphat Tangsubkul (eds.), *International Symposium on the New Law of the Sea in Southeast Asia: Developmental Effects and Regional Approaches* (Dalhousie Ocean Studies Programme, 1983).

538. The Canadian decision to establish ICOD was announced by Mr. Trudeau at the Heads of Commonwealth conference held at Melbourne in 1981. After many delays ICOD finally became operational in 1984 and was located in Halifax.

539. See initial brochure distributed by the International Centre on Ocean Development, located in Halifax, Nova Scotia.

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Canada and the New International Law of the Sea

DOUGLAS M. JOHNSTON

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