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EUROPEAN UNIVERSITY INSTITUTE
Department of Political and Social Sciences

RADWASTE DISPOSAL AND THE GLOBAL OCEAN DUMPING CONVENTION:
THE POLITICS OF INTERNATIONAL ENVIRONMENTAL REGIMES

Lasse Ringius

Thesis submitted for assessment with a view to obtaining
the Degree of Doctor of the European University
Department of Political and Social Sciences

Examining Jury:

Prof. Helge Hveem (Univ. Oslo)
Prof. Beate Kohler-Koch (Univ. Mannheim)
Prof. Giandomenico Majone (EUI) (Supervisor)
Prof. Ole Karup Pedersen (Univ. Copenhagen)
Prof. Eugene B. Skolnikoff (MIT)
Prof. Susan Strange (EUI) (Co-supervisor)

November 1992

Florence

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Timetable of Key Events

- 1958 United Nations Law of the Sea Conference adopts resolution to control ocean dumping of radioactive waste
- 1967 Nuclear Energy Agency (OECD) begins oversight of ocean dumping of radioactive waste by European countries
- 1969 UN conducts a survey among member states on desires for international regulation and reduction of ocean dumping
- 1971 First meeting of the Intergovernmental Working Group on Marine Pollution
- 1972 In Stockholm, United Nations Conference on the Human Environment. Adoption of the London Dumping Convention
- 1975 London Dumping Convention enters into force
- 1979 Greenpeace starts campaigning against ocean dumping of low-level radioactive waste in the Atlantic Ocean.
- 1980 Japan announces its intention to ocean dump low-level radioactive waste. United States considers resumption of ocean dumping of low-level radioactive waste.
- 1983 London Dumping Convention adopts a non-binding resolution calling for a moratorium on ocean dumping of low-level radioactive waste pending completion of a two-year expert review of technical and scientific aspects of such dumping.
- 1985 Results of the two-year scientific review are presented to LDC contracting parties. Contracting parties adopt resolution calling for suspension of all ocean dumping of radioactive wastes pending: (1) a study of the political, legal, economic, and social aspects of radioactive waste dumping at sea, (2) an assessment of comparative land-based options, and (3) an assessment of whether it can be proven that ocean dumping of radioactive wastes will not result in negative impacts on human health and/or cause significant damage to the marine environment.
- 1992 The Nordic environmental ministers agree to propose a permanent ban on dumping of medium-level and low-level radioactive waste to the 1992 consultative meeting
- 1993 The results of the study of the political, legal, economic, and social aspects of radioactive waste dumping at sea and the scientific and technical assessments of consequences of resuming to dump radioactive wastes into the oceans will be presented to the contracting parties annual meeting

List of Abbreviations

AEC	Atomic Commission (USA)
ACMP	Advisory Committee on Marine Pollution (ICES)
CEQ	Council on Environmental Quality (USA)
CFCs	Chlorofluorocarbons
CO ₂	Carbon Dioxide
DDT	Dichlorodiphenyltrichloroethane
EC	European Community
ECOSOC	Economic and Social Council (U.N.)
EPA	Environmental Protection Agency (USA)
FAO	United Nations Food and Agriculture Organization (U.N.)
GATT	General Agreement on Tariffs and Trade
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Pollution (IMO/FAO/UNESCO/WMO/WHO/LAEA/UN/UNEP)
IAEA	International Atomic Energy Agency (U.N.)
ICES	International Council for the Exploration of the Sea
ICRP	International Commission on Radiological Protection
ICSU	International Council of Scientific Unions (U.N.)
IMCO	Intergovernmental Maritime Consultative Organization (U.N.)
IMO	International Maritime Organization (formerly IMCO)
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature and Natural Resources
IWGMP	Intergovernmental Working Group on Marine Pollution
LDC	London Dumping Convention
LDC's	Less-developed countries
MED PLAN	Mediterranean Action Plan
NACOA	National Advisory Committee on Oceans and Atmosphere (USA)
NATO	North Atlantic Treaty Organization
NEA	Nuclear Energy Agency (OECD)
NGO	Nongovernmental Organization
NOAA	National Oceanic and Atmospheric Administration (USA)
NUS	National Union of Seamen (Britain)
OECD	Organization for Economic Co-Operation and Development
PCBs	Polychlorinated Biphenyls
Seabed Committee	Committee on the Peaceful Uses of the Seabed Beyond National Jurisdiction (U.N.)
U.N.	United Nations
UNCED	United Nations Conference on Environment and Development
UNCHE	United Nations Conference on the Human Environment
UNCLOS	United Nations Conference on the Law of the Sea
UNCLOS III	United Nations Third Conference on the Law of the Sea
UNEP	United Nations Environment Programme

UNESCO
UNITR
WHO
WMO

United Nations Educational, Scientific and Cultural Organization
United Nations Institute for Training and Research
World Health Organization (U.N.)
World Meteorological Organization (U.N.)

CHAPTER 1

INTRODUCTION

This is a study of the formation of the international regime for controlling the dumping of radioactive wastes from ships and aircraft into the oceans, the so-called London Dumping Convention, from 1972¹. This international regime prohibits the disposal of high-level radioactive wastes in the world's oceans and strictly regulates ocean disposal of low-level radioactive wastes, a practice that had been in use since 1946². Radwaste disposal, the phrase I will use for ocean dumping of low-level radioactive waste, was subsequently banned in 1983. This significant policy development is also examined in this study.

Prior to the formation of the international dumping regime, ocean disposal of radioactive wastes was subject only to national control. In contrast, in the period since the agreement, international control has prevailed. The shift from national to international control is my primary concern: what accounts for the adoption of an international dumping regime? To answer this question, I have examined the roles played by environmentalists,

1. Definitions of international regimes abound. I use the term in a way similar to Robert O. Keohane and Joseph S. Nye, *Power and Interdependence: World Politics in Transition* (Boston: Little, Brown, and Company, 1977). Their definition was, as it has been put by prominent international relations scholar Susan Strange, 'something quite narrow – explicit or implicit internationally agreed arrangements, usually executed with the help of an international organization'. Susan Strange 'Cave! hic dragones: A Critique of Regime Analysis', in Stephen D. Krasner, ed., *International Regimes* (Ithaca: Cornell University Press, 1983), 343. Keohane has similarly defined international regimes as 'complexes of rules and organizations, the core elements of which have been negotiated and explicitly agreed upon by states'. 'International Institutions: Two Approaches' *International Studies Quarterly* 32 (1988), 384.

2. For the convention text, see Appendix A. The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. Signed in London on 13th November 1972, entered into force on 30th August 1975. *International Legal Materials* 11 (November 1972), 1291–1314. Dumping is defined as any deliberate disposal at sea of material and substances of any kind, form or description from vessels, aircraft, platforms or other man-made structures, as well as the disposal of vessels, aircraft, platforms or other man-made structures themselves. The disposal of wastes or other matter derived from the normal operations of vessels, aircraft, platforms or other man-made structure (operational discharges) is excluded from this definition. See also IMO document 'The Provisions of the London Dumping Convention, 1972 and Decisions made by the Consultative Meetings of the Contracting Parties'. LCD/INF.2. 28 May 1985, 11–12. Ninth Consultative Meeting of Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. 23–27 September 1985.

ocean scientists, politicians, and international organizations during the late 1960s and early 1970s. To understand the decision to ban radwaste disposal, I have also examined the roles those actors played in the 1980s.

My perspective is not that of an ocean scientist or an environmentalist. As a student of international relations and international politics, I will view the adoption of this international regime as a case of international cooperation³. I will, therefore, ignore many technical and regulatory aspects of radioactive waste regulation and I will not attempt to compare policies across countries⁴. There are three theories that attempt to explain how such cooperation is accomplished: the Realist model of international cooperation; the epistemic community model; and the complex interdependence model. Realism, which currently dominates the study of international relations, is relevant because the United States acted, as my research will show, as an international leader in the regime-building process. Realism assumes that states make their choices independently in order to maximize their own returns, and that international cooperation is based on self-interest. The prominent role that scientific information occasionally plays in international politics has led to the notion that networks of experts, 'epistemic communities', influence policy outcomes at the international level in ways that do not necessarily reflect the national identities of the scientists. Some scholars have, in their explanations of the international dumping regime and radwaste

3. Robert O. Keohane defines cooperation as follows: 'Cooperation occurs when actors adjust their behavior to the actual or anticipated preferences of others, through a process of policy coordination'. *After Hegemony* (Princeton, N.J.: Princeton University Press, 1984), 51–52. See similar definitions by Robert Axelrod and Robert O. Keohane 'Achieving Cooperation Under Anarchy: Strategies and Institutions', in Kenneth A. Oye *Cooperation Under Anarchy* (Princeton, N.J.: Princeton University Press, 1986), 226; and Keohane 'International Institutions: Two Approaches', 380–381.

4. Among the existing – several are comparative – studies of nuclear waste disposal I will refer to the following: E. William Colgalzler, Jr., ed., *The Politics of Nuclear Waste* (New York: Pergamon Press, 1982); Gene I. Rochlin, *Plutonium, Power, and Politics. International Arrangements for the Disposition of the Spent Nuclear Fuel* (Berkeley: University of California Press, 1979); Charles A. Walker, Leroy C. Gould, and Edward J. Woodhouse, eds., *Too Hot to Handle? Social and Policy Issues in the Management of Radioactive Wastes* (New Haven, CT: Yale University Press, 1983); Andrew Blowers and David Pepper, eds., *Nuclear Power in Crisis. Politics and Planning for the Nuclear State* (London: Croom Helm, 1987); Luther J. Carter, *Nuclear Imperatives and Public Trust. Dealing with Radioactive Waste* (Washington, D.C.: Resources for the Future, 1987); Frans Berkhout, *Radioactive Waste: Politics and Technology* (London: Routledge, 1991); Andrew Blowers, David Lowry, and Barry D. Solomon, *The International Politics of Nuclear Waste* (London: Macmillan Press, 1991).

disposal, pointed to the special influence of scientists⁵. Complex interdependence theorists presume that some form of international cooperation is needed in situations of 'ecological interdependence'. Power politics have to give way to bargaining, compromise and cooperation.

This study will demonstrate that none of these theories adequately explain the formation of the international dumping regime. Nor do they properly account for the change of international policy on radwaste disposal in 1983. I suggest, instead, a transnational coalition model. My primary unit of analysis is a transnational coalition rather than states or scientists. The formation of the international dumping regime can be understood as the goal of a transnational coalition with the aim of significantly reducing, if not halting, ocean dumping of wastes, particularly radioactive wastes. The moratorium on radwaste disposal imposed in 1983 by the international dumping regime similarly represents a victory by a transnational coalition.

Based on this case study, I have developed a number of propositions that may help increase our understanding of international cooperation on environmental protection. Thus, this case offers a window on the global politics of the environment and international regime-building.

History of efforts to control ocean disposal of low-level radioactive waste

Radioactive wastes – the source of the problem

Many forms of radioactive waste exist and all must ultimately be disposed of⁶. Here we

5. Edward L. Miles, *Science, Politics, and International Ocean Management: The Uses of Scientific Knowledge in International Negotiations* (Berkeley, California: University of California, 1987). Dolores Maria Wesson, *Science and Policy in International Ocean Regimes: MARPOL 73/78, Annexes II and III, and the London Dumping Convention*. Unpublished master's thesis. University of Washington, 1990.

6. Alan Preston writes: 'Storage is expensive, and it may not in the long run offer any better chance than does prompt disposal in optimizing the choice between cost of protection from radiation and the value of the radiation detriment thus avoided. Storage is thus, except in a very few cases, no substitute for

are primarily concerned with ocean disposal of low-level radioactive wastes. Low-level radioactive wastes, which also can be disposed of on land, are the only form of radioactive wastes which have been dumped in the oceans ⁷. Most of these wastes have been packaged in 55-gallon drums filled with concrete to ensure that the drums would sink to the ocean bottom. These packages were not designed to remain intact for long periods after descent to the sea bottom, and it was assumed that all contents would be released relatively quickly ⁸. Fallout from atmospheric nuclear weapons tests and nuclear bombs, which also have reached the oceans, is controlled by the Limited Test-Ban Treaty of 1963 ⁹. Fallout from atmospheric nuclear weapons tests, the Chernobyl nuclear disaster (on April 26, 1986), and operational discharges from the British nuclear reprocessing plant Sellafield have been by far the greatest contributor to the radioactivity of the marine environment ¹⁰.

disposal, and disposal should be the preferred management option as soon as it offers a reasonable chance of optimizing with respect to the resulting radiation detriment'. 'Deep-Sea Disposal of Radioactive Wastes' in P. Kilho Park, Dana R. Kester, Iver W. Duedall and Bostwick H. Ketchum, eds., *Radioactive Wastes and the Ocean. Wastes in the Ocean. Volume 3* (New York: John Wiley and Sons, 1983), 108. It should be noted that disposal signifies the final 'fate' of the waste, while storage means a temporary, not permanent, scheme. For a discussion of the distinction between storage and disposal, see Gene I. Rochlin, *Plutonium, Power, and Politics*, 95. Furthermore, the disposal concept often does not imply continuous monitoring. See *Nuclear Science and Technology. Risks, Regulation Responsibilities and Costs in Nuclear Waste Management: A Preliminary Survey in the European Community*. Report of the Commission of the European Communities, 1980, 4.

7. At least three submarines, the U.S. submarines the Thresher and the Scorpion and one Soviet nuclear-powered submarine, have been lost at sea. See '*Nuclear Waste Management and the Use of the Sea: A Special Report to the President and the Congress*' (Washington, D.C.: National Advisory Committee on Oceans and Atmosphere, 1984), 5.

8. William L. Templeton 'Dumping Packaged Low Level Wastes in the Deep Ocean'. *Nuclear Engineering International*, February 1982, 39.

9. The Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, August 5, 1963, is commonly known as the Partial Test-Ban Treaty. It was signed by more than 100 states including all major powers except China and France. Over 1200 nuclear tests have been conducted throughout the world. The United States conducted 18 tests in 1982, 8 tests in 1990. See 'For A Nuclear Safer World', *Economist*, April 18, 1992. In April 1992, however, France announced that it would suspend nuclear weapons testing in the South Pacific until the end of same year. Alan Riding 'France Bans Atom Tests in Nod to Greens', *International Herald Tribune*, April 9, 1992.

10. According J. Mike Bowers and Chris J.R. Garrett: 'The total amount of radioactivity dumped in the ocean, some 6×10^4 TBq, is much less than the approximately 2×10^8 TBq that were added to the oceans as a result of atmospheric testing of nuclear weapons between 1954 and 1962. This, in turn, is only 1%

There are many definitions of radioactive wastes, ranging from those of the International Atomic Energy Agency (IAEA), which assists the international dumping regime with definitions of radioactive wastes, to those of individual laboratories. The most important waste forms are high-level waste, low-level waste, transuranic waste and mill tailings. These categories of waste are not simply a function of the nature of the wastes. Scientists and regulators have developed subjective distinctions ¹¹.

There are basically two sources of high-level waste. One is unprocessed spent fuel assemblies from nuclear power plants. The other is the highly radioactive waste from reprocessing plants. This waste contains the fission products and actinides (heavy elements) separated from the dissolved fuel. The highly toxic nature of high-level waste, as well as the extremely long half-lives of the nuclides contained in such wastes, require that the waste be isolated from the biosphere for several thousand years. In the United States, high-level waste is currently kept in pools at reactor sites while a site for a mined geological repository is sought. Emplacement of high-level waste into the seabed was debated and rejected at the 1983 annual meeting of the signatories to the ocean dumping convention.

Transuranic wastes, which result primarily from spent-fuel reprocessing and nuclear weapons production, are those which contain transuranic elements (that is, elements having a greater atomic number than uranium), for example, plutonium, americium, and neptunium in concentrations of greater than ten nanocuries per gram ¹². The risks from transuranic

of the 2×10^{10} TBq that exists naturally in the ocean. However, the mix of radioisotopes involved is different in each case and radioisotopes vary widely in the extent to which they can affect marine organisms and man, so that the total radioactivity is only a very rough guide to the risk. It must also be stated that the dumping cannot be considered safe just because the releases of radionuclides are small compared to the natural incidence of radionuclides in the environment'. 'Analysis of the Issues Related to Sea Dumping of Radioactive Wastes'. *Marine Policy*, April 1987, 106. For a definition of terabecquerel (TBq) see footnote 12 below.

11. A good example is the so-called *de minimis* risk approach below which a material will not be regarded as radioactive and therefore is 'below regulatory concern'. For a discussion, see C.G. Whipple 'Dealing With Uncertainty About Risk in Risk Management', in National Academy Press, *Hazards: Technology and Fairness* (Washington, D.C.: National Academy Press, 1986), 44-60.

12. Harold P. Green and L. Marc Zell 'Federal-State Conflict in Nuclear Waste Management: The Legal Bases', in E. William Colglazier, Jr., ed., *The Politics of Nuclear Waste*, 115. The curie (Ci) is a unit frequently used as a measure of the amount of radioactive material. It is defined as the amount of

wastes are not a function of the actual concentration of radioactive contaminant but rather lie in the fact that these elements decay so slowly.

Mill tailings are, for the most part, produced at uranium mills. For every ton of uranium ore that is milled in the United States, not more than about 5 pounds of uranium is extracted, leaving the rest to be discharged as finely ground, sandy tailings. Mill tailings contain very low concentrations of naturally occurring radioactive materials. From the mill the tailings go as a slurry into a tailings pond, but in drying they form a large spreading delta. Huge tailings piles have been created at numerous sites. Typically, tailings are left near uranium mills. Today, regulators see the accumulation of huge tailings piles as an unacceptable waste disposal practice. The best solution is to require burial of the tailings well below grade, or below the surface of the adjacent terrain ¹³. So far, mill tailings have not been the subject of long and severe public protests.

In the United States low-level waste is defined by law. Low-level waste is defined as 'radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel', or uranium or thorium tailings and wastes ¹⁴. Low-level waste can take solid, liquid, or gaseous forms. Typical wastes include protective clothing, filters, solidified liquids, scintillation wastes, animal carcasses, laboratory trash, contaminated soil, activated

radioactive material that will produce 37 billion disintegrations (3.7×10^{10}) per second. This is approximately the number of disintegrations per second in 1 g of radium. A more up-to-date unit is the Becquerel (Bq), which is the amount of radioactive material that produces one atomic disintegration per second. Since one terabecquerel or TBq is equal to one trillion Becquerel, one TBq is approximately equal to 27 Ci ($37 \times 27 = 1000$). A measure of minute radiation is the nanocuries which is one-billionth of a Ci (10^{-9} curies).

13. See Luther J. Carter, *Nuclear Imperatives and Public Trust*, 11-14. According to Carter, for a properly regulated industry, containment of tailings need not be a major problem. However, others disagree. See R.L. Goble 'Time Scales and the Problem of Radioactive Waste', in R.E. Kasperson, ed., *Equity Issues in Radioactive Waste Management* (Oelgeschlager, Gunn and Hain, 1983), 170-171. Policy suggestions for management of uranium mill tailings can be found in R.E. Kasperson, P. Derr, and R.W. Kates 'Confronting Equity in Radioactive Waste Management: Modest Proposals for a Socially Just and Acceptable Program', *ibid.*, 331-368.

14. Low-Level Radioactive Waste Policy Act, P.L. 96-573, December 22, 1980. Quoted from F.L. Parker 'Low-Level Radioactive Waste Disposal', in Michael E. Burns, ed., *Low-Level Radioactive Waste Regulation: Science, Politics, and Fear* (Lewis Publishers, 1988), 85.

metals, and failed equipment¹⁵. Low-level radioactive wastes can be generated by industries such as hospitals; medical, educational or research institutions; private or government laboratories; or facilities forming part of the nuclear fuel cycle (e.g. nuclear power plants, fuel fabrication plants)¹⁶. The United States was producing three million cubic feet of low-level waste annually in the early 1980s. Due to dramatically rising costs, which have resulted in better packaging of the wastes and therefore volume reduction, this figure has since been reduced by two-thirds¹⁷.

International ocean disposal practices before 1973

Beginning as early as 1946 and extending into 1972, ocean disposal of low-level radioactive wastes was practiced by several countries without any international control. Disposal operations were carried out under the direction of the relevant national authorities. The United Kingdom was the principal dumping country between 1949 and 1970. Isolated instances of ocean disposal were carried out by Belgium in 1960, 1962, and 1963. Table 1 lists the dominant countries that conducted ocean disposal operations along with the number of packages and associated radioactivity¹⁸.

15. Quoted from Don M. Berkovitz 'Waste Wars: Did Congress 'Nuke' State Sovereignty in the Low-Level Radioactive Waste Policy Amendments Act of 1985?', in *Harvard Environmental Law Review* 11 (1987), 440.

16. F.L. Parker 'Low-Level Radioactive Waste Disposal', 92.

17. James L. Franklin 'Are 15 Waste Sites Too Much of A Good Thing?' *The Boston Globe*, February 11, 1991.

18. W.F. Holcomb 'A History of Ocean Disposal of Packaged Low-level Radioactive Waste'. *Nuclear Safety* 23 (March-April 1982), 184. Note, the more accurate data on U.S. packages and approximate radioactivity ($4,3 \times 10^{15}$ Bq), but not weight, are from Amelia A. Hagen 'History of Low-Level Radioactive Waste Disposal in the Sea', in P.Kilho Park, Dana R. Kester, Iver W. Duedall and Bostwick H. Ketchum, eds., *Radioactive Wastes and the Ocean. Wastes in the Ocean. vol. 3*, 49. See also P. Kilo Park, Dana R. Kester, Iver W. Duedall and Botstwick H. Ketchum 'Radioactive Wastes and the Ocean: An Overview', *ibid.*, 5. Information on the number of containers dumped and their radionuclide content is incomplete. A later evaluation of all available data for past United States dumping resulted in an increase in the estimate of the quantity of radioactivity dumped of about 25% from earlier estimates. See

Table 1. Countries Engaged in Ocean Dumping of Radioactive Waste Unilaterally

Country	Period	Ocean	Approximate weight, t	Number of packages	Approximate radioactivity* Ci
United States	1946-1967	Pacific/Atlantic	25000	107000	116100
United Kingdom	1949-1966 1968,1970	Atlantic	47664	117544	143200
Netherlands	1965-1972	Atlantic	935	2365	62
Japan	1955-1969	Pacific	656	1661	452
Rep. of Korea	1968-1972	Sea of Japan	—	115	Not available
		Total	74255	228685	259814

* Radioactivity at the time of dumping.

International efforts to control dumping of radioactive materials date back to the 1958 United Nations Law of the Sea Conference (UNCLOS) which adopted a resolution stating that 'Every State shall take measures to prevent pollution of the seas from dumping of radioactive waste, taking into account any standards and regulations which may be formulated by the competent international organizations'¹⁹. This resolution was a compromise between those states engaged in such practices, who actively lobbied for its deletion, and other states (especially the Soviet Union) who favored a complete prohibition of nuclear waste dumping, and it had no great effect²⁰. Although states pledged to cooperate and take relevant 'measures', neither the precise nature of these measures nor any

IMO Document '*Report of Intersessional Activities Relating to the Disposal of Radioactive Wastes at Sea, Including the Final Report of the Scientific Review Report of the Expanded Panel Meeting*'. LDC 9/4. 24 June 1985. Annex 2, 12.

19. UN Convention on the High Seas, Geneva, Article 25, para. 1. Signed by, among others, Japan, the Soviet Union, the USA and United Kingdom. The article goes on to say: 'All States shall co-operate with the competent international organizations in taking measures for the prevention of pollution of the seas or air space above, resulting from any activities with radioactive materials or other harmful agents'. Quoted from L.F.E. Goldie 'International Maritime Environmental Law Today - An Appraisal', in J.L. Hargrove, ed., *Who Protects the Ocean?* (St. Paul, Minn.: West Publishing Company, 1975), 76.

20. Myres S. McDougal and William T. Burke, *The Public Order of the Oceans* (New Haven-London: Yale University Press, 1962), 864-67.

minimum standards were specified²¹. 'In essence, the Conference produced no community policy at all'²².

The conference resolution, which did not have the force of a treaty, further recommended that the International Atomic Energy Agency (IAEA), an organization of the United Nations which promotes the peaceful use of nuclear power, undertake studies of the technical and scientific problems connected with radioactive waste disposal in the sea. An IAEA panel established for this purpose concluded in 1961 that, while there was no hazard at that time associated with ocean dumping of radioactive wastes, such hazards might become significant in the future. Further, the report concluded that ocean disposal of high-level wastes could not be recommended and that low-level wastes should be dumped only under controlled conditions. The panel proposed an international accord to prevent radioactive hazards accumulating to unacceptable levels. This proposal, however, was never embodied in an international convention²³.

Starting in 1967, a voluntary mechanism set up by the Nuclear Energy Agency (NEA) of the Organization for Economic Development and Cooperation (OECD) provided guidelines and undertook supervisory responsibility for disposal of low-level wastes by NEA member countries²⁴. That same year the first NEA-supervised international nuclear waste dumping operation was carried out at a depth of 5000 meters in the eastern Atlantic Ocean.

21. M.S. Schenker 'Saving the Dying Sea? The London Dumping Convention on Ocean Dumping', in *Cornell International Law Journal* 7 (1973), 37. See also 'International Conventions Relating to Radioactive Marine Pollution', in *Nuclear Law Bulletin* 14 (April 1974), 41-42.

22. Alton Frye, *The Hazards of Atomic Wastes: Perspectives and Proposals on Oceanic Disposal* (Washington, D.C.: Public Affairs Press, 1962), 29. See also Daniel P. Finn 'International Law and Scientific Consultation on Radioactive Waste Disposal in the Ocean', in P. Kilo Park, Dana R. Kester, Iver W. Duedall and Bostwick H. Ketchum, eds., *Radioactive Wastes and the Ocean. Wastes in the Ocean. vol. 3*, 71. This interpretation is supported by, among others, Lindsay Grant (acting deputy assistant secretary of state for environmental and population affairs). See the statement before 'Radiological Contamination of the Oceans'. Oversight Hearings before the Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs. House of Representatives. 1976, 94th Congress. Second Session, 11.

23. L.F.E. Goldie 'International Maritime Environmental Law Today - An Appraisal', 94-95. See also Daniel P. Finn, *ibid.*, 71-72.

24. W.F. Holcomb 'A History of Ocean Disposal of Packaged Low-level Radioactive Waste', 184.

The primary objectives of OECD/NEA were 'to develop, at the international level, a safe and economic method for ocean disposal and to demonstrate this by a joint experimental disposal operation involving several member countries'²⁵. Belgium, France, Federal Republic of Germany, Netherlands, and Britain supplied some 35,000 containers of wastes weighing nearly 11,000 t and containing approximately 8,000 Ci of radioactivity. The primary dumpers were Belgium, the Netherlands, Switzerland, and Britain and they participated in a series of coordinated dumping operations which took place in 1967, 1969 and each year from 1971 to 1982. France, Italy, Sweden, and the Federal Republic of Germany only participated in the first two dumping operations. The regionally coordinated dumpings called for agreement on dumpsite selection, package design for the waste material, facilities available on the dumping vessel, and duties of escorting officers²⁶. The waste came mostly from national research centers, though in later years low-level wastes from nuclear power plants were included²⁷. Table 2 lists the mass of the material dumped from 1967 to 1982 as well as the estimated alpha and beta/gamma activity of the wastes at the time of packaging²⁸.

25. 'Radioactive Waste Disposal Operation Into the Atlantic - 1967'. European Nuclear Energy Agency. Organization for Cooperation and Development. 1968. Quoted from Robert S. Dyer 'Sea Disposal of Nuclear Waste: A Brief History', in Thomas C. Jackson, ed., *Nuclear Waste Management: The Ocean Alternative* (New York: Pergamon Press, 1982), 12.

26. Alan Preston 'Deep-Sea Disposal of Radioactive Wastes', 115.

27. The principal sources were wastes from nuclear power plant operations, other nuclear fuel cycle operations, including fuel fabrication and reprocessing, radionuclides used in medicine, research and industry and from the decontamination and dismantling of redundant plant and equipment. IMO Document. 'Report of Intersessional Activities Relating to the Disposal of Radioactive Wastes at Sea, Including the Final Report of the Scientific Review Report of the Expanded Panel Meeting', Annex 2, 73.

28. IMO document 'Report of Intersessional Activities Relating to the Disposal of Radioactive Wastes at Sea, Including the Final Report of the Scientific Review Report of the Expanded Panel Meeting', Annex 2, 104.

Alpha, beta, and gamma rays are collectively called ionizing radiation. Radioactivity is a nuclear phenomenon and it does not depend in any way on chemical or physical changes that an atom may undergo. When an alpha, beta, or gamma ray enters a piece of matter, energy is transferred to the material through collisions with the atoms in the matter. If the material is sufficiently thin or if the radiation has a high energy, the particle can pass completely through the material, losing only a portion of its original energy; otherwise, the particle will be absorbed within the material and will lose all its energy through ionization. Ionization gives rise to chemical reactions and to a general heating of the

Table 2 Radioactive Waste Dumped into the North Atlantic Ocean under the Supervision of OECD-NEA, 1967-1982

Year	Approximate radioactivity, Ci			
	Gross Weight t	Alpha	Beta/ Gamma	Tritium
1967	10895	253	7636*	
1969	9178	485	22066*	
1971	3968	627	11148*	
1972	4131	681	21626*	
1973	4350	740	12660*	
1974	2265	416	100356*	
1975	4454	767	57374	29690
1976	6772	878	53518	20703
1977	5605	958	76451	31886
1978	8046	1101	79628	36613
1979	5416	1414	83166	42240
1980	8319	1855	181227	98135
1981	9434	2177	153566	74372
1982	11693	1428	126988	77449
1983	No dumping			
1984	No dumping			
Total	94526	13780	987410	411088

* Includes tritium (^3H).

From 1946 through 1970 the United States Atomic Energy Commission (AEC) allowed disposal of low-level radioactive wastes in the ocean at AEC-licensed sites. Approximately 107,000 canisters (116,100 Ci) were disposed of ²⁹. The wastes from all sources consisted of contaminated laboratory glassware, bench tops, floor coverings, tools, chemicals, and animal carcasses. The wastes were mainly disposed of in three sites in the material.

Alpha particles are only capable of traveling a few inches in air and are stopped by a sheet of paper or intact skin. On the other hand, if alpha-emitting elements are taken internally, they are highly toxic. Alpha particles produce more deleterious biological effects than the lightly ionizing radiation associated with beta, gamma, or X-radiation. Although beta particles have a range greater than alpha particles, they can be stopped by relatively thin layers of water, glass, or metal. The range of beta particles in tissue is great enough, however, to cause burns when the skin is exposed. Beta-active isotopes that may become fixed in the body are highly toxic. Gamma rays penetrate a relatively great thickness of matter before being absorbed. Because of the penetrating nature of gamma radiation, overexposure of the body to it results in deep-seated organic damage. Of the three types of radiation from radioactive substances, gamma radiation is by far the most serious external hazard and is the one that requires heavy shielding and remotely controlled operations.

29. Amelia A. Hagen estimates the radioactivity to 4.3×10^{15} Bq in 'History of Low-Level Radioactive Waste Disposal in the Sea', 49. Information on the number of containers dumped and their radionuclide content is incomplete. See footnote (18) above.

Atlantic, off New Jersey and Massachusetts, and one site in the Pacific, off San Francisco. More than ninety percent of all the radioactive waste packages and ninety-five percent of the estimated radioactivity dumped were received by these four sites.

The largest quantity of radioactive wastes was dumped from 1946 through 1962. In 1960, because of strong and increasing public opposition to ocean disposal, the AEC imposed a moratorium on the issuance of new licenses for dumping³⁰. The AEC turned instead to land-burial, which also entailed relatively lower costs compared to ocean disposal³¹. By 1963 most ocean dumping activities had been phased out. About 350 containers (with an estimated activity of 230 Ci) were dumped in the ocean during 1963 and 1970 when all dumping of radioactive wastes was terminated³².

International ocean disposal practices after 1973

Representatives from ninety-two nations, meeting in a highly publicized United Nations-sponsored conference held in London from October 30 to November 13, 1972, agreed for the first time to establish an international dumping regime controlling the disposal of wastes in the oceans, radioactive wastes included. All Western European maritime states

30. George T. Mazuzan and J. Samuel Walker, *Controlling the Atom: The Beginnings of Nuclear Regulation 1946-62* (Berkeley: University of California Press, 1985), 304-345. In 1971, an official of the Atomic Energy Agency explained: 'No new licenses authorizing radioactive waste disposal at sea have been issued in the past 10 years. Only one commercial organization (which has never conducted any sea disposal), two Government agencies, and one university are still authorized to dispose of radioactive wastes in the ocean. The major contractors of the AEC have not disposed of any wastes at sea since 1962'. James T. Ramey 'Ocean Dumping of Waste Materials'. Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries. House of Representatives. Ninety-Second Congress, April 5, 6, 7, 1971, 231.

31. Contributing to the high costs were containers, transportation to the dock, and transportation to disposal point in the ocean. See Conrad P. Straub, *Low-Level Radioactive Wastes. Their Handling, Treatment, and Disposal* (United States Atomic Energy Commission, 1964), 326.

32. W.F. Holcomb 'A History of Ocean Disposal of Packaged Low-level Radioactive Waste', 189. Amelia A. Hagen, who also assesses that 350 containers were dumped, estimates the activity to be 8.5×10^{12} Bq. Hagen 'History of Low-Level Radioactive Waste Disposal in the Sea', 51.

participated together with the Soviet Union, the United States, Canada, Japan, Australia and New Zealand. A large number of developing countries were also represented³³. This truly international regime prohibits ocean dumping of high-level radioactive waste while medium-wastes and low-level radioactive wastes may be dumped when done in essentially a 'controlled way'.

The international dumping regime prohibits dumping without a permit. Governments are responsible for issuing permits to dumpers under their jurisdiction and for determining that any required conditions are fulfilled. Members must report the quantity and nature of the material dumped to a secretariat, which then reports this information to the other members of the regime. However, it is the international dumping regime that determines the criteria for issuing radwaste dumping permits – in essence the regime's regulatory policy on radioactive waste disposals – and dumping criteria are regularly reviewed by the members. This takes place at the London headquarters of the International Maritime Organization (IMO), an agency of the United Nations which facilitates international cooperation on technical matters affecting international shipping, and which serves as regime secretariat. The IAEA determines what radioactive materials are unsuitable for ocean dumping and makes recommendations on the disposal of other radioactive wastes. The IAEA also makes recommendations with regard to selection of a dumping site, packaging for dumping, approval of the ship and its equipment, escorting officers and record keeping. In setting radiation protection standards, the IAEA relies on the recommendations of the International Commission on Radiological Protection (ICRP), an international nongovernmental scientific organization of professional radiologists.

33. Eighty countries participated: Afghanistan, Argentina, Australia, Bahrain, Bangladesh, Barbados, Belgium, Bolivia, Brazil, Byelorussian SSR, Cameroon, Canada, Chile, Denmark, Dominican Republic, Egypt, El Salvador, Ethiopia, Fiji, Finland, France, The Gambia, Federal Republic of Germany, Ghana, Greece, Guatemala, Haiti, Honduras, Iceland, India, Indonesia, Iran, Ireland, Italy, The Ivory Coast, Jamaica, Japan, Jordan, Kenya, Korea, Kuwait, Liberia, Malaysia, Mexico, Monaco, Morocco, Nepal, the Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Pakistan, Panama, Paraguay, Philippines, Portugal, San Marino, Saudi Arabia, Senegal, Somali Democratic Republic, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Tonga, Trinidad and Tobago, Tunisia, Uganda, Ukrainian SSR, United Kingdom, United States of America, Uruguay, the Soviet Union, Venezuela, People's Democratic Republic of Yemen, and Zambia. Twelve governments had send observers.

Since 1971, only Belgium, the Netherlands, Switzerland and Britain have been conducting radwaste disposal. In 1974, France, Italy, West Germany and Sweden withdrew from the operation of the NEA/OECD arrangement, opting for land storage for waste products.

In 1979 both Japan and the United States announced their intention to initiate new programs of radioactive waste dumping into the ocean. Japan became a member of the international dumping regime in 1980 most probably in order to legitimize its plans to dump one to two million drums containing about 100,000 curies per year of low-level waste into a Pacific Ocean site³⁴. The United States considered a plan to scuttle ageing nuclear submarines in the Atlantic and Pacific Oceans. As many as 100 submarines were to be involved in this dumping program, each representing 50,000 curies of radioactive waste. The US Environmental Protection Agency (EPA) formulated new regulations that would permit resumption of ocean dumping of radioactive wastes, including decommissioned nuclear submarines³⁵. These plans were, however, soon defeated by Congress and environmentalists and the radioactive engine compartments of the submarines were instead buried at two government land facilities as an 'interim move'³⁶.

In 1983, in response to the planned dumpings by Japan and the United States and the annual European dumping operation against which protest was raising, a transnational coalition composed of nongovernmental organizations (NGOs), principally Greenpeace and Friends of the Earth, developing countries, led by South Pacific island nations, and the Nordic countries in alliance with Spain, succeeded in imposing a moratorium on radwaste

34. See J.M. Van Dyke 'Ocean Disposal of Nuclear Wastes'. *Marine Policy*, April 1988, 86. According to Daniel P. Finn, up to a million drums would be disposed of over the decade with an annual radioactive input of approximately 10^5 Ci during the operational phase. See 'Nuclear Waste Management Activities in the Pacific Basin and Regional Cooperation on the Nuclear Fuel Cycle'. *Ocean Development and International Law Journal* 13 (1983), 215. Japan has contended that the London Dumping Convention justifies their planned low-level dumping. See Jon Van Dyke, Kirk R. Smith and Suliana Siwatibau 'Nuclear Activities and the Pacific Islanders', *Energy* 9 (1984), 743. See also James B. Branch 'The Waste Bin: Nuclear Waste Dumping and Storage in the Pacific' *AMBIO* 13 (1984), 327.

35. Colin Norman 'U.S. Considers Ocean Dumping of Radwastes' *Science* 215 (5 March, 1982), 1217-19.

36. Philip Trupp 'Nuclear Subs to Settle on Dry Land', *Oceans* 17 (July 1984), 34-35.

dumping within the international dumping regime. Although the moratorium, which was renewed for an indefinite period in 1985, technically speaking did not outlaw dumping, the previous practices were no longer tolerated internationally. The moratorium was strongly opposed by Japan, South Africa, Switzerland, the Netherlands, the United States, and Britain. The British government threatened to renounce its membership of the international dumping regime with a view to further dumping, and the Swiss government announced that it would continue dumping low-level wastes in spite of the moratorium. France, who had last dumped in 1969, and Holland both seemed interested in further dumping³⁷. But the planned dumpings by Britain were boycotted by leading British transport unions and the government shelved its plans to dump. Responding to protests from its Pacific neighbors, the Japanese government decided in December 1984 to discontinue radwaste dumping³⁸.

In the late 1980s, the U.K. Ministry of Defence considered the option of disposing of obsolete nuclear submarines at sea, in possible breach of both the informally agreed upon Law of the Sea and the international dumping regime³⁹. Since the mid-1980s discharges of radioactivity from the British nuclear reprocessing plant Sellafield (previously known as Windscale) into the Irish Sea have also caused concern within the international dumping regime⁴⁰. In the spirit of the international dumping regime, and a regional dumping regime signed by countries bordering the North Sea – the so-called Oslo Convention – the

37. 'United Kingdom: Ocean Disposal Operations to Continue', *Nuclear News*, July 1983, 50.

38. 'Ocean Disposal: Japan Calls a Halt', *Nuclear News*, February 1985, 118.

39. David Fairhall 'MoD Favours Scuttling Old Nuclear Subs', *The Guardian*, April 13, 1989. John Pienaar 'Nuclear Subs May Be Scuttled', *The Independent*, April 13, 1989. Peter Jones 'Plans to Dump Nuclear Subs at Sea', *Marine Pollution Bulletin* 20 (June 1989), 251. See also W. Jackson Davis and Jon M. Van Dyke 'Dumping of Decommissioned Nuclear Submarines at Sea', *Marine Policy*, November 1990, 467–476.

40. For recent concern, see Tim Deere-Jones 'Back to the Land: The Sea-to-Land Transfer of Radioactive Pollution'. *The Ecologist* 21 (January/February 1991), 18–23. For a rare balanced and well-documented discussion, see M.F. Perutz 'Is Britain 'Befouled'?' in *The New York Review of Books*, November 23, 1989, 51 ff.

Sellafield discharges are no longer a domestic British matter only involving Ireland ⁴¹. Political parties and Greenpeace Denmark have put pressure on the Danish government, which also is concerned about its fishing interests, to protest against the Sellafield discharges ⁴².

Beginning in the 1980s American, British, and Japanese attempts to find permanent land-based disposal facilities for radioactive waste have increasingly met with public opposition and politically acceptable solutions seem out of reach ⁴³. Radwaste disposal is, to this day, constantly being reexamined by some governments. United States EPA officials have, for example, been reconsidering radioactive waste disposal in the oceans, but dumping has not been resumed ⁴⁴.

The members of the international dumping regime have in the period following the moratorium tried without success to reach agreement on the environmental effects of radwaste disposal. A small group of nations, consisting of the United States, the United Kingdom and Japan, occasionally supported by France, have regularly opposed the waste management policy advocated by the majority of nations and have refused to incorporate

41. Convention for the Protection of Marine Pollution by Dumping from Ships and Aircraft ('Oslo Convention'). Entered into force 1974. *International Legal Materials*, 11, 262-266.

42. Personal communication. National Agency of Environmental Protection, Denmark, October 1988.

43. For Great Britain, see Duncan Campbell and Patrick Forbes '£100 Million to be made as Nuclear Waste Dumpers Scramble to Get Rich Quick', *New Statesman*, 18 October 1985, 5; Simon Hadlington 'UK Nuclear Waste Strategists Still Facing Public Suspicion', *Nature* 333 (2 June 1988), 388; Christine McGourty 'UK Public says 'No, Thanks' to Nuclear Waste', *Nature* 336 (1 December 1988) 415. Recently, public protests in Japan against radioactive waste disposal and planned nuclear reprocessing plants have intensified. See Michael Cross 'Japan's Nuclear Industry Tries to Rescue Its Image', *New Scientist*, 24/31 December 1988, 8; Charles Smith 'Electoral Fallout. Row over Reprocessing Nuclear Waste Widens', *Far Eastern Economic Review*, 26 October, 1989, 12-13; 'Japan's Green Tinge', *The Economist*, February 2, 1991; 'Japan. Plutonium Politics', *The Economist*, October 5, 1991; David E. Sanger 'Tokyo Cautioned on Nuclear Storage', *International Herald Tribune*, April 14, 1992. For the United States 'Nuclear Gridlock', *The Economist*, January 18, 1992, 42-43.

44. See Alan B. Sielen 'Sea Changes? Ocean Dumping and International Regulation'. *Georgetown International Environmental Law Review* 1 (Spring 1988), 1-32. Sielen is presently Director, Multilateral Staff, Office of International Activities, U.S. EPA.

international policy on this issue into their national policies⁴⁵. A political deadlock may be inevitable. However, the members of the international dumping regime have continued to meet and have avoided undermining the regime's authority despite severe conflicts. Despite the conflicts surrounding seabed emplacement of high-level radioactive waste, for example, the 1984 annual meeting nonetheless agreed that the international dumping regime was 'the appropriate international forum' to examine this issue⁴⁶. In a similar manner, the group of international experts which met in 1985 within the context of the international dumping regime to examine whether radwaste disposal was advisable on technical and scientific grounds wrote in their report that 'present and any future dumping can only take place within the still-developing framework of international regulations'⁴⁷. In short, the London Dumping Convention has established a robust international regime for regulation of ocean disposal of radioactive waste⁴⁸.

45. In October 1987, for example, the Japanese delegation to that year's meeting of the international dumping regime stated that 'although it is not presently dumping radioactive wastes at sea, it regards sea dumping as an important option for the future'. Jon M. Van Dyke 'Ocean Disposal of Nuclear Wastes', 82.

46. Full text of this consensus decision is: '1. The Consultative Meeting of the Contracting Parties to the London Dumping Convention is the appropriate international forum to address the question of the disposal of high-level radioactive wastes and matter into the sea-bed, including the question of the compatibility of this type of disposal with the provisions of the London Dumping Convention. 2. No such disposal should take place unless and until it is proved to be technically feasible and environmentally acceptable, including a determination that such wastes and matter can be effectively isolated from the marine environment, and a regulatory mechanism is elaborated under the London Dumping Convention to govern the disposal into the sea-bed of such radioactive wastes and matter'. IMO Document *Report of the Eighth Consultative Meeting*. LDC 8/10, 8 March 1984, 31.

47. IMO Document *Report of Intersessional Activities Relating to the Disposal of Radioactive Wastes at Sea, including the Final Report of the Scientific Review Report of the Expanded Panel Meeting*, Annex 2, 71.

48. The international dumping regime is 'robust' or in 'institutional equilibrium' in the sense defined by Kenneth A. Shepsle. He regards 'an institution as 'essentially' in equilibrium if changes transpired according to an *ex ante* plan (and hence part of the original institution) for institutional change'. Shepsle 'Studying Institutions. Some Lessons from the Rational Choice Approach', *Journal of Theoretical Politics* 1 (1989), 143. See also Elinor Ostrom, *Governing the Commons. The Evolution of Institutions for Collective Action* (Cambridge, New York: University Press, 1990), 58. This definition of robustness comes close to how Ernst B. Haas defines regime stability: 'Regime stability implies several things. The norms, rules, and procedures that make up the regime will not be challenged by the members so as to throw the existence of the regime into doubt. The rights of the parties will be generally respected and

I will demonstrate that transnational actors have supplied crucial leadership in the regime-building phase and when international policy on radwaste disposal changed in 1983. In the early 1970s, elite United Nations officials galvanized international expectations in the regime-building phase and turned a United States proposal into an internationally acceptable dumping regime. In the 1980s, international environmental pressure groups constructed and focused international public opinion on pro-dumping nations. Transnational actors and a coalition of small states have thus successfully created international norms and regulatory machinery for ocean protection that constrain pro-dumping governments.

My conclusions will challenge basic assumptions in the examined literature on global cooperation on environmental protection. First, powerful governments build international cooperative agreements but, once established, might cooperate against their own will. Second, public opinion, national and international, has a significant impact on international cooperation. Third, international cooperation is heavily conditioned by domestic politics. Fourth, international organizations and NGOs occasionally play important roles in international cooperation.

Summary

In 1972, states reached for the first time agreement on an international dumping regime prohibiting the dumping of high-level radioactive wastes into the world's oceans and regulating ocean disposal of low-level radioactive wastes. This international regime has functioned as intended. It has been an active international forum for policy coordination, and a significant policy shift, the 1983 moratorium on radwaste disposal, has been adopted. Hence, the international dumping regime is a rare example of international cooperation on environmental protection. While international environmental agreements and conventions often fall short of expectations, international policy coordination has taken place although

obligations will be carried out. Challenges will take the form of conduct specified by the regime's procedures'. 'Why Collaborate? Issue-Linkage and International Regimes'. *World Politics* 32 (April 1980), 386.

the international dumping regime obviously is a hard case of international cooperation on environmental protection ⁴⁹.

Another important fact is that membership in the international dumping regime has been rising since international agreement was reached in 1972 ⁵⁰. Governments involved in radwaste disposal as well as governments opposing this practice have become members of the international dumping regime. It thus represents a significant departure from individual nations' uncontrolled dumping activities in the past. Today the international dumping regime is the forum where governments debate their dumping policies and attempt to reach agreement on international controls. Thus, the international dumping regime has been hailed as 'a milestone of international cooperation on ocean pollution control' ⁵¹.

I will attempt to explain the forces that converged to produce the international dumping regime, as well as the forces that later converged to produce the ban on radwaste disposal. I will also use this case to test dominant theories of international cooperation and, finally, to propose a new model to explain global cooperation on environmental protection. In a world searching for policy responses to global environmental problems such as CO₂

49. According to Oran R. Young, participants in international institutions can have strong incentives to disregard or change institutional requirements. The following factors seem likely to produce such incentives: one or more of the prominent members of the subject group are predisposed to dislike the outcomes they expect a regime to produce; it is comparatively easy to violate the rules of the regime either without detection or in such a way that incontrovertible evidence of the violation is difficult to obtain; and, ongoing changes in the character of international society raise doubts about the sociopolitical or intellectual underpinnings of the regime. The more of these conditions present at the same time, the harder the case as far as the effectiveness of institutional arrangements is concerned. See discussion in 'The Effectiveness of International Institutions: Hard Cases and Critical Variables', 5, to have been included in James N. Rosenau and Ernst-Otto Czempiel, eds., *Governance without Government: Order and Change in World Politics* (Cambridge, New York: Cambridge University Press, 1992). Kenneth N. Waltz gives the following definition: 'hard cases - situations, for example, in which parties have strong reasons to behave contrary to the predictions of one's theory'. *Theory of International Politics* in Robert O. Keohane, ed., *Realism and Its Critics* (New York: Columbia University Press, 1986), 123.

50. As of 17 May 1985, 56 governments had become member to the international dumping regime. IMO document '*The Provisions of the London Dumping Convention, 1972 and Decisions Made by the Consultative Meetings of the Contracting Parties*', Annex 1. LCD/INF.2.

51. P. Kilho Park and Thomas P. O'Connor 'Ocean Dumping Research: Historical and International Development', in Bostwick H. Ketchum, Dana R. Kester and P. Kilho Park, eds., *Ocean Dumping of Industrial Wastes* (New York: Plenum Press, 1981), 6.

emissions and ozone depletion, the international dumping regime – the first international institution to address global problems of marine pollution – presents a significant case⁵². Our knowledge about international cooperation on environmental protection is limited and studies in building of international regimes for environmental protection are almost nonexistent. This study of the formation of the international dumping regime can, therefore, offer theoretical as well as practical insight into global cooperation on environmental protection.

52. On the significance of the international dumping regime, one U.S. EPA official writes: 'Although in the past decade the London Convention has been supplemented by several regional marine protection agreements to address the particular needs of such areas as the Mediterranean, the Caribbean, and the South Pacific, it is still generally recognized as the standard against which all disposal operations must be measured'. Alan B. Sielen 'Sea Changes? Ocean Dumping and International Regulation', 4–5. The London Dumping Convention is not the first international convention for protection of the marine environment against radiation. But, as it has been noted, 'a basic characteristic of this period [the period from 1954 to 1971] is that environmental concern was limited to oil pollution. Conventions on nuclear ships and nuclear damage treated the matter as a dangerous activity rather than as an environmental problem'. Gr.J. Timagenis, *International Control of Marine Pollution* (New York: Oceana Publications, 1980), Vol.1, 5. Equally important, the global dumping convention regulates intentional, as opposed to accidental and unintentional, disposal of waste into the ocean. Put differently, unlike the earlier oil pollution conventions this regime considers ocean dumping 'a conscious decision to alter a given environmental medium for perceived social benefits'. Allen L. Springer, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States* (Westport, Connecticut: Quorum Books, 1983), 7.

There is no single global regime for marine pollution control. Many marine pollution control arrangements exist, but are mostly either regional or bilateral. See Peter Hayward 'Environmental Protection: Regional Approaches', *Marine Policy*, April 1984, 106–19; Dominique Alhéritière 'Marine Pollution Control Regulation: Regional Approaches', *Marine Policy*, July 1982, 162–73; Sonja A. Boehmer-Christiansen 'Marine Pollution Control in Europe: Regional Approaches, 1972–80', *Marine Policy*, January 1984, 44–55. Ocean dumping contributes only 10 percent of wastes entering the oceans. The remaining 90 percent of wastes originate from sources on land, the so-called land-based sources. While no global regime presently covers land-based sources of marine pollution, some regional arrangements do. The members of the international dumping regime are currently considering the expansion of the regime to cover such sources. For a proposal, see W. Jackson Davis 'Global Aspects of Marine Pollution Policy: The Need for a New International Convention', *Marine Policy*, May 1990, 191–97.

CHAPTER 2

THE INTERNATIONAL DUMPING REGIME AND REALISM, THE EPISTEMIC COMMUNITY MODEL, AND COMPLEX INTERDEPENDENCE

In this chapter, I examine how three models of international cooperation predict how the international dumping regime would be constructed and, once constructed, how it would change. Several questions are posed: Under what conditions are global regimes for environmental protection likely to be created? Who builds global regimes for environmental protection and exactly how do they do it? What are the constraints on global cooperation on environmental protection and how can they be overcome? Once in place, what would change a global regime on environmental protection? In Chapters 3, 4 and 5, I will test the ability of each of these three models to explain the formation of the international dumping regime.

I will examine the following models of international cooperation: the Realist, the epistemic community, and the complex interdependence models. Most students of international politics subscribe to a Realist point of view. Realist scholars, who especially dominate American thinking about international politics, point to Thucydides' *History of the Peloponnesian War*, Machiavelli's *The Prince*, and Hobbes' *Leviathan* as their theoretical ancestors¹. They share the view that states fundamentally struggle for physical survival and

¹ Students of international politics are often categorized as either Realists or Reflectionists (liberals). See Robert O. Keohane 'International Institutions: Two Approaches'. Joseph S. Nye, Jr., however, uses the labels neorealism and neoliberalism. See 'Neorealism and Neoliberalism' *World Politics* 40 (January 1988), 235–51. Realists emphasize anarchy, states as the principal actors, and pursuit of power as the primary objective of states. Major realist works include: E.H. Carr, *The Twenty Years' Crisis, 1919–1939: An Introduction to the Study of International Relations* (New York: Harper Torchbooks, 1964); Hans J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace* (New York, Knopf, 1973); Raymond Aron, *Peace and War: A Theory of International Relations*, trans. Richard Howard and Annette Baker Fox (New York: Doubleday, 1966); Kenneth N. Waltz, *Man, the State and War: A Theoretical Analysis* (New York: Columbia University Press, 1954); Waltz, *Theory of International Politics* (Reading, Mass.: Addison-Wesley, 1979); Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981). Realists often use results from economists' studies to understand international cooperation, especially how and when public goods might be provided. At the same time, it is widely held by economists that pollution control, within as well as among states, is a typical public good problem. The arguments developed by a diverse group of scholars of the environment and natural

political independence². Realists have contributed substantially to our understanding of international regimes, international cooperation and international leadership, three distinct but related phenomena in international politics. They as well as many other scholars view the prospects for international cooperation on environmental protection with pessimism³. Chapters 4 and 5 will show that Realism correctly predicts that the United States played an important role in the regime-building process. It will also become clear, however, that Realism ignores crucial aspects of this process.

Peter Haas's recent book *Saving the Mediterranean: The Politics of International Environmental Protection*, a study of the Mediterranean Action Plan to protect against marine pollution in the Mediterranean basin, has drawn attention to the way an epistemic community, 'a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that

resources are therefore often repeated in Realist studies. The most important contribution by natural resource economists is H. Scott Gordon 'The Economic Theory of a Common-Property Resource: The Fishery' *Journal of Political Economy* 62 (April 1954). For externalities, see E.J. Mishan 'The Postwar Literature on Externalities: An Interpretative Essay' *Journal of Economic Literature* 17 (March 1971), 1-28. For the economics studies of international pollution problems, see Ingo Walter, ed., *Studies in International Environmental Economics* (New York: John Wiley and Sons, 1976); Ingo Walter, *International Economics of Pollution* (London: Macmillan, 1975); Charles S. Pearson, *International Marine Environmental Policy: The Economic Dimension* (The Johns Hopkins University Press, 1975); C. Pearson 'Environmental Policy and the Ocean', in *Perspectives on Ocean Policy. Conference on Conflict and Order in Ocean Relations* (The Johns Hopkins University, 1975), 207-19; Richard N. Cooper 'An Economists' View of the Ocean', in *Perspectives on Ocean Policy. Conference on Conflict and Order in Ocean Relations*, 143-65. For the most widely quoted work on collective action problems, see Mancur Olson, *The Logic of Collective Action. Public Goods and the Theory of Groups* (Cambridge, Mass: Harvard University Press, 1965). For a recent analysis of collective action, see Elinor Ostrom, *Governing the Commons*. For collective action problems and international cooperation on environmental protection and natural resource uses, see Per Magnus Wijkman 'Managing the Global Commons' *International Organization* 36 (Summer 1982), 513-36. See also Bruno S. Frey, *International Political Economy* (Oxford: Basil Blackwell, 1984), 122-42.

² For a critical European review of Realism, see Pierre de Senarclens 'The 'Realist' Paradigm and International Conflict' *International Social Science Review*, February 1991, 5-19.

³ Other scholars who do not represent the international politics schools examined here are also pessimistic about the prospects for international cooperation on environmental protection. In fact, pessimism is widespread among commentators. See, for example, William Ophuls 'The International State of Nature and the Politics of Scarcity', in Charles W. Kegley, Jr. and Eugene R. Wittkopf, eds., *The Global Agenda: Issues and Perspectives* (New York: Random House, 1983), 367-89.

domain or issue-area', might induce states to cooperate⁴. The epistemic community research program, which is still in the process of defining its method as well as its object of study, has initially focused on compliance with international regimes rather than regime creation⁵. Haas's conclusion, that the Mediterranean Action Plan essentially was instituted and advanced by an epistemic community, radically challenges Realism. The epistemic community concept originates from the reflective literature which asserts that international cooperation basically varies with evolution and change in governments' perception of international cooperation⁶. Epistemic community theorists generally focus on the impact

⁴ Peter M. Haas, 'Introduction: Epistemic Communities and International Policy Coordination'. *International Organization* 46 (Winter 1992), 3. *Saving the Mediterranean. The Politics of International Environmental Cooperation* (New York: Columbia University Press, 1990).

⁵ Peter M. Haas 'Do Regimes Matter? The Mediterranean Action Plan and Evolving Policies to Control Mediterranean Pollution'. Manuscript, 1988. Peter M. Haas 'Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control' *International Organization* 43 (Summer 1989), 377–403. Emanuel Adler and Peter M. Haas 'Conclusion: Epistemic Communities, World Order, and the Creation of a Reflective Research Program' *International Organization* 46 (Winter 1992), 367–90.

⁶ For an introduction to the so-called Reflective approach, the alternative to the Realist and Rationalistic Realist approach, see Robert O. Keohane 'International Institutions: Two Approaches'. Modern Reflective or liberal theory, like its predecessors 'functionalism' and 'neofunctionalism', stresses the impact of domestic society on international society, interdependence, and international institutions. Major liberal works include: Karl Deutsch et al., *Political Community and the North Atlantic Area* (Princeton University Press, 1957); Ernst B. Haas, *The Uniting Of Europe* (Stanford University Press, 1956). For the classic outline of functionalistic international theory, see David Mitrany, *A Working Peace System* (Chicago: Quadrangle, 1966). Ernst B. Haas has repeatedly examined the cognitive and philosophical foundation of international cooperation. See – all by Haas – 'Why Collaborate? Issue-Linkage and International Regimes'; 'Words Can Hurt You: Or, Who Said What to Whom About Regimes', in Stephen D. Krasner, ed., *International Regimes*, 23–59; *When Knowledge is Power: Three Models of Change in International Organizations* (Berkeley: University of California Press, 1990). For empirical work in this tradition, see Ernst B. Haas, Mary Pat Williamson, and Don Babai, *Scientists and World Order: The Use of Technical Information in International Organizations* (Berkeley: University of California Press, 1977); Edward L. Miles, *Science, Politics, and International Ocean Management* (Berkeley: University of California, 1987); Peter M. Haas 'Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control'. See also Peter M. Haas, *Saving the Mediterranean* and 'Obtaining International Environmental Protection Through Epistemic Consensus' *Millennium* 19 (Winter 1990), 347–64. Although not representative of the reflective 'school', the importance of science and knowledge within certain issue-areas has also been stressed by James N. Rosenau 'Capabilities and Control in an Interdependent World' *International Security* 1 (Fall 1976), 32–49. See also Rosenau 'New Non-Land Resources as Global Issues', in Charles W. Kegley, Jr. and Eugene R. Wittkopf, eds., *The Global Agenda. Issues and Perspectives*, 390–97. The importance of understanding how perception guides international actors is stressed by, among others, Christer Jönsson 'A Cognitive Approach to International Negotiation',

of science and knowledge on international politics. The role of scientists should be examined in other cases of international cooperation on environmental protection. Epistemic community analysts view the prospects of international cooperation on environmental protection with moderate optimism ⁷. This case study, however, questions the usefulness of the concept of epistemic community.

The complex interdependence model, as far as it is one model, is the major challenger to Realism. Complex interdependence theorists claim that a historically unprecedented expansion of trade, advances in technology, military technology included, and increased communication, have drastically changed how states today define their interests and pursue foreign policy objectives ⁸. The complex interdependence research program on international

European Journal of Political Research 11 (1983), 139–50. Jönsson has later given up the 'cognitive approach' as a separate research program. See *International Aviation and the Politics of Regime Change* (London: Frances Pinter, 1987), 24. The literature on the environment as a new international policy area often implicitly subscribes to a reflective view. See, among others, Lynton Keith Caldwell, *International Environmental Policy. Emergence and Dimensions* (Durham, N.C.: Duke University Press, 1984). See also by Caldwell, *Between Two Worlds: Science, The Environmental Movement and Policy Choice* (Cambridge, New York: Cambridge University Press, 1990).

⁷ See Peter M. Haas, 'Obtaining International Environmental Protection through Epistemic Consensus', 348.

⁸ On interdependence theory, see Robert O. Keohane and Joseph S. Nye, Jr. 'Transnational Relations and World Politics', in Leland M. Goodrich and David A. Kay, eds., *International Organization* (Madison, Wisconsin: The University of Wisconsin Press, 1973), 427–54; Keohane and Nye, *Power and Interdependence: World Politics in Transition*; Keohane and Nye 'Power and Interdependence revisited', *International Organization* 41 (1987), 725–53. For critical discussion of the notion of interdependence, but little about complex interdependence, see R.J. Barry Jones and Peter Willetts, eds., *Interdependence on Trial* (London: Francis Pinter, 1984). For Oran Young, 'The Politics of International Regime Formation: Managing Natural Resources and the Environment' *International Organization* 43 (Summer 1989), 349–75; *International Cooperation. Building Regimes for Natural Resources and the Environment* (Ithaca: Cornell University Press, 1989); 'Political Leadership and Regime Formation: On the Development of Institutions in International Society' *International Organization* 45 (Summer 1991), 281–308. Many of the core arguments of interdependence theory are masterly applied to issues like protection of the global commons and others in James N. Rosenau 'Capabilities and Control in an Interdependent World'. An important contribution, which however disagrees with Keohane and Nye's 'Power and Interdependence', is James N. Rosenau, *The Study of Global Interdependence. Essays on the Transnationalization of World Affairs* (London: Francis Pinter, 1980). Rosenau presumably finds that ocean pollution is a typical interdependence issue. See James N. Rosenau, *Turbulence in World Politics. A Theory of Change and Stability* (Princeton, New Jersey: Princeton University Press, 1990), 106. Studies on international dimensions of regulation uses concepts from the complex interdependence literature. See Ronald Brickman, Sheila Jasanoff, and Thomas Ugen, *Controlling Chemicals: The Politics of Regulation*

cooperation, which is less well-specified than Realism's, includes the role of international organizations and transnational coalitions, as well as international negotiation. Realism has contributed little to our understanding of international organizations and non-state or non-governmental organizations as it finds they have no significant or independent influence on international politics. The complex interdependence model is, therefore, a rival candidate to Realism because officials and agencies of the United Nations participated in the construction of the international dumping regime. As mentioned, the IMO provides the regime with its secretariat. Complex interdependence theorists view the prospects of international cooperation on environmental protection with some optimism.

The international dumping regime and realism

Realist analysts primarily study military power and to a lesser extent international political economy. They have so far paid little attention to global cooperation on environmental protection. Nonetheless, it is obvious that Realists see the structure of the international system as a severe obstacle to such cooperation.

According to prominent Realist scholar Kenneth Waltz: 'In the 1970s, with the rapid growth of population, poverty, and pollution, some concluded, as one political scientist put it, that 'states must meet the needs of the political ecosystem in its global dimensions or court annihilation'. The international interest must be served; and if that means anything at all, it means that national interests are subordinate to it. The problems are found at the global level. Solutions to the problems continue to depend on national policies. What are the conditions that would make nations more or less willing to obey the injunctions that are so often laid on them? How can they resolve the tension between pursuing their own interests and acting for the sake of the system? No one has shown how that can be done, although many wring their hands and plead for rational behavior. The very problem,

in Europe and the United States (Ithaca: Cornell University Press, 1985), chapter 11. See also Sheila Jasanoff, *Risk Management and Political Culture* (New York: Russell Sage Foundation, 1986), 75-77.

however, is that rational behavior, given structural constraints, does not lead to the wanted results. With each country constrained to take care of itself, no one can take care of the system' ⁹. Thus, states are seemingly trapped in a static situation out of which only a major change of the international system can bring them: 'States facing global problems are like individual consumers trapped by the 'tyranny of small decisions'. States, like consumers, can get out of the trap only by changing the structure of their field of activity. The message bears repeating: The only remedy for a strong structural effect is a structural change' ¹⁰.

Realists assert that the anarchic structure of international politics, a result of absence of a government, a police force and a judicial power, makes nations constantly worry about their survival ¹¹. The international system is, as Waltz puts it, a self-help system that severely constrains governments' ability to cooperate ¹². According to Waltz, two principal obstacles to all international cooperation follow: 'A state worries about a division of possible gains that may favor others more than itself. A state also worries lest it become dependent on others through cooperative endeavors and exchanges of goods and services' ¹³.

In the Realist view, states cooperate within the international dumping regime only to the extent that they improve, or at least maintain, their position relative to other states. Realists expect that especially developing countries are reluctant to participate in the

⁹ Kenneth N. Waltz, *Theory of International Politics*, reprinted in Robert O. Keohane, *Realism and Its Critics*, 106. Waltz then simply concludes in a footnote that 'states (in such situations) face a 'prisoners' dilemma'. If each of two parties follow his own interest, both end up worse off than if each acted to achieve joint interests'. *Ibid.*, 129.

¹⁰ *Ibid.*, 108. By 'tyranny of small decisions', a phrase coined by the American economist and top regulator Alfred E. Kahn, Waltz refers to collectively unwanted consequences of individuals' behavior. One example of that would be the 'tragedy of the commons'. For discussion of the tragedy of the commons, see Elinor Ostrom, *Governing the Commons*, 2-3. Thomas C. Schelling has given numerous examples of how society, and other 'groups', may dislike the aggregate results of behavior which on the level of the individual seems rational. See *Micromotives and Macrobehavior* (New York: Norton, 1978).

¹¹ According to Waltz: 'Because some states may at any time use force, all states must be prepared to do so - or live at the mercy of their military more vigorous neighbors. Among states, the state of nature is a state of war. Among men, as among state, anarchy, or the absence of government, is associated with the occurrence of violence'. *Theory of International Politics*, 98.

¹² *Ibid.*, 101-04.

¹³ *Ibid.*, 102-3.

international dumping regime. Because of developing countries' poor economic conditions, they are not expected to spend scarce economic resources on pollution control technologies. For similar reasons, it is very unlikely that developing countries through stringent environmental legislation would retard their much needed industrial and economic development.

For Realists, the primary concern of states is neither to maximize power nor to realize economic gains. Instead, states' primary concern is to maintain their positions in the international state system. Also for that reason, Realists doubt that developing countries would join the international dumping regime¹⁴. Moreover, it follows from the first Realist assumption that considerations of security subordinate economic and all other gain to political interest¹⁵. Due to the security and energy concerns intimately associated with regulation of radioactive waste, Realists would therefore predict that nuclear nations would strongly resist other states' interference in these matters¹⁶. Nuclear nations are most likely to attempt to exclude regulation of nuclear waste from the scope of the international dumping regime¹⁷. Similarly, as long as environmental problems do not seem to threaten their national security, developing countries remain very reluctant about joining and participating

¹⁴ Ibid., 127. See also Waltz 'Reflections on *Theory of International Politics: A Response to My Critics*' in Robert O. Keohane, ed., *Realism and Its Critics* (New York: Columbia University Press, 1986), 334. Joseph M. Grieco has recently emphasized that states are primarily concerned with their physical survival and political independence. See *Cooperation among Nations. Europe, America, and Non-Tariff Barriers to Trade* (Ithaca: Cornell University Press, 1990), 10. The realist claim that states worry about how well they fare compared to other states (relative gains), and not simply how well they fare themselves (absolute gains), which has severe consequences for international cooperation, has most recently been challenged in Duncan Snidal 'Relative Gains and the Pattern of International Cooperation' *American Political Science Review*, 85 (September 1991), 701-26. See also footnote 25 below.

¹⁵ Waltz, *Theory of International Politics*, 104.

¹⁶ For example, in April 1977, the Carter Administration decided to defer commercial reprocessing of nuclear waste indefinitely because of the feared risk of proliferation of nuclear weapons. See Paul F. Power 'The Carter Anti-Plutonium Policy' *Energy Policy* 7 (September 1979), 215-31. See also E. William Colglazier, Jr., *The Politics of Nuclear Waste*.

¹⁷ Scope refers to the range of issues the regime covers. Strength refers to the degree of compliance with regime injunctions. See discussion in Stephan Haggard and Beth A. Simmons 'Theories of International Regimes' *International Organization* 41 (Summer 1987), 496-98.

in the international dumping regime ¹⁸.

Realists assert that global cooperation generally occurs only at the wish of strong states. 'Great tasks can be accomplished only by agents of great capability. This is why states, and especially the major ones, are called on to do what is necessary for the world's survival' ¹⁹. They further postulate that international cooperation and 'order' generally can be established only by a leader that possesses a 'preponderance of material resources', in contemporary parlance a hegemon ²⁰. Put simply, the supporters of the hegemonic leadership theory credit British leadership for the relatively stable world economy from 1850 to 1914, while the United States provided the leadership after World War II until the early 1970s. International crisis and disorder, on the other hand, are caused by a lack of hegemonic leadership ²¹.

Realists will suspect that the United States constructed the 1972 international dumping regime. The United States acted on pure self-interest and followed a mixed strategy of material rewards, threats, and perhaps exclusion of recalcitrant governments ²².

¹⁸ Attempts have been made to redefine environmental deterioration as a national security concern. See Richard K. Ullman 'Redefining Security' *International Security* 8 (Summer 1983), 130-53; Lester R. Brown 'Redefining National Security', reprinted C.W. Kegley, Jr. and E.R. Wittkopf, eds., *The Global Agenda: Issues and Perspectives*, 340-46; and Jessica Tuchman Mathews 'Redefining Security' *Foreign Affairs* 68 (Spring 1989), 162-77.

¹⁹ Waltz, *Theory of International Politics*, 107.

²⁰ The quotation is from Robert O. Keohane, *After Hegemony*, 32.

²¹ See Robert O. Keohane 'The Theory of Hegemonic Stability and Changes in International Economic Regimes, 1967-1977', in Ole R. Holsti, Randolph M. Siverson and Alexander L. George, eds., *Change in the International System* (Boulder, Col: Westview, 1980), 131-62. Charles P. Kindleberger, who first used the term hegemon in his studies of international political economy, writes: 'My conclusion stated that the 1929 Depression was so wide, so deep, and so long because no leading country was able and willing to discharge the role of a stabilizer'. 'Hierarchy Versus Inertial Cooperation'. *International Organization* 40 (Autumn 1986), 841-47. Supporters of the hegemonic leadership theory disagree on the definitions of the key terms hegemon, leader, and stabilizer. For a discussion see Susan Strange 'The Persistent Myth of Lost Hegemony' *International Organization* 41 (1987), 551-74. For a recent critical discussion, see Isabella Grunberg 'Exploring the 'Myth' of Hegemonic Stability' *International Organization* 44 (Autumn 1990), 431-77.

²² According to Realists, the hegemon creates regimes for the following reason: 'Hegemons provide these goods ['the collective goods that are needed for regimes to function effectively'] not because they are interested in the well-being of the system as a whole, but because regimes enhance their own national

Thus, the United States made use of its material and military supremacy²³. Through provision of side-payments, described as 'bribery' by Realist economic historian Kindleberger, or by other forms of reward, the United States built the necessary support²⁴. Some Realists suggest that in case the United States gained more than others it might have spent part of its revenue on building support²⁵.

Realists generally assert that changes in the underlying relative power capabilities

values'. Stephen D. Krasner 'Structural Causes and Regime Consequences: Regimes as Intervening Variables', in Krasner, ed., *International Regimes*, 15.

²³ However, as Haggard and Simmons observe: 'Hegemonic interpretations of regimes are not always clear about what hegemon actually *do* to promulgate and maintain a given set of rules'. 'Theories of International Regimes', 502. (Emphasis in the original). Oran Young puts it more emphatically: 'Confusion abounds when we turn to the actual processes through which institutions emerge'. See 'International Regimes: Toward a New Theory of Institutions', in *World Politics* 39 (October 1986), 110. Young has recently made some insightful suggestions on this issue in his discussion of 'structural leadership'. However, he repeats his doubts about hegemon as a necessary condition for the formation of regimes. See 'Political Leadership and Regime Formation: On the Development of Institutions in International Society', 286-93. Scholars generally pay little attention to the processes of regime building. See, for instance, Charles Pentland 'Building Global Institutions', in Gain Boyd and Charles Pentland, eds., *Issues in Global Politics*, (New York: The Free Press, 1981), 326-366. Scholars using the term international regime seldom ask the question how, and by who, these are created. For security studies, see Seong W. Cheon, Andrew F. Cooper, and Niall M. Fraser 'Partial Security Regimes and Verification of Compliance' *International Interactions* 16 (1989), 117-36. For international trade studies, see Richard Thomas Cupitt 'Compliance with International Trade Regime Norms and the Effects of Regime Change' *International Interactions* 14 (1988), 373-83.

²⁴ Instead of multilateral cooperation of some sort, future international environmental policy scenarios in which the United States, the Soviet Union or the United Kingdom employ military means to protect the Brazil's tropical forests and the ozone layer, as well as prevent drift-net fishing have recently been envisaged. See Roger Martin, former British career diplomat-turned-environmentalist, in 'Toward a 'Green' Defense Policy', *The Boston Globe*, August 6, 1990.

²⁵ Oran R. Young writes that a party with more to gain than others can exercise bargaining leverage by offering side-payments or promising to reward others for their support. 'Political Leadership and Regime Formation: On the Development of Institutions in International Society', 289. Joseph M. Grieco has recently emphasized the Waltzian view on cooperation claiming that such bargains will not take place. Grieco writes: 'a relative-gains problem for cooperation [exists]: a state will decline to join, will leave, or will sharply limit its commitment to a cooperative arrangement if it believes that gaps in otherwise mutually positive gains favor partners'. *Cooperation Among Nations*, 10. For further discussion, see Duncan Snidal 'Relative Gains and the Pattern of International Cooperation', and Robert Powell 'Absolute and Relative Gains in International Relations Theory', *American Political Science Review* 85 (December 1991), 1303-1320. For a recent critical discussion of Grieco's view, see Helen Milner 'International Theories of Cooperation Among Nations: Strengths and Weaknesses,' *World Politics* 44 (April 1992), 466-96.

result in regime change ²⁶. A decline of American leadership would therefore weaken the international dumping regime. Fragmentation of hegemonic power eventually means regime collapse. In the absence of a hegemon, disputes are more likely and rule violations more frequent within the international dumping regime.

For Realists, states are 'the only agents capable of solving global problems' ²⁷. International organizations, ocean scientists, NGOs and prominent individual personalities therefore play an insignificant role in the process of building the international dumping regime ²⁸. Moreover, Realists implicitly state that the influence of non-state actors diminishes as the number of cooperating states rises.

The international dumping regime and rationalistic realism

Rationalistic Realists share Realists' view on the international system. However, they find that international rules and institutions facilitating international cooperation are more widespread than what is suggested by Realists ²⁹. Whereas the latter group of scholars see the world as always in danger of slipping back into a state of war (theorizing is therefore

²⁶ Keohane 'The Theory of Hegemonic Stability and Changes in International Economic Regimes, 1967-1977', 132. See also Stephen Krasner 'Structural Causes and Regime Consequences: Regimes As Intervening Variables', 14-16.

²⁷ Waltz, *Theory of International Politics*, 108.

²⁸ Realists maintain that states are the only significant actors at the level of the international system. Graham T. Allison claims in *Essence of Decision. Explaining the Cuban Missile Crisis* (Boston: Little, Brown, 1971) that his three models all explain major aspects of international politics. Waltz has responded that only one of the three models is relevant for understanding international politics, while the two other models are in fact concerned with foreign policy making, i.e. domestic level events. See Waltz *ibid.*, 122. See also Robert G. Gilpin's critique of Allison in 'The Richness of the Tradition of Political Realism' in Robert O. Keohane, ed., *Realism and Its Critics*, 316-18.

²⁹ The term rationalistic theory is suggested by Keohane in 'International Institutions: Two Approaches'. For an important collection of studies by Rationalistic Realists, see Kenneth A. Oye, ed., *Cooperation Under Anarchy* (Princeton NJ.: Princeton University Press, 1986). Referred to as Neoliberal Institutionalism, the Rationalistic Realist school of thought has recently been challenged by Realists. See Joseph M. Grieco, *Cooperation among Nations*.

oriented toward explaining how the state of war might be avoided, for example balance-of-power theory) the former group sees the world as consisting of states with a potential for cooperation (theorizing is therefore oriented toward explaining the obstacles to cooperation and how they might be overcome). Rationalistic Realists emphasize the existence of collective goods, collective action problems, mixed interests, mutual gains, and plus-sum conflicts in international politics³⁰. In the Rationalistic Realist view, the international-political system is divided up into issue-areas, and states are not quite the rational, unitary decision-makers Realists would have them to be³¹. To explain cooperation, Rationalistic Realists focus on international regimes³². According to Stephen D. Krasner's well-known definition, which is broader than the one used in this study, 'regimes can be defined as sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations'³³. While Rationalistic Realists in principle agree with Krasner that 'actors are rarely constrained by international principles, norms, rules, or decision-making procedures', i.e. regimes really do

³⁰ Realist Stephen D. Krasner has repeatedly emphasized that zero-sum conflicts do not provide a basis for regimes nor any reason to coordinate policies precisely because one actor's loss is another's gain. See *Structural Conflict: The Third World Against Global Liberalism* (Berkeley: University of California Press, 1985), 60; see also 'Global Communications and National Power: Life on the Pareto Frontier', *World Politics* 43 (April 1991), 336-66. Robert O. Keohane uses Thomas Schelling's term 'mixed-motives' games to describe international situations or structures which could benefit from cooperation. See *After Hegemony*, 67. For the definition of mixed-motive games, see Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, Mass.: Harvard University, 1980), 89.

³¹ See, for example, Keohane's discussion of bounded rationality and incomplete and partially available information in *ibid.*, 85-132.

³² For an important collection of contributions to this literature, which also demonstrates major differences of opinion, see Stephen D. Krasner, ed. *International Regimes*.

³³ Stephen D. Krasner 'Structural Causes and Regime Consequences: Regimes as Intervening Variables', 2. Important criticism of the definition of regimes has been put forward in Susan Strange 'Cave! hic dragons: a critique of regime analysis', and Oran R. Young, *International Cooperation. Building Regimes for Natural Resources and the Environment*, 194-198. For a good overview, see Stephan Haggard and Beth A. Simmons 'Theories of International Regimes', 491-517. For the definition used in this study, see Chap. 1, footnote 1. I do not count Krasner in the Rationalistic Realists' group. Krasner has recently criticized this group of scholars for emphasizing 'political market failures' as well as monitoring and information, rather than power. See 'Global Communications and National Power', 361-62.

not matter much on their own, they nonetheless find that regimes can perform important functions ³⁴.

Rationalistic Realists thus claim that international regimes help governments to overcome collective action problems, especially the problems of supplying and maintaining collective goods, for example pollution-free oceans ³⁵. The Prisoners' Dilemma, the most popular model of collective action problems, illustrates that governments behaving as rational egoists might fail to cooperate; while non-cooperation in the Prisoners' Dilemma is the best strategy for each government, the governments lose collectively compared to if they had cooperated ³⁶. Also, future cooperation is discouraged ³⁷.

Rationalistic Realists find that international regimes can improve on this socially undesirable situation. To show how, insights from rational-choice theory and micro-economics have been incorporated into regime theory. Thus, Rationalistic Realists claim that as improving communication between the prisoners increases cooperation in the Prisoners' Dilemma (where the prisoners are held incommunicado), so improving communication among governments will aid cooperation. Communication is thus crucial in coordinating the

³⁴ Stephen D. Krasner, *Structural Conflict*, 60.

³⁵ It is well-known that public goods are defined by the two characteristics 'jointness of supply' and 'non-excludability'. The first characteristic points out that the consumption of pure public goods is jointly, non-rival and simultaneously occurring, i.e. once the good is made available to one individual (state) it can be easily and freely supplied to others (states) as well. Everyone with access to it is able to consume it without detracting from the amount available to others. Non-excludability means that once the good is provided it cannot feasibly be withheld from others in the group. See Mancur Olson, *The Logic of Collective Action*, 14.

³⁶ Helen Milner writes: 'Indeed, prisoners' dilemma (PD) has proliferated as *the* key metaphor of international politics'. 'International Theories of Cooperation Among States,' 467. By 1975, more than 2,000 papers had been devoted to the Prisoners' Dilemma game. See Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 5.

³⁷ The Prisoners' Dilemma is some variation on the following situation: Two prisoners are accused of the same crime. If both confess, both will be convicted. If neither confesses, neither will be convicted. If one refuses while the other confesses, the confessor will be acquitted and will furthermore receive a gift while the refuser will be punished more severely than he would have been if both confessed. Both prisoners' best individual strategy is therefore to confess (no cooperation) as each then avoids the most severe punishment and might, if the other refuses, furthermore receive a gift. If neither confesses (cooperation), however, both will be acquitted.

preferences of governments. Rationalistic Realists argue that international regimes also can facilitate monitoring and enforcement by providing information on the behavior of states. International regimes will thus help in establishing the credibility of governments, especially their reputation for cooperation³⁸. By stressing reciprocity among states, regimes delegitimize defection, which makes this strategy more costly³⁹. For Rationalistic Realists, international regimes thus serve a major function as information gatherers and distributors.

It has been demonstrated experimentally that cooperation is more likely when the Prisoners' Dilemma is played several times instead of just once because short-term gains obtained by non-cooperation are outweighed by the potential benefits of cooperation in the long run⁴⁰. Rationalistic Realists similarly maintain that examples from international political economy support their claim that cooperation becomes more likely when governments expect that their relationships will continue indefinitely ('the shadow of the future') and retaliation is possible⁴¹. Regularizing inter-governmental relations is thus another major function of international regimes. In sum, international regimes help cooperation through providing reliable information to members; monitoring governments; raising the costs of non-compliance (as issues might be linked within regimes); and pushing states to reexamine their short-term interests in the light of long-term interests.

Rationalistic Realists also stress that transactions and information costs rise as the

³⁸ Robert Keohane and Robert Axelrod write: 'Regimes provide information about actors' compliance; they facilitate the development and maintenance of reputations; they can be incorporated into actors' rules of thumb for responding to others' actions; and they may even apportion responsibility for decentralized enforcement of rules'. 'Achieving Cooperation Under Anarchy: Strategies and Institutions', 237.

³⁹ *Ibid.*, 250.

⁴⁰ Keohane, *After Hegemony*, 75-76. For discussion of the games Prisoners' Dilemma, Stag Hunt, and Chicken, see Kenneth A. Oye 'Explaining Cooperation Under Anarchy: Hypothesis and Strategies', in Oye, ed., *Cooperation Under Anarchy*, 13-14. See also Axelrod and Keohane 'Cooperation Under Anarchy: Strategies and Institutions', 232. For a more detailed discussion, see Kenneth W. Abbott 'Modern International Relations Theory: A Prospectus for International Lawyers', *Yale Journal of International Law* 14 (1989), 354-75.

⁴¹ Axelrod and Keohane 'Achieving Cooperation Under Anarchy: Strategies and Institutions', 232. However, realists doubt that the 'shadow of the future' necessarily makes cooperation more likely. See Grieco, *Cooperation Among Nations*, 227.

number of states increases. They agree that very high transactions costs and information costs in some cases might preclude cooperation. Another threat to cooperation within groups involving large numbers of states stems from difficulties in anticipating the behavior of other states. In addition, the feasibility of sanctioning defectors is diminished in large groups, which encourages free-riding ⁴².

To improve on such situations, Rationalistic Realists point to the beneficial effect of transforming groups involving large numbers of states into collections of more manageable two-persons games ⁴³. In their understanding, this is achieved by powerful states forcing less powerful ones to accept terms favored by the powerful ones ⁴⁴. For such reasons, Rationalistic Realists expect that groups of rather homogeneous states would establish regional dumping regimes. Reaching agreement on an international dumping regime, necessarily including a much higher number of very uneven and heterogeneous states, would be infeasible and is therefore not likely.

For Rationalistic Realists, finally, constructing linkages between issues within regimes might increase cooperation. International regimes with many issues on their agenda, high issue density, are therefore more successful in promoting cooperation than regimes with low issue density ⁴⁵.

Although Rationalistic Realists have paid little attention to the question, there appears

⁴² Kenneth A. Oye 'Explaining Cooperation Under Anarchy: Hypothesis and Strategies', 19–20.

⁴³ For a discussion of N-person games, see Duncan Snidal 'The Game Theory of International Politics', in Kenneth A. Oye, ed., *Cooperation Under Anarchy*, 52–55.

⁴⁴ Axelrod and Keohane write: 'the role of institutions in transforming N-person games into collections of two-person games'; and 'institutions...may enable N-person games to be broken down into games with smaller number of actors'; also, 'powerful actors structure relationships so that countries committed to a given order can deal effectively with those that have lower levels of commitment'. 'Achieving Cooperation Under Anarchy: Strategies and Institutions', 238–9 and 248. Axelrod and Keohane mention big banks (they discuss a study of banking) and great powers as examples of 'powerful actors' structuring relationships. Keohane has given other examples of how powerful states structure less powerful states' policy choices. See *After Hegemony*, 72–73. It should be kept in mind that institutions, as the two first quotes could imply, are not actors. James N. Rosenau has criticized Keohane for referring to international regimes as if they were actors. See 'Before Cooperation: Hegemons, Regimes and Habit-Driven Actors in World Politics' *International Organization* 40 (Autumn 1986), 881–82.

⁴⁵ For discussion of issue density, see Keohane, *After Hegemony*, 79–80.

to be agreement that international regimes are created by selfish hegemons supplying international public goods⁴⁶. Rationalistic Realists therefore suspect that the United States would 'throw its weight' behind the creation of the international dumping regime.

Important implications for how international cooperation develops follow from Rationalistic Realists' emphasis on international public goods. Thus, similar to Realists, they predict that the hegemon will support the regime as long as benefits exceed costs to the hegemon. But it might happen, however, that other states to some extent follow their own interests and perhaps do not contribute their fair share to the provision of the good⁴⁷. For Rationalistic Realists, the scope and the strength of the international dumping regime will therefore not be dictated entirely by American interests. Other states might be able to pursue their own interests to a limited extent.

⁴⁶ Robert O. Keohane writes: 'The dominance of a single power may contribute to order in world politics, in particular circumstances, but it is not a sufficient condition and there is little reason to believe that it is necessary'. However: 'Cooperation may be fostered by hegemony, and hegemons require cooperation to make and enforce rules'. See *After Hegemony*, 46. Keohane has not developed an alternative to the hegemonic stability theory's explanation of international regime formation. Keohane's functional theory of international regimes (Chap. 6 in *After Hegemony*) explains regimes as means at the disposal of states wanting to cooperate. Using a functional explanation, the question of *how* regimes are constructed is not addressed by Keohane. For a good discussion of functional explanations, see Jon Elster, *Explaining Technical Change: A Case Study in the Philosophy of Science* (Cambridge: Cambridge University Press, 1983), 49–69. For a good discussion of hegemons and international regime formation, see Oran R. Young 'The Politics of International Regime Formation: Managing Natural Resources and the Environment', 350–55. See also Young 'Political Leadership and Regime Formation: On the Development of Institutions in International Society', 285–88. Those who stress that hegemons act on selfish reasons when they provide public goods repeat Mancur Olson's argument about 'privileged groups': '(Groups where) each of the members, or at least one of them, will find that his personal gain from having the collective good exceeds the total cost of providing some amount of that collective good: there are members who would be better off if the collective good were provided, even if they had to pay the entire cost of providing it themselves, than they would be if it were not provided'. Olson, *The Logic of Collective Action*, 34.

⁴⁷ Especially the United States government as well as American academicians have seen such 'exploitation' of the great by the small', first described by Olson, as a threat to international cooperation within NATO. This discussion runs parallel to the one of international burden-sharing. For discussion of international cooperation and public goods, see Bruce M. Russett and John D. Sullivan 'Collective Goods and International Organization' *International Organization* 25 (1971), 853–54. See also Mancur Olson 'Increasing the Incentives for International Cooperation' *International Organization* 25 (1971), 870.

Summary; The international dumping regime, realism and rationalistic realism

Realists claim that global cooperation on environmental protection necessarily is severely constrained by the structure of international politics. International rules, institutions and patterns of cooperation might develop, but will achieve very little ⁴⁸.

Because of anarchy, the lack of common government to enforce rules, states cooperate only when it is in their interest. States cannot be forced to act against their self-interests. Domestic politics, international organizations and NGOs are insignificant in the Realist and the Rationalistic Realists' models of international politics ⁴⁹. International principles, norms, rules, and decision-making procedures guiding behavior within particular issue-areas are non-mandatory and volatile. Moreover, they change with redistribution in the underlying relative power capabilities. Information distribution and monitoring are occasionally well developed within international regimes, but centralized enforcement is as a rule lacking ⁵⁰.

Realists and Rationalistic Realists both suspect that the United States would have constructed the international dumping regime. As a hegemon, the United States would be motivated purely by self-interest. Concern for the welfare of other states, much less for the world's oceans, would not enter into its policy 'calculus'. The regime would closely mirror environmental interests of the United States, or achieve broader American foreign policy objectives.

⁴⁸ Realism does not rule out the existence of international rules. See Waltz, *Theory of International Politics*, 89. Waltz writes 'Rules, institutions, and patterns of cooperation, when they develop in self-help systems, are all limited in extent and modified from what they might otherwise be'. Waltz 'Reflections on *Theory of International Politics: A Response to My Critics*', 336. Same point is made in James N. Rosenau, *Turbulence in World Politics*, 245-46.

⁴⁹ Waltz writes: The theoretical separation of domestic and international politics need not bother us unduly...Students of international politics will do well to concentrate on separate theories of internal and external politics until someone figures out a way to unite them'. 'Reflections on *Theory of International Politics: A Response to My Critics*', 340.

⁵⁰ Axelrod and Keohane write: 'Of course, compliance is difficult to assure; and international regimes almost never have the power to enforce rules'. 'Achieving Cooperation Under Anarchy: Strategies and Institutions', 250.

For Realists and Rationalistic Realists, the international dumping regime would be critically dependent on continued support from the United States. Declining American leadership would eventually lead to regime collapse because states would follow their own individual interests.

Realists and Rationalistic Realists both suspect that dumper nations would fiercely resist other states' attempts to circumscribe their regulatory autonomy with respect to disposal of radioactive waste in the oceans. Because regulation of radwaste disposal also raises security and energy independence concerns, nuclear nations would try to exclude regulation of radwaste disposal from the scope of the regime. Similar to the negotiations on the 1958 U.N. Law of the Sea Conference, mentioned in Chapter 1, anti-dumping nations would have no powerful leverage to use against dumping nations, an exclusive group of economic and military superpowers (the Soviet Union excluded).

A study of the international dumping regime and radwaste disposal – successful global environmental cooperation, in particular in the case of radwaste disposal – tests Realism in circumstances that are very unfavorable to the theory. From the Realist viewpoint, it is unlikely that a global arrangement for ocean dumping control would be established, and termination of disposal of radioactive waste is even more unlikely. In short, the international dumping regime is a hard case for Realist scholars.

The international dumping regime, reflectivism and the ecological epistemic community model

Reflective literature stresses that international cooperation cannot be fully understood without reference to ideology, the knowledge available to actors, and the values of actors. Cooperation is affected by ideas, provision of information and capacity to process it, perception and misperception, and learning ⁵¹. Ernst Haas, a leading Reflective scholar,

⁵¹ The literature on how perception and misperception, taken in the more narrow sense, influence foreign policy-making, is not included in the Reflective group. For this literature, see R. Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976).

emphasizes the role science plays in policy-making within international organizations and international cooperation: 'Science, in short, influences the way politics is done. Science becomes a component of politics because the scientific way of grasping reality is used to define the interests that political actors articulate and defend. The doings of actors can then be described by observers as an exercise of defining and realizing interests informed by changing scientific knowledge about man and nature'⁵². Thus, Reflective analysts mostly pay attention to how decisions and policies are made within national and international bureaucracies. Whereas Realists and Rationalistic Realists analyse at the level of the international system, Reflective scholars analyse at the level of the so-called units of the international system.

Ernst Haas links regime creation to perception of costs of non-cooperation: 'The need for collaboration arises from the recognition that the costs of national self-reliance are usually excessive'⁵³. However, knowledge needs to be rather consensual in order to guide regime creation⁵⁴. If not, regimes are hard to construct. Since knowledge varies over time Reflective analysts question if certain forms of international collaboration by definition are collective goods⁵⁵. Internationally, then, the sharing of a fund of knowledge among governments otherwise in opposition to each other is, in Ernst Haas's words, a form of

For another approach, focussing on uncertainty and decision making, see by John D. Steinbruner, *The Cybernetic Theory of Decision* (Princeton, NJ: Princeton University Press, 1974).

⁵² Ernst B. Haas, *When Knowledge is Power*, 11.

⁵³ Ernst B. Haas 'Why Collaborate? Issue-Linkage and International Regimes', 357.

⁵⁴ Ernst B. Haas, *ibid.*, 364-67. Recently, Haas has written: 'When knowledge becomes consensual, we ought to expect politicians to use it in helping them define their interests; we should not suppose that knowledge is opposed to interests'. *When Knowledge is Power*, 12.

⁵⁵ Ernst Haas writes: 'If the emphasis is on how actors perceive the need for collaboration, certain activities or places cannot *by definition* be regarded as a 'collective good'. Whether they are so regarded depends on the mixture of perceptions and the modes of reasoning employed by those who fashion regimes'. 'Why Collaborate? Issue-Linkage and International Regimes', 360. For an example of how thinking about 'a place' has changed, the example is oceans as 'the heritage of mankind', see Ernst B. Haas 'Words Can Hurt You; Or, Who Said What to Whom About Regimes', 24.

'cognitive convergence' ⁵⁶.

Reflective scholars generally do not consider hegemonic power a sufficient condition for regime creation and maintenance ⁵⁷. They find it unlikely that the hegemon will supply the necessary power in cases where it does not see the need for creating collaborative arrangements ⁵⁸. This might happen when those involved at the domestic level do not support cooperation, are unable to reach agreement among themselves, or possibly miscalculate the outcomes and benefits of cooperation ⁵⁹. On the other hand, cooperation is helped to the extent governments are guided by embedded norms stressing the existence of a commonly shared problem and the appropriate solutions ⁶⁰.

When do regimes change, then? Reflective scholars agree that changes of regimes are mainly a result of change of knowledge: 'If we adopt this perceptual notion of the national interest, we must discard the idea of 'structurally necessary' regimes; nothing is *absolutely* necessary. Necessity is a function of perception, of knowledge; it is time-bound. What was considered necessary in one epistemological perspective becomes obsolete in another' ⁶¹.

To understand evolution and change in governments' perception of international cooperation, Reflective scholars especially focus on how scientists and policy experts influence policy. Reflective scholars stress that professional groups of for instance scientists and experts by way of academic training and professional experiences might acquire a common outlook on the world and even share political values. Other scholars have observed that experts from public administration, industry and private interest groups might as

⁵⁶ Haas 'Why Collaborate? Issue-Linkage and International Regimes', 368.

⁵⁷ *Ibid.*, 359.

⁵⁸ *Ibid.*, 365.

⁵⁹ For an example, see John S. Odell, *U.S. International Monetary Policy: Markets, Power, and Ideas as Sources of Change* (Princeton, N.J.: Princeton University Press, 1982), 358.

⁶⁰ See, for example, John G. Ruggie 'International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic Order', in S.D. Krasner, ed., *International Regimes*, 195-231.

⁶¹ Haas 'Why Collaborate?', 392.

informal groups affect policy because their professional training and knowledge of policy realities lead them to advocate some policies and oppose others⁶². Reflective scholars, in contrast, argue that policy experts, government advisors, and bureaucrats who constitute an epistemic community choose to advocate policies when these conform to political beliefs and values which academic training and professional experience have instilled in them. Epistemic communities are actively influencing and perhaps even formulating policy; they are not just government advisors, policy specialists, or experts⁶³.

To illustrate his thesis, Ernst Haas has often referred to ocean affairs. He writes, for example, that: 'The ocean matters to governments because their citizens use it to fish, sail ships, extract oil, fight wars and conduct research; they also now recognize that the oceans help determine the weather and that it may not be a good idea to use them as the world's garbage dump'⁶⁴. But Ernst Haas does not explain how the health of the oceans and how competing uses of the oceans – both issues signify a change in perception which gained political momentum only in the beginning of the 1970s – became political issues. The Reflective approach has often an evolutionary and rather harmonious flavor and, as this study will show, despite its intentions to the opposite, may downplay important ideological conflicts and rivalries among competing perceptions. Furthermore, knowledge is apparently transformed into policy through a piecemeal, gradual process. As Ernst Haas writes: 'Knowledge becomes salient to regime construction only after it has seeped into the

⁶² The terms issue network, advocacy coalition, and policy community have been used to describe such informal networks of policy specialists active in setting agendas and formulating policies. For issue networks, see Hugh Heclo 'Issue Networks and the Executive Establishment', in Anthony King, ed., *The New American Political System* (Washington, D.C.: American Enterprise Institute, 1978), 87–124. For advocacy coalitions, see Paul A. Sabatier 'An Advocacy Coalition Framework of Policy Change and the Role of Policy-Oriented Learning Therein', *Policy Sciences* 21 (1988). For policy community, see John W. Kingdon, *Agendas, Alternatives, and Policy Alternatives* (Boston: Little, Brown, 1984), 123, and Giandomenico Majone, *Evidence, Argument and Persuasion in the Policy Process* (New Haven: Yale University Press, 1989), 161.

⁶³ According to Ernst B. Haas: 'Not only molecular biologists and meteorologists but also psychoanalysts, astrologers, and sociologists may constitute epistemic communities (or they may not)'. *When Knowledge is Power*, 41.

⁶⁴ Ernst B. Haas 'Why Collaborate?', 365.

consciousness of policy-makers and other influential groups and individuals' ⁶⁵. But because it is difficult to pin down exactly when knowledge is consensual enough for policy-making it also becomes difficult for the Reflective scholar to predict at what point new knowledge will give rise to international regimes ⁶⁶. Nonetheless, Ernst Haas finds that issue-specific negotiations usually deal with topics on which there is an accepted body of knowledge ⁶⁷. It is therefore to be expected that the international dumping regime will reflect rather consensual knowledge ⁶⁸.

For Reflective scholars, international organizations may play a major role as producers and distributors of new scientific knowledge. But regimes arise and change through interactions among governments, which leaves little influence to other actors. Downplaying the role of hegemony, Ernst Haas generalizes: 'Regimes are constructed by states through the medium of multilateral negotiation' ⁶⁹.

The international dumping regime and the ecological epistemic community model

In a recent study Peter Haas concludes that an ecological epistemic community has been essential in promoting the arrangement for protecting the Mediterranean Sea against pollution (the so-called Med Plan). He summarizes: 'Controlling marine pollution and supporting the Med Plan has been basically an elite-driven process. Domestically, issues of marine quality

⁶⁵ Ibid., 369.

⁶⁶ See also discussion in Haggard and Simmons 'Theories of International Regimes', 509-13. Reflective scholars admit that they have difficulties predicting when cooperation will occur. See, for example, John S. Dryzek, Margaret L. Clark, and Garry McKenzie 'Subject and System in International Interaction' *International Organization* 43 (Summer 1989), 498.

⁶⁷ Ernst B. Haas 'Why Collaborate?', 370.

⁶⁸ For discussion of some of the conceptual problems of consensual knowledge and cooperation, see Peter M. Haas 'Epistemic Communities and International Policy Coordination', Manuscript January 1991, 32-34.

⁶⁹ 'Why Collaborate?', 370.

were not highly politicized, following their initial popularity, and remained the purview of a small group of elites and technocrats' ⁷⁰. This group constituted an ecological epistemic community; i.e. an epistemic community sharing views on 'the kinds of substances to be controlled, the methods to be used and the values to be employed in order to direct policy towards desired ends' ⁷¹.

Peter Haas finds that an ecological epistemic community defined the scope and influenced the strength of this regional pollution control arrangement ⁷². Based on a shared broad understanding of the environmental problems and their solutions, an ecological epistemic community pressured decision-makers to construct a regional arrangement the community itself had defined. The strength of the arrangement varied in relation to the ecological epistemic community's influence on domestic policy-making. Countries with strong representation of the ecological epistemic community, i.e. access to national decision-makers, were the most active supporters of international commitments and the most successful in national compliance along the lines of the epistemic community's shared view. Countries with weak representation of the ecological epistemic community were less supportive of international commitments and adopted weaker domestic pollution controls. Governments would thus be persuaded to establish environmental protection policies when members of the ecological epistemic community presented their advice in a forceful and consistent way to national decision-makers, and the influence of the opposition was at the same time minimized ⁷³. Similar to the case of the Med Plan, Peter Haas finds that recent

⁷⁰ *Saving the Mediterranean*, 163.

⁷¹ Peter M. Haas 'Obtaining International Environmental Protection Through Epistemic Consensus', 350. Haas adds the following to the definition: 'Every member of this group of specialists (epistemic community in environmental issues) shares a number of beliefs: principled values regarding the enhancement of collective welfare, the validity of cause-and-effect relationships, truth tests (while most ecological epistemic communities share an acceptance of the scientific method, truth tests may in principle be based on other techniques) and a common policy enterprise'. *Ibid.*, 350.

⁷² For scope and strength of international regimes, see footnote (17) above.

⁷³ Peter M. Haas 'Obtaining International Environmental Protection Through Epistemic Consensus', 351. Ernst Haas writes: 'The success of an epistemic community thus depends on two features: (1) the claim to truth being advanced must be more persuasive to the dominant political decision makers than some other claim, and (2) a successful alliance must be made with the dominant political coalition. We

international efforts to protect the ozone layer largely have been driven by an ecological epistemic community which 'identified the broad scope of international policy, and...pressured governments to comply with international standards' ⁷⁴.

Epistemic community theorists argue that the political influence of an epistemic community grows with its control over bureaucratic power. In countries in which it gains significant bureaucratic control it will institute environmental protection policies. At the national level, members of an epistemic community might be present in budgetary finance, staffing and enforcement authorities ⁷⁵. At the international level, an epistemic community might supply international officials who will influence agenda-setting, policy debates, and draw attention to international problems and their possible solutions. Thus, an epistemic community might as a transnational network influence policy-making in several countries.

The epistemic community analyst will expect that the international dumping regime was basically created by an ecological epistemic community. The ecological epistemic community would persuade domestic decision-makers of the need for protection of the marine environment against ocean dumping ⁷⁶. Reflecting the ecological epistemic community's perception of the scope of the ocean dumping problem, the epistemic community would press for a global arrangement. Those countries in which the epistemic

can say that epistemic communities *seek* to monopolize access to strategic decision-making positions, though few of them succeed in holding such a position for a long period'. *When Knowledge is Power*, 42.

⁷⁴ Peter M. Haas 'Obtaining International Environmental Protection through Epistemic Consensus', 361. Haas writes that members of the epistemic community 'urged compliance with the Med Plan and pushed their governments to adopt and enforce more comprehensive pollution control policies'. *Saving the Mediterranean*, 79. See also 132 as well as 249-50.

⁷⁵ Haas 'Obtaining International Environmental Protection through Epistemic Consensus', 351.

⁷⁶ Peter Haas variously talks of pressure, persuasion and learning when explaining the influence of ecological epistemic communities. But he does not make clear analytical distinctions among pressure, persuasion and learning. Persuasion and learning are the two most important explanations. For instance, he observes: 'Learning seems to have occurred by persuasion, as marine scientists and members of the ecological epistemic community informed foreign ministry officials of the need to control specific pollutants'. See 'Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control', 397. Elsewhere, however, he stresses 'that very little learning occurred by persuasion. Other government officials did not come to accept a more integrative and conceptual vision of environmental problems (an environmental consciousness) as a result of their accepting the correctness of the ecological epistemic community's consensual knowledge'. *Saving the Mediterranean*, 227.

community had access to domestic decision-makers would be the strongest supporters of stringent controls on ocean dumping. Those countries in which the epistemic community did not have access to domestic decision-makers would be the weakest supporters of stringent controls on ocean dumping.

As previously mentioned, Reflective scholars doubt that hegemonic power is a sufficient condition for international regime formation. Pointing to, among others, international regulation of oil tanker pollution and treaties for preservation of endangered species, Haas similarly claims that 'these environmental treaties were concluded without any single state – not even the United States – assuming a leadership role'⁷⁷. Haas asserts, instead, that: 'international environmental cooperation is generated by the influence wielded by specialists with common beliefs, contrary to the conventional approaches which stress the role of interstate power'⁷⁸.

The epistemic community model tends to focus on compliance with international regimes rather than regime creation. While Haas points to the role of knowledge and new information when explaining why Mediterranean states complied with and expanded the Mediterranean Action Plan, he actually points to erroneous beliefs instead of scientific knowledge when explaining the regime-building process. In Haas's account, therefore, persuasion by an ecological epistemic community was not essential in bringing decision-makers to begin controlling regional pollution: 'Many [national] officials thought that pollution was a commons problem, and thus required coordinated action throughout the region. They assumed that currents transferred the pollutants fairly freely among countries. UNEP officials were well aware that currents were not sufficiently strong to transmit pollutants across the Mediterranean Basin...but they hoped to complete an agreement, so they just smiled and nodded when others characterized Mediterranean pollution as a commons problem. Only later did studies reveal to marine scientists that currents were too weak to fully exchange the wastes between the northern and southern shores; regional pollution was not a true collective good, and could be managed bilaterally or subregionally, although this

⁷⁷ Peter M. Haas 'Obtaining International Environmental Protection through Epistemic Consensus', 349.

⁷⁸ *Saving the Mediterranean*, xxii.

fact was never fully appreciated by foreign ministry officials, who continue to accept pollution as a regionally shared problem. This false perception actually facilitated the resolution of the problem'⁷⁹. Elsewhere, Haas briefly mentions that 'Jacques Cousteau was active in attracting publicity' to Mediterranean pollution and 'gloom-and-doom prophesies' led to concern about the Mediterranean in the early 1970s⁸⁰. Although such popular science accounts of Mediterranean pollution together with prominent scientists and ecologists thus identified the need for regulation, they are not given any more systematic significance by the ecological epistemic community model⁸¹.

To create the international dumping regime, the epistemic community analyst will expect that international leadership would be supplied by an ecological epistemic community. Domestic decision-makers will be uncertain about the nature and scope of the ocean dumping problem, as well as the costs of specific control strategies, and will consult the ecological epistemic community for advice. By providing the authoritative and legitimate scientific understanding of the ocean dumping problem, the ecological epistemic community will shape policy as well as institutional and organizational arrangements⁸². The epistemic community will develop a coherent view and common understanding of the ocean dumping problem through international scientific conferences as well as other forms of exchange and

⁷⁹ *Saving the Mediterranean*, 70–71. For a discussion of Haas's explanation, see also Helen Milner 'International Theories of Cooperation among Nations,' 478–79.

⁸⁰ *Ibid.*, 83 and 104. Haas occasionally juxtaposes the influence of popular science and 'hard' science in his explanation: 'Facing evidence of environmental degradation, fearing the impending 'death' of the Mediterranean, and pressured by the UNCHE preparations, governments established environmental ministries to alleviate the uncertainty surrounding the causes and effects of Mediterranean pollution and to develop measures to control it'. *Ibid.*, 156.

⁸¹ Haas's summary version of the emergence of the Med Plan reads: 'An ecological epistemic community was consulted by governments in order to dispel uncertainty about the extent of environmental pollution. Such concern was precipitated by a crisis; the alarm that the Mediterranean was in danger of dying. This epistemic community significantly influenced the form and duration of environmental cooperation. The epistemic community made itself felt internationally and nationally'. *Ibid.* 224.

⁸² I use the words organizations and institutions in the sense they have been defined by Oran Young: 'Institutions are practices composed of recognized roles coupled with sets of rules or conventions governing relations among the occupants of these roles. Organizations are physical entities possessing offices, personnel, equipment, budgets, and so forth'. Oran R. Young 'International Regimes: Toward a New Theory of Institutions', 108.

communication of scientific understanding and knowledge. Common understanding among the members of the ecological epistemic community will guarantee that its members in various countries will give consistent, uniform scientific advice to decision-makers. Reflecting the beliefs of the ecological epistemic community, domestic decision-makers will then design and implement a global policy to protect the oceans against dumping.

Epistemic community analysts maintain that the ecological epistemic community's political influence remains unabated as long as it can advise policy-makers in a consistent and persuasive way, and as long as its claim to expertise remains unchallenged. Its political influence might end, however, should new Torrey Canyon-size oil spills, ozone holes over the Antarctica, Chernobyl nuclear accidents, or shifts in scientific understanding, reject the 'paradigm' advanced by the epistemic community⁸³. In the absence of ecological or environmental crises, or erosion of the ecological epistemic community's authoritative claim to policy relevant knowledge, the epistemic community analysts therefore suspect that the international dumping regime through advice and pressure will develop consistently with the interests of an ecological epistemic community.

Summary; The international dumping regime, reflectivism and the ecological epistemic community model

According to Reflective scholars, scientists play a key role in international environmental policy-making as well as in cooperation on technical and scientific issues⁸⁴. Scientists

⁸³ Peter M. Haas 'Obtaining International Environmental Protection through Epistemic Consensus', 353. See also *Saving the Mediterranean*, 249. For the international political impact of the 1967 Torrey Canyon oil spill (121,200 tonnes) between France and Britain, see R. Michael M'Gonigle and Mark W. Zacher, *Pollution, Politics, and International Law. Tankers at Sea* (Berkeley, Calif.: University of California Press, 1979). For the impact of the discovery of a seasonally depleted ozone layer over the Antarctica, see Richard Elliot Benedick, *Ozone Diplomacy. New Directions in Safeguarding the Planet* (Cambridge, Mass.: Harvard University Press, 1991), 110-11.

⁸⁴ According to Ernst Haas, environmental protection and public health is particularly prone to be guided by scientists and their models: 'Scientific models show up more directly in those fields of public policy in which scientific participation is continuous alongside the work of nonscientific decision makers,

participate because of a need for expertise, and the high uncertainties which often surround global environmental issues reinforce the need for policy advice by scientists, which probably increases their influence⁸⁵.

Epistemic community theorists will predict that the international dumping regime will be masterminded and spearheaded by an ecological epistemic community, the legitimate scientific authority with claim to policy relevant knowledge. Staffing international organizations as well as national environmental administrations involved in ocean dumping, an ecological epistemic community will persuade and pressure decision-makers to establish and enforce stringent ocean dumping controls reflecting the epistemic community's view of this problem and its appropriate solutions.

Epistemic community theorists will also predict that the strength of the international dumping regime will vary with the ecological epistemic community's influence on domestic policy-making. Countries with strong representation of the ecological epistemic community, i.e. broad access to national decision-makers, will be the most active supporters of international commitments and the most successful in national compliance. Countries with weak representation of the ecological epistemic community will be less supportive of international commitments and will adopt weaker domestic ocean dumping controls.

It should be noted that Reflective scholars and epistemic community theorists neglect environmental groups and public opinion in their understanding of international cooperation on environmental protection. While Ernst Haas only briefly remarks on these matters, Peter Haas finds little supporting evidence that public opinion and environmental groups influence

such as public health, environmental protection, transportation, telecommunications, and defense production. Here the models used by scientists seriously guide the way problems are defined and solutions devised; economic, political and legal information that constrains the use of scientific models at the margin, however, also enters the process'. Haas, *When Knowledge is Power*, 22.

⁸⁵ The reason why epistemic communities come into power is 'the growing reliance on technical expertise to manage highly complex international policy matters'. Peter M. Haas 'Obtaining International Environmental Protection Through Epistemic Consensus', 347. He also claims that 'if perceived uncertainty by politicians is high and public pressure is severe, then epistemic communities may be effectively able to promote policies that are further from the political 'norm' than if uncertainty was less'. *Ibid.*, 353.

international policy development⁸⁶. He therefore concludes that 'environmental policy is usually elite driven' and 'despite the recent emergence of Green Parties throughout Europe, actual governmental policies for environmental protection and international co-operation preceded this mass mobilization of public opinion'⁸⁷. In fact, few, if any, contributors to international regimes theory ascribe any importance to environmental groups and public opinion in understanding international cooperation on environmental protection⁸⁸.

A study of the international dumping regime – science-intensive, fairly inexpensive environmental cooperation – tests ecological epistemic community theory in circumstances that favor the theory⁸⁹. Epistemic community theorists will strongly suspect that an

⁸⁶ According to Ernst B. Haas: '...other instances of regional rather than national space as foci for governance are confined to such unspectacular matters as fisheries conservation and pollution control, which are not likely to arouse the emotional involvement of the citizenry'. *When Knowledge is Power*, 185.

⁸⁷ Peter M. Haas 'Obtaining International Environmental Protection through Epistemic Consensus', 353. Peter Haas asserts that public opinion has been ignoring the issue of marine pollution and has been without effective influence on the initiation of environmental protection policies for the Mediterranean Basin. See 'Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control', 399–400. See also *Saving the Mediterranean*, 163.

⁸⁸ Discussing this issue, James N. Rosenau has concluded: 'The politics of new resource issues is unlikely to be sustained by the hue and cry of mass publics or burdened or facilitated by their mobilization and intervention'; instead, 'the onset of problems derived from new non-land resources [the new non-land resources associated with outer space, the seabed, environmental pollution, radio frequencies, and weather climate as issue-areas] is likely to be detected only by specialists whose salience and clout in the political arena are quite limited'. 'New Non-Land Resources as Global Issues', 394. See also Rosenau 'Capabilities and Control in an Interdependent World', 43–49. Oran R. Young has paid no attention to mobilization of international public pressure and deliberate construction of public opinion in order to build, and change, international regimes for environmental protection. See Young, 'International Regimes: Toward a New Theory of Institutions, 104–22; Young, 'The Politics of International Regime Formation: Managing Natural Resources and the Environment; Young, *International Cooperation: Building Regimes for Natural Resources and the Environment*; Young, 'Global Environmental Change and International Governance'. None of the three leadership types recently discussed by Young – structural, entrepreneurial, and intellectual leadership – owe their influence to skillful use of public opinion, or attempt to mobilize international public opinion. See Young, 'Political Leadership and Regime Formation: On the Development of Institutions in International Society'.

⁸⁹ As two epistemic community theorists write: 'In the area of global environmental policy an obvious place to look for an epistemic community is climate change, although it would also be instructive to study deforestation, the Law of the Sea, and maritime pollution'. Emanuel Adler and Peter M. Haas 'Epistemic Communities, International Cooperation, and World Order: Creating A Reflective Research Program'. Manuscript, January 1991, 41. Epistemic community theorists seem to believe that high costs are likely

ecological epistemic community has been essential in building the international dumping regime, as well as in halting radwaste disposal. For epistemic community theorists, the international dumping regime is a soft case of international cooperation on environmental protection ⁹⁰.

The international dumping regime and complex interdependence theory

During the 1970s, several criticisms of Realism were raised by international relations scholars. Most important were the following points: the existence of a multitude of international organizations and multinational corporations, as well as various kinds of regional organizations, such as the European Community (EC) and NATO, had dramatically changed international politics; technology and science played a major role in transforming international politics and international organizations ⁹¹; it increasingly seemed misleading and artificial to separate domestic politics and international politics; bureaucratic politics as well as organizational routines and malfunctions prevented states from behaving as unitary, rational actors ⁹²; and issues other than war and peace had appeared on the international agenda.

Moreover, states competed within issue areas, instead of within international politics

to reduce an ecological epistemic community's influence on international environmental policy. See, for example, the comparison between the efforts to protect the ozone layer and the efforts to deal with global warming in Peter M. Haas 'Obtaining International Environmental Protection through Epistemic Consensus', 354–361.

⁹⁰ For hard cases, see Chap. 1, footnote 49.

⁹¹ See Eugene B. Skolnikoff, *The International Imperatives of Technology. Technological Development and the International Political System* (Berkeley, Calif.: University of California, Institute of International Studies Research Series, no. 16, 1972). See also Skolnikoff 'The International Functional Implications of Future Technology', reprinted in Thomas J. Kuchn and Alan L. Porter, eds., *Science, Technology, and National Policy* (Ithaca and London: Cornell University Press, 1981), 226–46.

⁹² For the seminal argument, see Graham T. Allison 'Conceptual Models and the Cuban Missile Crisis', *American Political Science Review* 63 (September 1969), 689–718. See also Allison, *Essence of Decision*.

at large. The metaphor chessboards was used to describe the presumed new realities of international politics: 'The competition between states takes place on several chessboards in addition to the traditional military and diplomatic ones: for instance, the chessboards of world trade, of world finance, of aid and technical assistance, of space research and exploration, of military technology, and the chessboard of what has been called 'informal penetration'. These chessboards do not entail the resort to force'⁹³. Scholars conclude that states were less powerful than earlier, that transnationalization had reduced the power states used to exercise, and that the costs of unilateral action had dramatically increased⁹⁴.

Such observations made scholars search for an alternative to the notion that states are the most significant actors and that states as unitary, rational units struggle for power and peace in an anarchic and violent world politics arena. Realism seemed in addition unable to explain the processes of international politics. A representative view among skeptics of Realism was that 'the state-centric view often fails to forecast outcomes correctly, and state-centric theories are not very good at explaining such outcomes even when the forecasts are correct'⁹⁵.

Complex interdependence

In an important analysis Stephen Haggard and Beth Simmons have concluded that domestic politics and transnational coalitions should be included in theories of international regimes. They suggest: 'a research program that focuses greater attention on issues raised by theorists of complex interdependence; these issues have been neglected in the revival of game theory,

⁹³ Stanley Hoffman 'International Organization and the International System', quoted in Nye and Keohane 'Transnational Relations and World Politics: A Conclusion', 434.

⁹⁴ James Rosenau has summarized, with sarcasm: 'Yes, the power of states has eroded and yes, the world is still smaller and more interdependent than ever, but the state is still the predominant actor in world politics and the state system is still the main foundation for the course of events. That has been the litany in the literature of the field for several decades'. *Turbulence in World Politics*, 97.

⁹⁵ Robert Keohane and Joseph Nye 'Transnational Relations and World Politics: A Conclusion', 430.

and include the erasure of the boundaries between domestic and foreign policy, the importance of transnational coalitions, and, above all, the way in which domestic forces determine patterns of international cooperation' ⁹⁶. International regime analysis has also been criticized by others, most notably by Susan Strange, for overlooking domestic politics ⁹⁷.

The complex interdependence model, Joseph Nye and Robert Keohane coined the term, takes into account several of the criticisms of Realism. Complex interdependence describes situations which exhibit three main characteristics: multiple channels connecting countries reduce the foreign office's control of a governments' foreign policies; absence of hierarchy among issues; and military force as an largely irrelevant or inapplicable means for overcoming conflicts in the international system ⁹⁸. The model primarily focuses on transnational and transgovernmental as well as interstate relations ⁹⁹. Domestic politics is

⁹⁶ Haggard and Simmons 'Theories of International Regimes', 492.

⁹⁷ Susan Strange has suggested instead: 'In trying to draw a map of interlocking, overlapping bargains the researcher will often be drawn far beyond the conventional limits of international politics and international economics. Most likely, the map will have to include bargaining situations and their outcome within national political economies...Drawing bargaining maps will therefore reveal the domestic roots of international arrangements, and tell us more about what is likely to be permanent and what will probably prove ephemeral about them'. Susan Strange '*Cave! hic dragones: a critique of regime analysis*', 353. More generally, James Rosenau has recently emphasized the analytic need to break free 'of the presumption that the domain of 'domestic' politics is separate from the domain of 'international' politics and, instead, viewing the two as woven together around and through the historical and legal boundaries that allegedly separate them'. *Turbulence in World Politics*, 42.

⁹⁸ Robert O. Keohane has later emphasized that 'the most important feature of complex interdependence – almost its *only* important feature – is the ineffectiveness of military force and the constraints that this implies on fungibility of power across issue-areas'. Keohane 'Theory of World Politics: Structural Realism and Beyond', in Keohane, ed., *Neorealism and Its Critics*, 197.

⁹⁹ Joseph Nye and Robert Keohane coined the term in *Power and Interdependence*. See Keohane and Nye's own discussion in '*Power and Interdependence revisited*', 732. According to Keohane and Nye: 'Transnational interactions necessarily involve nongovernmental actors, whereas interstate interactions take place exclusively between states acting as units. Transgovernmental interactions, however, are defined as interactions between governmental subunits across state boundaries. The broad term transnational relations includes both *transnational* and *transgovernmental* interactions – all of world politics that is not taken into account by the state-centric paradigm', 439.

not a significant part of it ¹⁰⁰.

The complex interdependence school has not put forward explicit propositions about creation and change of international regimes for environmental protection ¹⁰¹. But the three conditions of complex interdependence 'are fairly well approximated on some global issues of economic and ecological interdependence' ¹⁰² and 'the explanatory power of overall structure theories of regime change would be lower under conditions of complex interdependence than under realist conditions' ¹⁰³. Because international regimes for environmental protection arise under conditions of complex interdependence – while instead military security 'regimes' arise under Realist conditions – complex interdependence theorists have indicated possible avenues for formation and change of the international dumping regime.

To cope with ecological interdependence, Keohane and Nye claim, leadership should make sure that behavior focuses on joint gains rather than the zero-sum aspects of interdependence ¹⁰⁴. But hegemonic leadership is hardly viable under conditions of complex interdependence. A combination of unilateral initiative – 'going first and setting an example' – and action to induce other states to help stabilize an international regime is instead needed. The first form of leadership will be carried out primarily by a large powerful state while cooperation among large states is needed for the second form of leadership.

Complex interdependence theorists will predict that the United States will take the initiative to construct the international dumping regime because of domestic concern over

¹⁰⁰ For their own recent comments on this, see Keohane and Nye '*Power and Interdependence revisited*', 739–40.

¹⁰¹ International regimes are defined as follows: 'Relationships of interdependence often occur within, and may be affected by, networks of rules, norms, and procedures that regularize behavior and control its effects. We refer to the sets of governing arrangements that affect relationships of interdependence as *international regimes*'. Keohane and Nye, *Power and Interdependence*, 19. (Emphasis in the original).

¹⁰² *Ibid.*, 25.

¹⁰³ '*Power and Interdependence revisited*', 733.

¹⁰⁴ *Power and Interdependence*, 229.

pollution caused by dumping in U.S. waters. Ocean dumping will attract policy attention which results in legislation to protect U.S. waters. In addition, the United States will take the initiative to act internationally against ocean dumping. Complex interdependence theorists will therefore suspect that the international dumping regime will be constructed in response to a U.S. initiative. In short, the United States will go first and thereby set an example ¹⁰⁵.

For complex interdependence theorists, the United States will be able to use only limited economic pressure, but no military means, to achieve agreement on the international dumping regime. According to Keohane and Nye: 'Power resources specific to issue areas will be most relevant. Manipulation of interdependence, international organizations, and transnational actors will be major instruments' ¹⁰⁶.

For complex interdependence theorists, the international dumping regime's survival depends on its legitimacy: 'If non-hegemonic leadership is to be effective, furthermore, all major parties must believe that the regime being created or maintained is indeed in their interests' ¹⁰⁷. Legitimacy is crucial in reducing free-riding or cheating because the coercive element is diminished under conditions of complex interdependence. Keohane and Nye do not, however, explain how and by who the legitimacy of the international regimes will be created. It is assumed, furthermore, that it will be more difficult to create legitimacy among a large number of uneven actors than among a small number of like-minded countries ¹⁰⁸.

Complex interdependence theorists assert that international organizations will not

¹⁰⁵ To define unilateral initiatives to create international regimes Keohane and Nye quote Susan Strange. I have then generalized and applied this form of leadership to ocean dumping. Susan Strange writes: 'The rule made by the United States - made in response for the most part to *domestic* political pressures and *domestic* economic and social needs - are almost always much the most important set of national rules affecting operators in international markets'. Susan Strange 'What is Economic Power and Who Has It?', *International Journal* 30 (Spring 1975), 220, in Keohane and Nye, *Power and Interdependence*, 230.

¹⁰⁶ Keohane and Nye, *Power and Interdependence*, 37.

¹⁰⁷ *Ibid.*, 231.

¹⁰⁸ *Ibid.*, 234.

supply leadership. International organizations may however help cooperation by serving as forums bringing officials together face-to-face and as facilitators of transnational and transgovernmental coalition-formation. International organizations can also influence the international agenda ¹⁰⁹.

To understand change of regimes, Keohane and Nye have suggested an 'international organization model' ¹¹⁰: 'Regimes are established in accordance with distributions of capabilities, but subsequently the relevant networks, norms, and institutions will themselves influence actors' abilities to use these capabilities. As time progresses, the underlying capabilities of states will become increasingly poor predictions of the characteristics of international regimes. Power over outcome will be conferred by *organizationally dependent capabilities*, such as voting power, ability to form coalitions, and control of elite networks: that is, by capabilities that are affected by the norms, networks, and institutions associated with international organization' ¹¹¹. Because oceans affairs is a 'low politics' area compared to the 'high politics' of national defence, complex interdependence theorists expect that their international organization model would better than the Realist model capture the politics of the international dumping regime ¹¹².

Complex interdependence theorists see a possibility for the international dumping regime developing contrary to the interests of its most powerful members. This might

¹⁰⁹ Ibid., 35-37. See also 240.

¹¹⁰ The 'international organization model' is not an international organization but a 'type of world political structure'. Keohane and Nye, *Power and Interdependence*, 54. It basically states that: first, 'the breakdown or weakening of a regime is explained by changes in the norms and organizational processes of world politics'; second, 'a regime may be altered by political bargaining processes that diminish the position of the states with underlying power that gave rise to the regime'; third, 'the development of networks of political interaction, often centered on international organizations, may facilitate agreement on new principles for an international regime'. Keohane and Nye's 'international organization model' has not occupied scholars much. For a discussion of the model, see John S. Odell, *U.S. International Monetary Policy*, 37. For a discussion of its use for international regime theory, see Christer Jönsson, *International Aviation and the Politics of Regime Change*, 57-61.

¹¹¹ Keohane and Nye, *Power and Interdependence*, 55. (Emphasis in the original).

¹¹² Keohane and Nye have recently discussed, and confirmed, the usefulness of the international organization model for understanding oceans politics. See Keohane and Nye, *Power and Interdependence* revisited, 738-39.

happen when less powerful states join forces to vote against the interests of more powerful states. Also, coalitions between developing and developed countries may arise within the international dumping regime. Moreover, less powerful states might control the scientific work within the international dumping regime.

According to complex interdependence theorists, the dumping regime might at some point be too adverse to the interests of powerful governments. In that case, powerful governments will abandon the international dumping regime. Keohane and Nye explain: 'The factors on which the international organization model depends are also more temporary and reversible than those of the basic structural models. *If* powerful governments decide to destroy the existing regimes, and have the determination as well as the ability to do so, the regimes and their associated organizations will no longer have lives of their own' ¹¹³.

Powerful governments might choose, however, not to abandon the international dumping regime if the costs of creating another, more attractive regime are prohibitively high. According to Keohane and Nye: 'The international organization model postulates that the costs of destroying a regime will be high when well-integrated elite networks exist on many levels among countries. Nevertheless, the costs of an adverse regime could become so great that some states would resolve to destroy it even though that meant disrupting those networks. At this point the basic structural models would become more relevant than the international organization model' ¹¹⁴. Powerful states will therefore abandon the international dumping regime when they consider it too adverse to their interests but might, in some cases, choose not to do so when the costs of destroying its elite networks are too high.

Summary; The international dumping regime and complex interdependence theory

Complex interdependence theorists protest when Realists interpret the international political system as one where states as unitary, rational actors compete for peace and power under

¹¹³ Keohane and Nye, *Power and Interdependence*, 57. (Emphasis in the original).

¹¹⁴ *Ibid.*, 57.

conditions of anarchy. In their view, ecological interdependence and other interdependence issues are causing states to be increasingly dependent on one another for attainment of human well-being and social welfare. The nature of interdependence issues requires that states cooperate within international regimes. International regimes, then, will often allow international organizations as well as transnational and transgovernmental coalitions to play a considerable role.

Complex interdependence theorists will suspect that the United States will propose to create the international dumping regime. Responding to domestic political pressures, the United States government will at the same time probably be establishing legislation to protect U.S. waters against pollution from dumping. The United States' initiative to create the international dumping regime will therefore be motivated by concern for national interests.

Once constructed, the international dumping regime will mostly be dependent on its continued legitimacy. Powerful states will have no means for forcing regime decisions upon other states. Through transnational coalition-formation and control of elite networks, less powerful states even might use the international dumping regime to their advantage. In case the regime becomes too adverse to the interests of major powerful states, however, they will destroy the regime.

A study of the international dumping regime and radwaste disposal – an ecological interdependence issue institutionalized within the framework of the United Nations system – tests complex interdependence theory in circumstances that are favorable to the theory. Complex interdependence theorists will suspect that the conditions for reaching viable compromises are favorable, but will doubt that less powerful states will be able to use the regime to halt radwaste disposal.

Conclusion

This chapter has examined how three models of international cooperation predict the international dumping regime will be built. Each model explains the construction of

international regimes, as well as their strength and scope, differently. At the level of the international system, their preferred level of analysis, Realists find little potential for global cooperation on environmental protection. They doubt if the international dumping regime will be anything more than a foreign policy instrument of the hegemon, the United States. The epistemic community theory model focuses on change in governments' perception of cooperation. The model predicts that successful global cooperation can be attributed to an ecological epistemic community exerting influence over policy-makers. Ecological epistemic communities are groups composed of experts, national and international officials agreeing on the kinds of substances to be controlled, the methods to be used, and the values to be employed in order to direct policy towards desired ends. The complex interdependence model postulates that the nature of ecological interdependence issues compels states to cooperate within international regimes. Power politics have to give way to bargaining, compromise and cooperation. By using political resources specific to the particular issue-area, less powerful states may be able to exert considerable control. Powerful states may, however, ultimately destroy the international dumping regime if they wish so.

CHAPTER 3

THE INTERNATIONAL DUMPING REGIME AND THE EPISTEMIC COMMUNITY MODEL

The international dumping regime is a global regime. Epistemic community theorists would thus assume that in 1972 states generally perceived ocean dumping as a global commons problem. They would likewise suspect that negotiations on the regime would proceed as a collective, cooperative process. This was not the case, however, as Russell Train, head of the U.S. delegation to the negotiations on the international dumping regime explained before the United States Senate Committee on Foreign Relations in the spring of 1972: 'Perhaps naively, I had thought everybody would be in favor of doing something effective about stopping dumping in the ocean, but we have found that many of the LDC's are very leery of getting into this. They would rather not have a convention' ¹.

The proposal to establish an international dumping regime was made by the United States. Perhaps epistemic community theorists would suspect that an ecological epistemic community had persuaded American decision-makers to propose that other states work together in controlling ocean dumping. This group of theorists would assume that decision-makers, who would be uncertain about the nature of the ocean dumping problem, its possible solutions, and costs of possible control strategies, would take advice from marine biologists, ecologists and other scientists serving as policy experts. Further, such experts would constitute an ecological epistemic community and would provide decision-makers with non-conflicting scientific advice. Epistemic community theorists also predict that decision-makers would then transform expert advice into stringent control of ocean dumping.

Epistemic community theorists also assume that international expert advice and pressure could have influenced United States ocean dumping policy in 1972. One possible

¹ Russell Train before *U.N. Conference on Human Environment: Preparations and Prospects*, 17. Hearings before the Committee on Foreign Relations. United States Senate. 92nd Congress. May 3, 4, and 5, 1972, 17.

source of influence would be international scientific conferences, another the many United Nations organizations which had been active in the marine pollution field since the mid-1960s.

To test the epistemic community model, this chapter focuses on scientific advice given to the U.S. Congress, the administration's involvement in ocean dumping control, and the international scientific response to ocean dumping. This chapter will show that ocean dumping regulation in the United States was not established by policy-makers responding to persuasion or pressure by an ecological epistemic community. Chapters 4 and 5 will supply further evidence of the inability of the epistemic community model to explain crucial aspects of the construction of the international dumping regime.

The United States response to ocean dumping

In the late 1960s, asbestos, DDT, smog, and a few other names of supposedly deadly chemicals and environments became household words in the United States². Together with nuclear fear, which had a longer history of raised emotions, these were the subject of the most frequent protests in the 'pollution battle'³. They each could serve as a guide to the surge of environmental policies which in 1969 started to sweep the United States⁴.

The late 1960s were a time of dramatic and rapid changes of beliefs and values in the United States. In January 1970, *Newsweek* reported in an article titled 'The Politicians Know an Issue', that 'Old Washington hands have been sensing for some time that

² For a brief account of the asbestos case, see Harvey M. Sapolsky 'The Politics of Risk', *Dædalus* 119 (Fall 1990) *Risk* (Special Issue), 83-96.

³ See Spencer R. Weart, *Nuclear Fear: A History of Images* (Cambridge, Mass.: Harvard University Press, 1988).

⁴ This period witnessed the passage of the National Environmental Policy Act (1969), the creation of the Environmental Protection Agency (1970), and the passage of the Occupational Safety and Health Act (1970), the Clean Air Act of 1970 (1970), the Federal Water Pollution Control Act Amendments (1972), and the Marine Protection, Research, and Sanctuaries Act (1972). President Nixon also established the CEQ.

environment may well be the key issue of the '70s, for the nation and for their political futures. They freely concede that no other cause has moved so swiftly from the grass roots into the arena of public policy-making. As early as 1968, environment had surpassed law and order and in 1969 was gaining on Vietnam in total lineage in the Congressional Record. And by now, nearly everyone on Capitol Hill seems to be actively against pollution, causing a veritable stampede for stage center in the crusade to save America's land, air and water'⁵. In 1973, the environment had clearly established itself as an issue: 'A few year ago, 'ecology' and 'environmental protection' did not exist in American public discourse; they were non-issues to most citizens and public officials. Now we are in the midst of a new 'environmental decade'⁶.

Faced with unprecedented demands for political action to protect the environment, President Nixon was under pressure to act. 'There is no doubt', *Newsweek* wrote, 'that the President has been a Johnny-come-lately on the environmental bandwagon'⁷. While especially Democrat Edmund S. Muskie had made anti-pollution a central part of his political program, Nixon's position on environmental control was unclear in early 1970. "What the issue needs,' said one liberal Democrat, 'is a man like Bob Kennedy who went to the Indian reservations. Some young guy has to get into a bathing suit and jump into Lake Erie. If he survives, he's on top of the issue'⁸.

Pollution of Lake Erie had thus emerged as one of the major environmental issues in the United States. Lake Erie often symbolized, as above, the political crisis of the environment. According to the most widely quoted environmentalists in the United States, Lake Erie 'died' already in the mid-1960s as a result of a greatly accelerated eutrophication

⁵ 'The Politicians Know and Issue', *Newsweek*, 33, January 26, 1970.

⁶ Walter A. Rosenbaum, *The Politics of Environmental Concern* (New York: Praeger Publishers, 1973), 51.

⁷ 'The Politicians Know and Issue', *Newsweek*, 33, January 26, 1970.

⁸ 'And How Are the Democrats Doing?', *Newsweek*, 15. January 12, 1970.

process caused by industrial pollution⁹. Many saw the condition of the lake as at least gloomy, at worst it was doomed¹⁰. *Newsweek* wrote in January 1970: 'A few years ago – nobody was paying close enough attention to tell exactly when – Lake Erie died: acidic wastes from the surrounding factories have strained its water of virtually every form of life except a mutant of the carp that has adjusted to living off poison'¹¹. As a conspicuous symbol of industrial destruction of ecosystems of large bodies of water, Lake Erie served as a catalyst for the realization of U.S. dumping policy for both the Great Lakes as well as coastal waters¹².

President Nixon did respond on the issue in a series of speeches which laid out a philosophy and policy for protection of the environment. In his State of the Union message in late January, 1970, President Nixon, interrupted 28 times with applause by the audience at the Capital, declared: 'The great question of the seventies is, shall we surrender to our

⁹ For an early article on the pollution of Lake Erie, see Charles F. Powers and Andrew Robertson 'The Aging Great Lakes', *Scientific American*, November 1966, reprinted in *Man and the Ecosphere. Readings from Scientific American*. 1971. Arthur D. Hasler and Bruce Ingersoll wrote in 1968 'It took the visual (and olfactory) impact of a huge body of water, Lake Erie, suffocating as a sump for industrial waste, sewage, and urban and rural runoff to bring the problem of water pollution dramatically to the public eye. Some now pronounce Lake Erie 'dead'.' See 'Dwindling Lakes' reprinted in Cecil E. Johnson, ed., *Eco-Crisis* (New York: Wiley, 1970), 152–52.

¹⁰ Ecologist Barry Commoner devoted a chapter of *The Closing Circle* (1971) to the subject. For a rejection of Commoner's view, see John Maddox (British scientist, author and former editor of *Nature*) *The Doomsday Syndrome* (New York: McGraw-Hill, 1972), 19–20. For denials of the poor condition of Lake Erie or, if true, its possible quick recovery, see also Melvin J. Grayson and Thomas R. Shepard, Jr. *The Disaster Lobby. Prophets of Ecological Doom and Other Absurdities* (Chicago: Follett, 1973), 62–87. Since 1972 the state of the Great Lakes seemed to be improving. See 'The Great Lakes are Scarcely Great but Getting Better', *New York Times*, June 9, 1974. R. Tunley 'Fresh Start for the Great Lakes', *Reader's Digest*, December 1974.

¹¹ 'Special Report: The Ravaged Environment', *Newsweek*, January 26, 1970, 31.

¹² Interview with Charles Lettow, former member of the CEQ, Washington, D.C., (September 24, 1991). Lake Erie is one of the examples of environmental disasters from the late 1960s and early 1970s – 'headline events that had the effect of catalyzing environmental fears' – which are discussed in John McCormick, *Reclaiming Paradise: The Global Environmental Movement* (Bloomington; Indiana University Press, 1989), 59. See also Dixy Lee Ray with Lou Guzzo, *Trashing the Planet* (Washington, D.C.: Regnery Gateway, 1990), 164. Charles W. Howe writes: 'Lake Erie's 'death' in the 1960s, caused by the inflow of sewage and industrial wastes, spurred the passage of the Water Quality Act of 1965'. 'An Evaluation of U.S. Air and Water Policies', *Environment*, September 1991, 15.

surroundings, or shall we make our peace with nature and begin to make reparations for the damage we have done to our air, to our land and to our water?'¹³. The special 'Message on the Environment' in February 10, 1970, which was the most comprehensive statement ever made by an American president on the subject, established a permanent three-member White House Council of Environmental Quality (CEQ)¹⁴. Although President Nixon had opposed the proposal at first, the Environmental Protection Agency (EPA) was also established¹⁵. In the President's message to the Congress of April 15, 1970, on the subject of Great Lakes and other dumping, the President directed the CEQ to make a study and report on ocean disposal of solid wastes¹⁶.

In October 1970, the CEQ announced a national policy to prevent pollution of the oceans in the future. The CEQ also recommended that the United States should take the initiative to establish international cooperation on ocean dumping, and that such proposals should be presented in 'international forums such as the 1972 U.N. Conference on the Human Environment'¹⁷. Such proposals should be made along the lines of national policy.

¹³ For President Nixon's State of the Union message, see 'Text of President Nixon's State of the Union Message', the *Congressional Quarterly. Weekly Report*, January 23, 1970, 245-48. See also 'Nixon's Spirit of '76', *Newsweek*, February 2, 1970, 20-23, and 'Pollution: The Battle Plan', *Newsweek*, February 23, 1970, 23-24. The State of the Union message tells what the President consider important at the given moment. Steven Kelman sees it as an agenda-setting mechanism for Congress. See *Making Public Policy* (New York: Basic Books, 1987), 71-72. The message is, in John W. Kingdon's words, 'a classic garbage can'. See *Agendas, Alternatives, and Public Policies*, 197.

¹⁴ Democrat Senator Henry M. Jackson had proposed a permanent three-member White House Council on Environmental Quality. It was established by a law which originated in legislation introduced by Congressman John D. Dingell (Chairman of the Subcommittee on Fisheries and Wildlife Conservation). Environmentalism among American presidents is briefly discussed in Philip Nobile and John Deedy, eds., *The Complete Ecology Fact Book* (Garden City, New York: Anchor, 1972), xiii-xvii.

¹⁵ President Nixon personally saw the environment issue as 'a phony one'. Mark H. Moore 'What Sort of Ideas Become Public Ideas', in Robert B. Reich, ed., *The Power of Public Ideas* (Cambridge, Mass.: Harvard University Press, 1990), 67. See also Alfred Marcus 'Environmental Protection Agency', in James Q. Wilson, ed., *The Politics of Regulation* (New York: Basic Books, 1980), 287.

¹⁶ For President Nixon's message to Congress on pollution of the Great Lakes, see 'Great Lakes Pollution', the *Congressional Quarterly. Weekly Report*, April 17, 1970, 1050-51.

¹⁷ *Ocean Dumping: A National Policy*. A Report to the President prepared by the Council on Environmental Quality. October 1970, 37. For the history of this report, see H. Crane Miller 'Ocean Dumping - Prelude and Fugue' *Journal of Maritime Law and Commerce* 5 (October 1973), 58. See also

President Nixon welcomed the council's recommendations and its 'approach of acting rather than reacting to prevent pollution'¹⁸. Senator and 'antipolluter' Gaylord Nelson, Democrat of Wisconsin and leading Senate authority on ocean pollution, declared: 'We have the opportunity now to prevent the sea from becoming the same kind of mess we now see in our rivers'¹⁹. A *New York Times* editorial, titled 'To Save the Seas', cautioned: 'If the nations continue to use the seas as a dump, scientists warned last summer, the world's oceans will become as 'dead' as Lake Erie by the end of this century'²⁰.

In its report entitled 'Ocean Dumping. A National Policy', the CEQ urged that strict limits set on the wastes that were dumped indiscriminately into the Great Lakes and the oceans. On radioactive waste, the report said: 'The current policy of prohibiting ocean dumping of high-level radioactive wastes should be continued. Low-level liquid discharges to the ocean from vessels and land-based nuclear facilities are, and should continue to be, controlled by Federal regulations and international standards. The adequacy of such standards should be continually reviewed. Ocean dumping of other radioactive wastes should be prohibited. In very few cases, there may be no alternative offering less harm to man or the environment. In these cases ocean disposal should be allowed only when the lack of alternatives has been demonstrated. Planning of activities which will result in production of nuclear wastes should include provisions to avoid ocean disposal'²¹.

The CEQ's decision was based on the anticipated environmental and economic

Ocean Waste Disposal. Hearings before the Subcommittee on Oceans and Atmosphere of the Committee on Commerce. Senate. 92nd Congress. March 2, 3; April 15, 21, 22, and 28, 1971, 205-18.

¹⁸ Robert M. Smith 'Panel Urges Curbs on Ocean Dumping; Nixon Hails Report', *New York Times*, October 8, 1970.

¹⁹ 'Don't Go Near the Water', *Newsweek*, October 19, 1970, 76. According to the *Newsweek*, America's ten 'filthiest' rivers were the Ohio, the Houston Ship Channel, the Cuyahoga, the Rouge River, the Buffalo, the Passaic and the Arthur Kill, the Merrimack, the Androscoggin and the Escambia. 'From Sea to Shining Sea' *Newsweek*, January 26, 1970, 37.

²⁰ 'To Save the Seas', *New York Times*, October 13, 1970.

²¹ *Ocean Dumping: A National Policy*, vi-vii.

consequences of future dumping²². As a member of CEQ explained before a Senate hearing: 'We think it is a serious problem today. It is a potentially very critical problem for the future. And let's stop; let's control the problem. Prevention, I think, in this case will be far more economical than trying to cure it after it becomes critical'²³.

In 1968, more than 48 million tons of waste were dumped at 246 sites in the Gulf of Mexico and the Atlantic and Pacific oceans. The amount of ocean dumping was expected to increase drastically as a result of a future increase in the U.S. coastal population. The CEQ report stressed the need for preventive rather than remedial action. Knowledge of economic costs and environmental impact of ocean dumping was scanty, however, and comparisons made with disposal alternatives disregarded political and social hindrances and hoped for technological advances and new methods of recycling. At subsequent hearings waste managers pointed to possible future scarcity of suitable landfills and lack of treatment technologies for certain toxic and other hazardous materials²⁴. The report listed as 'interim alternatives' hauling waste to suitable dumping sites by rail and reclaiming strip mines and other land for dumping. Permanent alternatives to ocean dumping, which neither the CEQ nor legislators gave much attention to later, would be sought through research authorized as part of legislation and development of environmentally acceptable and feasible land-based alternatives²⁵. President Nixon practically quoted the CEQ's findings and policy recommendations in his statement to the Congress: 'In most cases, feasible economic, and more beneficial methods of disposal are available...Legislation is needed to assure that our oceans do not suffer the fate of so many of our inland waters, and to provide the authority needed to protect our coastal waters, beaches, and estuaries'²⁶.

²² *Ibid.*, v.

²³ Dr. Gordon J.F. MacDonald before *Ocean Waste Disposal*, 153.

²⁴ *Ibid.*, 124.

²⁵ For the brief mention in the Senate, see the *Congressional Record*, September 8, 1971, 30863.

²⁶ 'International Aspects of the 1971 Environmental Program: Message from President Nixon to the Congress', *Department of State Bulletin*, March 1, 1971, 254. Compare with 'Findings and Recommendations', *Ocean Dumping. A National Policy*, v.

Although the draft bill of the national regulation was prepared and cleared through the office of Management and Budget in October 1970, it was held and announced in the President's environmental message to the Congress on February 8, 1971, providing the first annual report on the state of the Nation's environment ²⁷. In the 'Message on the Environment', President Nixon recommended legislation to implement 'a national policy banning unregulated ocean dumping of all materials and placing strict limits on ocean disposal of any materials harmful to the environment' ²⁸. In order to complete national legislation, U.S. should work toward getting other nations to adopt and enforce similar measures ²⁹. The final act similarly said that the Secretary of State and the administration should pursue international action and cooperation to protect the marine environment and 'may for this purpose, formulate, present, or support specific proposals in the United Nations and other competent international organizations for the development of appropriate international rules and regulations in support of the policy of this Act' ³⁰.

Two days later, EPA Administrator William Ruckelshaus submitted to the Senate a draft of a bill for national legislation ³¹. The bill was part of a comprehensive and wide-ranging action program which built upon the twenty-three legislative proposals and fourteen acts to clean up air and water submitted to the Congress the year before. 'Upon introduction in the Congress it was clear', wrote one of the staff members to the hearings, 'that the issues would be primarily jurisdictional, not substantive: a political demand for the legislation was

²⁷ H. Crane Miller 'Ocean Dumping - Prelude and Fugue', 58. See also Melvin J. Grayson and Thomas R. Shepard, Jr., *The Disaster Lobby*, 67.

²⁸ 'International Aspects of the 1971 Environmental Program: Message from President Nixon to the Congress', 254.

²⁹ *Ibid.*, 255. The Council of Environmental Quality's recommendation with respect to international cooperation said: 'Finally, this report recognizes the international character of ocean dumping. Unilateral action by the United States can deal with only a part - although an important part - of the problem. Effective international action will be necessary if damage to the marine environment from ocean dumping is to be averted'. *Ocean Dumping. A National Policy*, v.

³⁰ 'Marine Protection, Research, and Sanctuaries Act of 1972', Section 109. Quoted from *Senate Report no. 92-451*, November 12, 1971, sec 108.

³¹ 'The President: The Ecologist', *Newsweek*, February 22, 1971, 23-24.

evident; the regulatory techniques chosen were acceptable without objection' ³².

The scientific basis of ocean dumping regulation

In the early 1970s, knowledge of environmental effects of ocean dumping was at best rudimentary. Dr. R. B. Clark, British scientist and editor of *Marine Pollution Bulletin*, described in 1971 the state-of-the-art in marine pollution research as follows: 'Most knowledge of the biological consequences of marine pollution is derived from studies in temperate waters. Information about these environments is woefully inadequate, but it is encyclopedic compared with what we know about even the basic ecology of Arctic and tropical waters, let alone the consequences of effluent disposal and accidental pollution in them' ³³. Two years later, it was obvious that there still was 'a great gap in scientific knowledge about pollution of the seas. A gush of research following oil spills of the 1960s barely has begun to lay the groundwork for decades of study needed before people can know just what pollutants are in the sea, how much there is of them, where they go once there and what effect they eventually will have on life in the oceans and on land' ³⁴. This lack of knowledge did not, however, dampen regulatory policy-making.

The question whether available knowledge of water and marine pollution could guide,

³² H. Crane Miller 'Ocean Dumping - Prelude and Fugue', 59.

³³ Michael Harwood 'We Are Killing the Sea Around Us', *The New York Times Magazine*, October 24, 1971.

³⁴ Barry Newman 'The Sea: Pollution of Oceans is Enormous Threat, but Few People Care', *The Wall Street Journal*, October 2, 1973. For a marine pollution expert's view, see John A. Knauss 'Ocean Pollution: Status and Prognostication', in John King Gamble, Jr. and Giulio Pontecorvo, eds., *Law of the Sea: The Emerging Regime of the Oceans* (Cambridge, Mass: Ballinger, 1973), 313-28. For a lawyer's account of the state-of-the-art in ocean dumping research, see Eckart Böhme 'The Use of the Seabed as a Dumping Site Viewed from the Outcome of the FAO Technical Conference on Marine Pollution, Rome 1970', in Eckart Böhme and Max Ivers Kehden, eds., *From the Law of the Sea towards an Ocean Space Regime: Practical and Legal Implications of the Marine Revolution* (Hamburg: Werkhefte der Forschungsstelle für Völkerrecht und ausländisches öffentliches Recht der Universität Hamburg, 1972), 93-121.

and should guide, policy-making actually had already been raised before the CEQ issued its report on ocean dumping. The scientific basis of a proposal to control waterways, included in the above 37-point program presented at the first 'Message on the Environment' in February 1970, had been received with skepticism. Under this plan, rivers and lakes were assumed to have a capacity to absorb waste without becoming polluted, technically known as the assimilative capacity³⁵, and through fair allocation of this capacity among all industrial and municipal sources precise limits on the amount of waste dumped into a river or lake would be assigned³⁶. But the Nixon administration's proposal, which allowed waste discharges but would avoid pollution³⁷, did not have the full consent of the Congress³⁸. 'We just don't know enough about a river's assimilative capacity,' objected one Senate

³⁵ The terms assimilative capacity, environmental capacity, accommodative capacity, and absorptive capacity have all been used to identify the capacity of the oceans to receive wastes safely. See footnote (37) below.

³⁶ President Nixon said in his 'Message on the Environment': 'I propose that State-Federal water quality standards be amended to impose precise effluent requirements on all industrial and municipal sources. These should be imposed on an expeditious timetable, with the limit for each based on a fair allocation of the total capacity of the waterway to absorb the user's particular kind of waste without becoming polluted'. 'President Nixon's Message on the Environment', *Congressional Quarterly. Weekly Report*, February 13, 1970, 436.

³⁷ Ocean scientists presume the existence of a certain identifiable assimilative capacity of the oceans. This concept relies on the capacity of the oceans to absorb and neutralize pollutants. It follows that as long as this assimilative capacity is not exceeded, the marine environment will clean itself. Consequently, pollution occurs when a certain marine capacity is exposed to pollutants which exceed the upper level or capacity of assimilation of contamination. In this definition room is given to a certain legitimate use of the waste disposal capacity of the oceans, as long as the regeneration of the ocean resources is not prevented. In 1979 a group of ocean scientists reached agreement on a consensus definition, which later has been more widely accepted, which defines this capacity as 'the amount of materials that could be contained within a body of seawater without producing unacceptable biological impacts'. It is therefore necessary to consider specific conditions like the mixing capacity, length of turnover time (it takes, for example, 50 years for the water in the Baltic Sea to be renewed), stratification of water, temperatures and the level of biological activity when defining the assimilative capacity of a certain region. For above definition of assimilative capacity, see Edward D. Goldberg, ed., *Assimilative Capacity of U.S. Coastal Waters for Pollutants. Workshop at Crystal Mountain* (1979). Used by professionals the word contamination signifies what is less than clean but not quite polluted.

³⁸ EPA administrator William Ruckelshaus told congressman John Dingell that EPA's policy disagreed with, in Dingell's words, 'some of the industrial and municipal folks who have ideas we should utilize the streams and lakes and oceans up to their assimilative capacity'. *Ocean Dumping of Waste Materials. Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Subcommittee on*

water expert. 'The best route is no dumping at all, but that's is not what Nixon seemed to say' ³⁹.

The CEQ report on ocean dumping actually acknowledged that existing knowledge of ocean pollution was either rudimentary or, in fact, did not exist ⁴⁰. It had, in addition, been impossible to separate the effects of ocean dumping from the broader issue of ocean pollution ⁴¹. The CEQ nonetheless concluded that there was 'reason for significant concern' ⁴². It was, in addition, clear to U.S. government officials with experience in control of oil pollution from tankers that international control of ocean dumping was needed ⁴³.

Contrary to the predictions of the epistemic community model, Congressional hearings held in spring 1971 demonstrated that experts disagreed whether significant pollution had occurred in the ocean, whether an ocean capacity to safely absorb some wastes existed, and whether regulation reducing ocean dumping at all was justified ⁴⁴. The view of the administration and a group of congressmen backing ocean dumping legislation and the view of representatives from the waste management field were strongly at odds. Professional witnesses from the waste management field did not find that waste disposal necessarily was a danger to the health of the oceans. They stressed that the oceans were robust, had an enormous capacity to receive waste safely, and should be considered in any rational waste management strategy. Indeed, they did not support stringent ocean dumping control and

Oceanography of the Committee on Merchant Marine and Fisheries. House of Representatives. 92nd Congress. April 5, 6, 7, 1971, 454. It has been suggested that any indication that the EPA in any way supported 'pollution', and more specifically, effluent charges and intended to 'sell licenses to pollute' 'would have dealt a serious blow to the EPA's need to find some political breathing room' in the precarious early months of its existence. James Q. Wilson 'The Politics of Regulation' in James Q. Wilson, ed. *The Politics of Regulation*, 376.

³⁹ 'Pollution: The Battle Plan', *Newsweek*, February 23, 1970, 24.

⁴⁰ Ruckelshaus concurred with this view. See *Ocean Dumping of Waste Materials*, 451.

⁴¹ *Ocean Dumping. A National Policy*, 18.

⁴² *Ibid.*, 18.

⁴³ Interview with Charles Lettow.

⁴⁴ See the two Congressional hearings *Ocean Waste Disposal* and *Ocean Dumping of Waste Materials*.

many strongly disagreed that ocean dumping should be advised against in all cases. But another group of witnesses, mainly ecologists and marine scientists, disagreed. They advocated stringent control of ocean dumping on the grounds that irreversible damage otherwise would be inflicted on the oceans. In their view, the assimilative capacity of the oceans was limited and should be protected by legislation. The lack of any form of dumping regulation resulted in lack of incentives to reduce the amount of waste disposed of ⁴⁵.

Contradicting another essential claim of the epistemic community model, public opinion was far from indifferent on the issue of ocean pollution. Further illustration of the wide divergence of views among the acknowledged experts and, at the same time, considerable public concern over the health of the oceans, is found in the testimony given by a marine geologist who had produced a study that was the basis of the CEQ ocean dumping report. While he advised against any bill which ignored the assimilative capacity of the oceans he realized that the examination of the pros and cons of ocean dumping was met with public disbelief. Thus, public opinion was in favor of significantly reducing, if not banning, ocean dumping: 'We are faced with a matter of attitude in the United States today. It seems clear that in the general public's mind the idea prevails that disposal of any waste materials in the ocean is inherently bad, and therefore should be stopped, or at least severely curtailed...I am opposed to this, and I will explain why. I am convinced, and I believe if you will talk to various professionals in the waste management field you will find general agreement, that ocean dumping of selected types of waste – and I emphasize selected – is not only permissible but is in fact quite desirable...I fully recognize that this approach, as in my statement here, favors ocean disposal of all of certain types of wastes may seem contrary to everything you have heard or read regarding waste disposal at sea. I recognize also that in the present era of aroused public interest in the environment, in which ecology has become virtually a 'motherhood issue', there are certain significant hazards, both politically and professionally, in what at first may seem to favor what others might term pollution...There is a need to recognize in the bill that will be reported out by this committee

⁴⁵ For a discussion of these scientists' values, which however downplays the values of politicians and public opinion, see Judith Spiller and Alison Rieser 'Scientific Fact and Value in U.S. Ocean Dumping Policy', *Policy Studies Review* 6 (November 1986), 389–98.

that the waste assimilative capacity of the sea is enormous. I can hardly overstate or overemphasize that there has been a general failure to recognize this. We hear a lot of what I term vastly oversimplified and commonly ill-founded statements that any discharge of waste to the sea is pollution. This is just not true. If you will talk to qualified sanitary engineers, qualified biologists who are concerned with waste management, I think you will find general agreement with this' ⁴⁶. Parts of this witness' statement were reprinted in the Senate report which, however, ignored it and instead urged strict control on ocean dumping ⁴⁷.

Despite a lack of knowledge about the environmental effects of ocean dumping, Congress passed a law on ocean dumping regulation the following year – the Marine Protection, Research, and Sanctuaries Act of 1972 ⁴⁸. It was hoped that research would uncover the many unknowns of ocean pollution. Obviously motivation to solve the problem was far ahead of understanding.

Also contradicting the epistemic community model, Chapter 4 will demonstrate that a group of congressmen seeking to minimize all ocean dumping mobilized public and political support for U.S. domestic legislation. To supplement domestic regulation, they also advocated the establishment of an international regime. To influence and move public opinion and political leaders, both national and international, a series of Congressional hearings spread the simple, powerful idea that 'the oceans are dying'. Although clearly disregarding the many scientific unknowns of ocean dumping, this idea was used to focus public opinion and legislative attention on this issue.

⁴⁶ Dr. David D. Smith before *Ocean Waste Disposal*, 206–207. For the lack of knowledge of effects of wastes on the ocean environment, and the possible benefits of waste disposal, see also testimonies on 122–134 and 134–142.

⁴⁷ *Senate Report no. 92–451*, November 12, 1971, 4239–40.

⁴⁸ Marine Protection, Research, and Sanctuaries Act of 1972. 33 U.S.C §§ 1401 *et seq.*

The pre-Stockholm international response to ocean dumping

As epistemic community as well as other theorists predict, international officials saw in ocean dumping and ocean protection generally a possibility to expand their sphere of competence and influence in the early 1970s⁴⁹. Several United Nations specialized agencies – IMCO, FAO, UNESCO, and WMO – had since the 1960s been involved in various aspects of ocean pollution⁵⁰. In the words of a U.S. State Department official: 'A number of international organizations – in fact, I dare say almost every one of them – all simultaneously discovered the environment. All decided that they in turn wanted to be the sole organization or the principal organization dealing with it'⁵¹. A pronounced tendency among international public officials to make ocean pollution, as well as the environmental 'crisis', a serious international issue was also obvious⁵². But none of these international agencies had success in getting governments involved in ocean dumping control. Neither did they play an essential role in the construction of the international dumping regime.

The UNESCO so-called Biosphere Conference held in Paris in September 1968 marked the beginning of the new era of international environmental concern of the late 1960s

⁴⁹ See Peter M. Haas, *Saving the Mediterranean*, 74. For several examples of rivalry and competition among international organizations involved in issues of marine pollution, see Baruch Boxer 'Mediterranean Pollution: Problem and Response', *Ocean Development and International Law*, 10 (1982), 315–56. For how the IMCO (the then IMO) made use of the Torrey Canyon oil spill disaster to invigorate itself, see R. Michael M'Gonigle and Mark W. Zacher, *Pollution, Politics, and International Law. Tankers at Sea*, 50–51.

⁵⁰ Richard N. Gardner 'The Role of the United Nations in Environmental Problems', *International Organization* 26 (Spring 1972), 237–54. See also other contributions in this special issue on the U.N. and environmental problems.

⁵¹ Christian A. Herter, Jr., special assistant to the Secretary of State for Environmental Affairs, at *International Environmental Science*. Joint Colloquium before the Committee on Commerce, United States Senate, and the Committee on Science and Astronautics, House of Representatives. 92nd Congress. 1st Session. May 25 and 26, 1971, 27.

⁵² In 1974, an internal memo written by a high-level UNEP official said: 'I continue to support FAO's tactic of stressing the effect on fisheries as a way to stimulate action on pollution in the Mediterranean, but suspect that the tourist angle is also one which should be played, particularly in relation to oil on beaches, but also in relation to sewerage'. Peter M. Haas, *Saving the Mediterranean*, 256.

⁵³. The conference was organized in cooperation with other U.N. organizations and, among several nongovernmental agencies, the International Union for the Conservation of Nature and Natural Resources (IUCN), an organization aimed at furthering the ecological point of view ⁵⁴. Prior conferences on environmental issues, often United Nations–sponsored, had tended toward a technical rather than an ecological orientation and had been single events ⁵⁵. The Biosphere Conference concentrated on the scientific aspects of the conservation of the biosphere and marked the first appearance on the international environmental agenda of the biosphere approach to man–environment relationships ⁵⁶. The conference was well–attended; representatives from sixty–two nations and a number of international organizations were present. As at the later United Nations Conference on the Human Environment in 1972, the so–called Stockholm Conference, prominent and vocal ecologists, mostly American, attended the conference and contributed to conference reports.

The 'Final Report' of the Biosphere Conference recommended: 'In the place of single–purpose actions in disregard of their associated consequences, both public and private, there is need to substitute planned programs for the management of resources if past degradation of the environment and deterioration of ecosystems are to be corrected, if the biosphere's productivity is to be maintained and even enhanced, and if aesthetic appreciation is given opportunity to flower' ⁵⁷. But because economic, social and political dimensions of the

⁵³ This conference's official name was the Intergovernmental Conference of Experts on the Scientific Basis for the Rational Use and Conservation of the Resources of the Biosphere. For the new era of international environmental concern, see John McCormick, *Reclaiming Paradise*, 47–105.

⁵⁴ For the preparations for the conference, see M. Taghi Farvar and John P. Milton, eds., *The Careless Technology. Ecology and International Development* (Garden City, New York: The Natural History Press, 1972), 974–75.

⁵⁵ See Lynton K. Caldwell 'Government and Environmental Quality', 198–204 in Huey D. Johnson, ed. *No Deposit – No Return* (Reading, Mass.: Addison – Wesley, 1970), 198–204. Also by Caldwell, see 'Cooperation and Conflict: International Response to Environmental Issues' *Environment* 27 (January/February 1985), 974–75.

⁵⁶ Allen L. Springer, *The International Law of Pollution*, 4–5. See also R. M'Gonigle and Mark W. Zacher, *Pollution, Politics and International Law*, 5.

⁵⁷ UNESCO, *Final Report of the Intergovernmental Conference of Experts on the Scientific Basis for the Rational Use and Conservation of the Resources of the Biosphere*, Paris, 4–13 September 1968, 34.

problems of the biosphere were outside the purview of the Biosphere Conference – UNESCO is concerned primarily with science issues and scientific aspects of policy-making – the Final Report made only vague recommendations for future legal and institutional changes. It concluded that 'it has become clear...that earnest and bold departures from the past will have to be taken nationally and internationally if significant progress is to be made', but the more precise nature of those 'departures' was not mentioned. The 1972 Stockholm Conference, instead, focused on the economic, political and social dimensions of protection of the global environment.

'Man and His Environment: A View Toward Survival' was the telling title of the 13th National Conference of the U.S. National Commission for UNESCO dealing with the environment. The conference took place in November 1969 at Stanford University and was attended by representatives of more than two hundred organizations⁵⁸. Prominent environmentalists such as Paul R. Ehrlich, Barry Commoner and distinguished anthropologist Margaret Mead contributed background papers or participated in panel discussions, or both. Considerable attention was paid to ocean pollution as well as control of population growth, reduction of atmospheric pollution, and preservation of ecological diversity.

One scientist warned that 'the end of the ocean came late in the summer of 1979 and it came even more rapidly than the biologists had expected'⁵⁹. Another contribution entitled 'The Sea: Should We Now Write It Off As a Future Garbage Pit?', by a specialist in the effects of pollutants on marine birds, was headlined in the conference publication as: 'For those who don't as yet believe that the sea is dying, this is ample proof. For those who do, it is further documentation'⁶⁰. It was concluded that 'Scientific, practical, economic,

⁵⁸ See H.D.Johnson, ed., *No Deposit – No Return*.

⁵⁹ Taylor A. Pryor 'The Sea' in Huey D. Johnson, ed., *No Deposit – No Return*, 115–121. This was a quote from Paul R. Ehrlich's 'persuasive fable on the future of the ocean titled *Eco-Catastrophe*'. For Paul Ehrlich 'Eco-Catastrophe!', see Rex R. Campbell and Jerry L. Wade, eds. *Society and Environment: The Coming Collision* (Boston: Allyn and Bacon, 1972), 269–280.

⁶⁰ R. W. Riseborough 'The Sea: Should We Now Write It Off as a Future Garbage Pit?', in H. D. Johnson, ed., *No Deposit – No Return*, 121–136.

moral, and esthetic reasons require that the sea not be used as a garbage dump' ⁶¹.

Similar to the Biosphere Conference, it was concluded that international machinery was needed because radioactivity released by atomic explosions, DDT, and polychlorinated biphenyls (PCBs), potentially travelled long distances. The conference proposed that 'the leaders of all nations through the United Nations General Assembly declare that a state of environmental emergency exists on the planet Earth' ⁶². Among the proposals for future action were the establishment of national, regional and worldwide commissions on environmental deterioration and rehabilitation ⁶³. More precise indications were not given.

The beginning of the United Nations' interest in international control of marine pollution is signaled by a General Assembly request from 1969 that the Secretary General conduct a survey among member states on desires for international arrangements for regulation and reduction of ocean pollution ⁶⁴. The responses from 44 countries showed a general concern of increasing threat of pollution to the ocean environment, and a need for international prevention and control of ocean pollution. It was reported that no existing international agreement effectively controlled marine pollution. Existing agreements were too broad and without proper enforcement of many of the concepts agreed to. Other agreements were narrow and did not cover the existing range of pollution problems ⁶⁵.

⁶¹ Ibid., 122.

⁶² 'Interdependency Resolution'. Ibid., 337. See also Connie Flateboe 'The UNESCO Manifesto', in *Ecotactics. The Sierra Club Handbook for Environment Activist* (New York: Pocket Books, 1970), 179–82. Barry Commoner also recommended that action should be taken through the United Nations when his background paper 'The Ecological Facts of Life' was reprinted as part of the conference proceedings. Earlier version published in Robert Disch, ed., *The Ecological Conscience. Values for Survival* (A Spectrum Book, 1970).

⁶³ Ibid., 337

⁶⁴ Already in 1966 did the Subcommittee on Marine Science and Its Application – formed by the Administrative Committee on Co-ordination (ACC) of the United Nations – and IMCO a survey among all the U.N. members on ocean pollution. Out of 67 replies, 13 governments declared that pollution of the seas was no problem; of the 47 stating that pollution was a problem, on the other hand, 36 indicated harm to living resources, 20 referred to threats to human health, 12 to hindrance of marine activities and 19 to reduction of amenities. Velimir Pravdic, *GESAMP. The First Dozen Years* (UNEP, 1981), 3–4.

⁶⁵ Report of the United Nations Secretary-General *The Sea: Prevention and Control of Marine Pollution*, 51 U.N. ECOSOC, Annex 2, at 6, UN.DOC E/5003, 1971.

The more specialized agencies within the sphere of the United Nations also involved themselves in ocean dumping. In 1969, the then Intergovernmental Maritime Consultative Organization (IMCO) conducted a survey among its member countries on the kind and amount of materials which were disposed of from ships and barges in the ocean ⁶⁶. The general picture showed that some control of dumping existed within territorial waters, while there existed almost no control of ocean dumping on the high seas ⁶⁷.

In December 1970, the Food and Agriculture Organization (FAO) organized 'the first attempt to make a worldwide scientific approach to marine pollution and its effects on the living resources of the oceans' ⁶⁸. Invitations had been sent to all FAO member nations and associate members, United Nations agencies, intergovernmental organizations and nongovernmental bodies with an interest in ocean pollution. Almost 400 participants attended the conference, mostly scientists and experts in the various fields of marine pollution, but also industry and governments, coming from over 65 countries. In addition to its scientific objectives, the conference intended to focus attention on pollution problems where international cooperation and coordination were required.

Experimental and review papers were mostly concerned with pollution by rivers and atmospheric fall-out. Ocean dumping had received little attention. In the discussion it was pointed out, however, that the future impact of marine pollution on a large scale would derive from ocean dumping. Serious concern should therefore be given to the future development of disposal of waste by ocean dumping. Harmful substances were reaching the ocean from coasts, through rivers and the atmosphere, but the substances disposed of by

⁶⁶ *IMCO Document OPS/Circ.15*, 13 May 1969. Exists also as appendix to GESAMP report no. 22, 10 February 1970.

⁶⁷ Eckart Böhme 'The Use of the Seabed as a Dumping Site Viewed from the Outcome of the FAO Technical Conference on Marine Pollution, Rome 1970', 105.

⁶⁸ Official conference title was the Technical Conference on Marine Pollution and its Effects on Living Resources and Fishing, held in Rome December 9-18, 1970. See *ibid.*, 93-121. Scientists from the Woods Hole Institute in Massachusetts, a leading international oceanographic institute, described that a number of scientists at this conference had reached the conclusion that oil pollution of the ocean was 'an increasingly serious global problem'. Max Blumer, Howard L. Sanders, J. Fred Grassle, and George R. Hampson 'A Small Oil Spill', *Environment* 13 (March 1971).

ocean dumping – radioactive materials, chemical warfare weapons, and ammunition – were particularly toxic and persistent. The participants concluded therefore that 'in future there is all the more an urgent need to improve the knowledge and information about the aspects of pollution by ocean dumping before any future control of ocean dumping can work efficiently' ⁶⁹. The recommendations said that FAO in cooperation with other bodies should: 'review the widespread practice of dumping wastes, especially toxic or persistent substances in the world oceans and encourage international studies of selected dumping sites to make a scientific evaluation of both the short and long-term effects of such practices, and bring about cessation of the practice of dumping containers of waste and other obstacles in present and potential fishing grounds, and establish a system of registration to cover the dumping of all persistent and or highly toxic pollutants into the sea' ⁷⁰. FAO was not involved in the preparations already under way to establish an arrangement for protection of the North Sea against ocean dumping, but it did get involved, though only indirectly, in the preparations for the global dumping regime initiated only a few months after the marine pollution conference.

Conclusion

Contrary to the predictions of the epistemic community model, the Nixon administration proposed ocean dumping regulation although scientific evidence of damage to the oceans was nonexistent in the early 1970s. Despite lack of knowledge, the administration considered ocean dumping a domestic environmental problem of some importance and urgency. Because of ocean dumping's international character, the administration also suggested that international regulation be established. Contrary to the predictions of epistemic community theorists, the hegemon, the United States, thus took the initiative to establish the international dumping regime.

⁶⁹ *Ibid.*, 96.

⁷⁰ *Ibid.*, 95.

Nor were politicians influenced by scientific knowledge as epistemic community theorists suggest. Congressional hearings demonstrated that scientists radically disagreed on the question whether ocean dumping had damaged the ocean environment and whether the ocean had a capacity to safely absorb some substances. Scientists also disagreed on the question whether knowledge about the effects of ocean dumping was sufficient to guide regulation. In short, policy experts were divided. Stringent ocean dumping legislation was, therefore, not given unanimous support by marine scientists. Politicians, however, largely ignored this.

Beginning in the late 1960s, international organizations, scientists, and international 'anti-pollution' conferences advocated control of ocean dumping. Ecologists and environmentalists participated in conferences, for example the Biosphere Conference, organized by international organizations; ecologists and environmentalists also participated in international 'anti-pollution' conferences; and FAO convened several hundred scientists to establish a global scientific approach to marine pollution. But the public as well as governments paid little attention to such initiatives. Chapter 4 will show that politicians together with prominent environmentalists and ecologists – instead of scientists and international organizations – spearheaded United States' initiative to construct an international dumping regime.

Perhaps epistemic community theorists would object to this conclusion. They would correctly point out that the international dumping regime of 1972 was constructed at a time when only few governments had established environmental protection agencies. An ecological epistemic community would, therefore, be without the organizational platform necessary to exert its influence. Nonetheless, this case contradicts the claim that the existence of an ecological epistemic community is a necessary condition, and maybe even a sufficient condition, for the construction of international regimes for environmental protection. Chapters 4 and 5 will add supporting evidence to this conclusion.

CHAPTER 4

THE INTERNATIONAL DUMPING REGIME, REALISM AND RATIONALISTIC REALISM

Realists and Rationalistic Realists both would argue that the United States would construct the international dumping regime. The United States would use the regime to realize its environmental objectives, if necessary at the expense of other states. The regime would closely mirror American environmental interests. It might, alternatively, satisfy American foreign policy objectives, for example improving the U.S. bargaining position in international trade or strengthening an international organization facilitating cooperation, which would not be intrinsically related to the solution of environmental problems¹. This group of theorists assumes that the United States would dictate the terms of the regime to other states through some combination of coercion, cooptation, and the manipulation of incentives².

In order to assess the Realist and Rationalistic Realist models of international regime formation, which seem identical, this chapter examines U.S. domestic policy formulation, key politicians' perception of the ocean dumping problem, Congress' support of legislation, and the economic implications of U.S. ocean dumping regulation. Contrary to the predictions of these models, ocean dumping was perceived as an international, if not global, problem both by Congress and the administration in the early 1970s. Through a series of hearings

¹ A 1970 U.S. administration study report suggested several reasons of this kind: 'International cooperation on the environment may be deliberately undertaken and encouraged for the purpose of strengthening an international organization that serves US interests, revitalizing it, and/or to increase its capability to bring nations together. Sometimes the primary aim is a more specific political objective such as enhancing the US image abroad or improving our bargaining position in international trade. In these cases, the improvement of environmental quality is a secondary consideration even though the desirability of that end is acknowledged and the need for joint action to control pollution is recognized'. Committee On International Environmental Affairs: Task Force III, *US Priority Interests in the Environmental Activities of International Organizations*, December 1970, 23.

² Oran R. Young 'Regime Dynamics: The Rise and Fall of International Regimes', in Stephen D. Krasner, ed, *International Regimes*, 100.

intended to attract public attention and legislative action congressmen 'trying to clean up the oceans' – as they put it – established domestic regulation³. To influence and move public opinion and political leaders, nationally and internationally, Congressional hearings spread the simple, powerful idea that 'the oceans are dying'. To supplement domestic regulation, the United States should also work toward agreement on an international dumping regime. Supporting the claim made by Realists and Rationalistic Realists, introduction of ocean dumping regulation domestically created significant pressure in the United States for some sort of global regulation able to harmonize the economic costs of environmental protection in other countries. But their prediction that the United States primarily would be motivated by self-interest and a need to protect the national interest does not conform well with this case.

US Congressional hearings on ocean dumping

The United States Department of the Army's disposal of some 65 tons of nerve gas in the Atlantic Ocean off Florida in the summer 1969 focused national as well as international attention on the problem of unregulated ocean dumping of supposedly extremely dangerous materials⁴. In the words of one congressman: 'The nerve gas dumping incident reverberated around the world and focused public opinion on the need for legislation'⁵. In August 1970,

³ See footnote 14, below.

⁴ Stuart Weinstein-Bacal mentions the nerve gas dumpings in 'The Ocean Dumping Dilemma', *Lawyer of the Americas* 10 (1978), 892. Some have claimed that the international dumping regime was created in direct response to these dumpings. See R.P. Barston and P.W. Birnie 'The Marine Environment', in R.P. Barston and Patricia Birnie, eds., *The Maritime Dimension* (London: George Allen & Unwin, 1980), 113. For international reactions, see Joachim Joesten, *Wem gehört der Ozean? Politiker, Wirtschaftler und moderne Piraten greifen nach den Weltmeeren* (München: Südwest Verlag, 1969), 152. See also Eckart Böhme 'The Use of the Seabed as a Dumping Site Viewed from the Outcome of the FAO Technical Conference on Marine Pollution', 98.

⁵ *The Congressional Record*. September 8, 1971, 30854. One Congressman said during the debate in the House on the ocean dumping bill: That emergency situation demonstrated that we had virtually no national policy or means of control for ocean dumping, and we had to stand by and watch the Army dump

despite national and international protests, the Army disposed of surplus nerve gas rockets embedded in concrete vaults on the ocean floor deep under international waters ⁶. 'A major incident', wrote the *New York Times* ⁷. Scientists – concerned over plans for oil drillings and discharges of domestic wastes, chemicals, minerals and 'other byproducts of our technology by proposed giant outflows into the deep sea' – gave testimony before Congressional hearings describing possible catastrophic implications in the deep sea and were quoted by the press ⁸. A 1969 study by the US National Academy of Sciences talked of catastrophic dangers for fish ⁹. When the Council on Environmental Quality in October 1970 announced its ocean dumping report the Army's dumpings again were brought up. 'Such practices could – and should – be controlled by executive order to conform to the new guidelines', said the *New York Times* ¹⁰.

Public and political attention to ocean dumping was sustained through several

nerve gas into the Atlantic Ocean off the coast of Florida'. *The Congressional Record*, September 9, 1971, 31154. See also the *Congressional Record*, October 16, 1973, 34298.

⁶ For the Army dumpings, see Robert L. Friedheim 'Ocean Ecology and the World Political System', in John L. Hargrove, ed., *Who Protects the Ocean? Environment and the Development of the Law of the Sea* (St. Paul, Minn.: West Publishing Co., 1975), 172–73. The U.N. Seabed Committee made an 'appeal to all governments to refrain from using the seabed and ocean floor as a dumping ground for toxic, radioactive and other noxious material which might cause serious damage to the marine environment'. See David A. Deese, *Nuclear Power and Radioactive Waste. A Sub-Seabed Disposal Option?* (Lexington, Mass.; Lexington Books, 1978), 45–47. See also David Deese 'Seabed Emplacement and Political Reality', *Oceanus* 20 (1977), 51. For the international legal consequences of the dumpings, see Oscar Schachter and Daniel Serwer 'Marine Pollution Problems and Remedies', *The American Journal of International Law* 65 (1971), 107–08.

⁷ Robert M. Smith 'Panel Urges Curbs on Ocean Dumping; Nixon Hails Report', *New York Times*, October 8, 1970.

⁸ Statement by Dr. Howard Sanders, from Woods Hole Oceanographic Institute, Massachusetts, before the Subcommittee on Oceanography, is quoted from *Senate Report no. 92–451*, November 12, 1971, 4238. Robert M. Smith 'Panel Urges Curbs on Ocean Dumping; Nixon Hails Report', *New York Times*, October 8, 1970.

⁹ The study is mentioned in Joachim Joesten, *Wem gehört der Ozean?*, 152.

¹⁰ 'To Save the Seas', *New York Times*, October 13, 1970.

Congressional hearings held in 1971¹¹. One group of congressmen and senators concerned over ocean dumping, some with ties to the U.S. marine scientific community¹², was organizing an attack on the image of the oceans as pristine and indestructible and was effectively formulating new norms for ocean protection¹³. While ocean pollution commanded the attention of the President and the administration, this group saw the opportunity to minimize, and maybe even end, all ocean dumping, and initiate a new oceans program¹⁴. Heightened public and political concern for the health of the oceans furnished

¹¹ As one Congressman later said: 'Our colleague John Dingell, who chairs the Subcommittee on Fish and Wildlife Conservation, was instrumental in bringing public attention and focus on the problem through the important hearings which he conducted'. The *Congressional Record*, September 9, 1971, 31154.

¹² From the point of view of the marine scientific community the past decade had been dominated by 'ocean rhetoric'. The then newly established U.S. National Oceanic and Atmospheric Administration (NOAA) was welcomed as an opportunity to 'get going'. See Administrator-Designate of NOAA Dr. Robert M. White's speech to the American Oceanic Organization. Reprinted in the *Congressional Record*, February 4, 1971, 1670-72.

¹³ Senator Alton Lennon, John D. Dingell (the chairmen of the Joint Subcommittee on Fisheries and Wildlife Conservation and the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries), and Senator Ernest F. Hollings (chairman of the Senate Subcommittee on oceans and atmosphere) were clearly the driving forces behind the ocean dumping convention. For Hollings' interest in marine science and technology, see Robert Gillette 'Politics of the Ocean: View from the Inside', *Science* 178 (November 1972), 729. Lennon and Dingell had for several years prior to 1971 been concerned with the degradation of the marine environment and were responsible for the development of the National Environmental Policy Act of 1969 and the establishment of the CEQ. See the *Congressional Record*, September 8, 1971, 30854.

¹⁴ Senator Hollings said during the Senate debate on the ocean dumping bill: '...the actual goal of trying within 5 years to set a policy against dumping the committee will welcome and gladly go along with'. The *Congressional Record*, November 24, 1971, 43068. See also discussion in Joseph A. Lumsdaine 'Ocean Dumping Regulation: An Overview' *Ecology Law Quarterly* 5 (1976), 771-772 and, more briefly, Allan Bakalian 'Regulation and Control of United States Dumping: A Decade of Progress, An Appraisal for the Future' *Harvard Environmental Law Review* 8 (1984), 213.

This group's continued interest in minimizing all ocean dumping is evident from an exchange between Senator Hollings and Mr. Rhett, spokesman for EPA, at the 1975 Oversight Hearing for the dumping act:

'Sen. Hollings. If you had to make the choice from your vantage point, would you ever choose the ocean over a land site? I mean, I have been listening to this testimony about all the progress in phasing dumping out, and we're starting here and there, and now you act like you're going to start up something that never was.

...

Mr. Rhett. Let's say you have no heavy metal contaminants or anything of this nature and no land available for disposal. I'm not sure. Maybe it is better to burn it and pollute the air, but I think that we should evaluate all methods. I am not saying that it should be in the ocean, but, I am saying that I

them with this opportunity. In order to mobilize public and political support for regulation, prominent environmentalists and experts were invited to Congressional hearings where they described ecological threats to and even crises in the marine environment caused by pollution. Prominent ecologists and scientists attacked in particular the view that the oceans have a capacity to absorb unlimited waste without harm to them.

This group of politicians saw the problem of ocean dumping as being 'global in scope'¹⁵. National efforts alone would be futile. 'We are faced not with a national problem', one politician declared, 'but an international one. Unless the nations concerned combine to put an end to ocean abuse, the abuse will write finis to us all'¹⁶. A Senate hearing highlighting the international character of ocean dumping was held in the fall of 1971. The goal of this hearing – named 'International Conference on Ocean Pollution' – was to focus national and international public and political attention on ocean dumping in particular and demonstrate the need for international cooperation. The idea to convene an international conference was put forward by a congressman who questioned the usefulness of the course of action suggested by the Council on Environmental Quality. In a letter to President Nixon he wrote: 'I believe the ocean dumping problem is of such momentous importance as to warrant an international conference at which it could receive maximum

think all methods of disposal should be considered.

Sen. Hollings. We looked at all methods of disposal and we looked at oceans...We made that determination. We are not looking around to find places to dump...

...

Sen. Hollings. You guys had better stay in that one direction because we'll amend the law to make sure you do.

Mr. Rhet. I think we are, but I do not believe that the act, as such, precludes ocean dumping. It says 'regulate'.

Sen. Hollings. Well, We'll look at that and make sure because we want to go in one direction on this one. We are trying to clean up the oceans. Go right ahead'. Quoted in Joseph A. Lumsdaine, 772.

¹⁵ Senator Randolph quoted in the *Congressional Record* April 1, 1971, 9184. See also Senator Roth *Congressional Record*, April 1, 1971, 9209. See also statement of congressman Dante B. Fascell, in *Ocean Dumping of Waste Materials*, 137–41. See also the *Congressional Record*, May 12, 1971, 14667.

¹⁶ *International Conference on Ocean Pollution*. Hearings before the Subcommittee on Oceans and Atmosphere of the Committee on Commerce. Ninety-Second Congress. United States Senate. October 18 and November 8, 1971, 40.

attention. It seems to me that the exclusive attention which such an international conference could afford would be more productive of positive results than would be the case if we relied on a general conference such as the United Nation's Conference on the Human Environment scheduled for 1972'¹⁷. Agreement reached at an international conference would, at the same time, be part of United States' preparations for the Stockholm Conference where, as one Congressman put it, 'the United States must be prepared to offer for consideration an international policy governing ocean disposal of materials'¹⁸.

Representatives of the international diplomatic community attended the 'International Conference on Ocean Pollution'¹⁹. Science aspects of ocean pollution were covered by Thor Heyerdahl, Jacques-Yves Cousteau, and Barry Commoner, all vocal international environmentalists and respected scientists. None of the marine scientists from earlier hearings participated²⁰. Congress had been informed that Cousteau in 1960 led a successful campaign to prevent the French Atomic Energy Commission's dumping of radioactive wastes into the Mediterranean²¹. Thor Heyerdahl, the Norwegian explorer, had

¹⁷ Senator William V. Roth's, Jr. letter to President Nixon of October 13, 1970 reprinted in the *Congressional Record*, April 1, 1971, 9209.

¹⁸ Senator Randolph, the *Congressional Record*, April 1, 1971, 9184. Senator Randolph and others doubted the value of routine diplomatic channels with respect to reaching an international agreement on dumping. He suggested, instead, to reach an agreement through the international conference on ocean pollution and the Stockholm Conference. The reasons why United States tabled a draft convention on ocean dumping at the first meeting of the Intergovernmental Working Group on Marine Pollution has been briefly discussed. See Lawson A.W.Hunter, *The Question of an Ocean Dumping Convention* (Washington, D.C.: Studies in Transnational Legal Policy no. 2., The American Society of International Law, 1972), 9-10. See also Gr. J. Timagenis, *International Control of Marine Pollution*, 181-82.

¹⁹ In addition to a number of unidentified representatives of foreign governments, the ambassador of Spain, the ambassador of South Africa, the ambassador of Honduras, and the ambassador of Portugal were present. *International Conference on Ocean Pollution*, 1.

²⁰ The following individuals participated in The International Conference on Ocean Pollution': Scott Carpenter, former NASA astronaut; Jacques Cousteau; Christian A. Herter, special assistant to the Secretary of State for Environmental Affairs; Mark Morton, vice president and group executive, General Electric Co.; Barry Commoner; Hugh Downs; and, Thor Heyerdahl. See *ibid*.

²¹ *Ocean Dumping of Waste Materials*, 163. For the planned French dumping in the Mediterranean, see 'Atomic Disposal Alarms Riviera', *New York Times*, October 11, 1960; 'Riviera Resorts Threaten Strike', *New York Times*, October 12, 1960; 'France to Delay Atomic Disposal', *New York Times*, October 13, 1960. For Cousteau's involvement in the French anti-nuclear movement, see Dorothy Nelkin and

during trips crossing the Atlantic in a reed boat in 1970 collected samples of oil pollution which later were on deposit at the United Nations in New York. Reports on oil pollution by Heyerdahl were also included in the United Nations group of marine pollution scientists's (GESAMP) documents as well as in background documents for the Intergovernmental Working Group on Marine Pollution (IWGMP), the negotiating and drafting group on the dumping convention ²².

Senator Hollings, in chairing 'The International Conference on Ocean Pollution', explained the goal of focusing public and political attention on ocean pollution in his opening remarks. 'This...Conference is dedicated to putting people on the alert... Everyone talks a lot about ecology...But we lack a sense of environment priorities...we need much more a full-scale assault on the heart of the problem. A second oceans program will provide just that' ²³. Barry Commoner's left-wing political views later almost overshadowed his scientific statement, and were met with strong objections by one Senator. At that point, Senator Hollings defined the crucial role of vocal ecologists and environmentalists in giving the ocean pollution issue the needed national and international visibility ²⁴. 'Specifically we all know', he said, 'that the oceans program is dragging its feet. It dragged its feet under President Kennedy. It dragged its feet under President Johnson. It was due to this Congress that we got the Stratton Commission and President Nixon instituted NOAA. We had a conference last week on how we could get the Administration going again in giving attention to the oceans, giving attention to the pollution problem, as the President gave in his Reorganization Plan No. 4 setting up the National Oceanic and Atmospheric Administration. So we are trying to move it along, and you have helped us in a magnificent way' ²⁵. When closing the international conference on ocean

Michael Pollak, *The Atom Besieged. Antinuclear Movements in France and Germany* (Cambridge, Mass.: The MIT Press, 1981), 91.

²² See Oscar Schachter and David Serwer 'Marine Pollution Problems and Remedies', 90.

²³ *International Conference on Ocean Pollution*, 40.

²⁴ For Barry Commoner, see Rae Goodell, *The Visible Scientists* (Boston: Little, Brown, 1975), 60-69.

²⁵ *International Conference on Ocean Pollution*, 71.

dumping, Hollings further emphasized the importance of the participation of Commoner, Heyerdahl and Hugh Downs, a television personality: 'So the only way I know – I could say these things over and over again – but the only way we are ever going to get this message through is with people with the brilliance and dynamism of you three here this morning getting the attention of the American public and in turn of our colleagues here in the Congress to move in the right direction' ²⁶.

Evidently the international conference's goal of focusing public and media attention on the issue of ocean pollution was achieved. Heyerdahl's statement was reprinted in the *Congressional Record* ²⁷. Cousteau's statement, however, reached a much broader audience. It was reprinted, in an even more apocalyptic version, in the *New York Times* under the heading 'Our Oceans Are Dying' ²⁸, which often since has been quoted in popular science publications and ecology literature ²⁹. At this occasion, and others, Cousteau significantly influenced public opinion with his message that 'the seas are dying' ³⁰.

²⁶ Ibid., 126.

²⁷ See the *Congressional Record*, November 9, 1971, 40233–40235. For Heyerdahl's speech in Stockholm, see the *Congressional Record*, October 13, 1972, 35753–35756. Many statements given by Heyerdahl at U.S. hearings and the Stockholm Conference were reprinted in the *Congressional Record*.

²⁸ Jacques Cousteau 'Our Oceans Are Dying', *New York Times*, November 14, 1971. *New York Times* followed clearly an apocalyptic editorial line. *The New York Times Magazine* had explored the same theme a few weeks earlier in an article by Michael Harwood entitled 'We Are Killing The Sea Around Us'. The article's daunting conclusions were characteristic of the time: 'Lake Erie may, or may not be restored within 50 years', Dr. Max Blumer of Woods Hole wrote last December, 'but a polluted ocean will remain irreversibly damaged for many generations'. And who would care to argue that a dead ocean would not mean a dead planet?'. For criticism of the lack of scientific evidence and 'the dialectical convolutions worthy of a Cicero' in this article, see Melvin J. Trayson and Thomas R. Shepard, Jr., *The Disaster Lobby*, 65–66.

²⁹ See, for example, Reo M. Christenson, *Challenge and Decision. Political Issues of Our Time* (New York: Harper and Row, 1976), 2.

³⁰ Interview with Robert J. McManus, Washington, D.C., August, 29, 1991. Former Director, Oceans Division, Office of International Activities, U.S. EPA, and former General Council, National Oceanic and Atmospheric Administration. See also Robert J. McManus 'Legal Aspects of Land-Based Sources of Marine Pollution', in J.I. Charney, ed., *The New Nationalism and the Use of Common Spaces* (Totowa, NJ: Allanheld, Osmun, 1982), 90. See also R.B. Clark 'The Mediterranean, the Media, and the Public Interest', in *Marine Pollution Bulletin* 20 (1989), 369–72. In a 1978 fund-raising letter, in which no numbers were given, Cousteau repeated the frightening possibility of the death of the oceans: 'I beg you

House and Senate reports on ocean dumping and the view of Congress

The House committee released its report upon the hearings in spring of 1971. On the question whether the oceans should be used for waste disposal, it said: 'Considering this end and the many other issues raised in the course of the hearings, it seems fair to say that the Committee wished to emphasize its answer to that question as a very large 'No''³¹. The House committee report did not reflect the wide divergence of views among the scientists who had testified. Using carefully worded language, it summarized 'almost complete current unanimity of concern for the protection of the ocean's from man's depredations. In the hearings before this Committee, the witnesses were unanimous in their support for the purpose of this legislation. No argument was raised by any witness as to the desirability of creating a system of protection for unregulated dumping of waste material into the oceans'³². As described in Chapter 3, there had been considerable disagreements among scientists and professional witnesses from the waste management field. But the Committee chose to ignore the view of the latter group. To explain the need for ocean dumping regulation, it instead extensively quoted prominent environmentalists Paul and Anna Ehrlich, Jacques Cousteau and Thor Heyerdahl although only Heyerdahl had testified in the spring hearings³³.

A quotation from Paul and Anna Ehrlich stressed nations' responsibilities toward each other: 'No one knows how long we can continue to pollute the seas with chlorinated hydrocarbon insecticides, polychlorinated biphenyls, and hundreds of thousands of other

not to dismiss this possibility (of death of the oceans) as science fiction. The ocean can die, these horrors could happen. *And there would be no place to hide*'. Quoted in Mary Douglas and Aaron Wildavsky, *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers* (Berkeley: University of California Press, 1982), 170. (Their emphasis)

³¹ House report no. 92-361, July 17, 1971, 14.

³² Ibid., 12.

³³ For the Ehrlichs, see Rae Goodell, *The Visible Scientists*. See also Edith Efron, *The Apocalypics: How Environmental Politics Control What We Know About Cancer* (New York: Touchstone, 1984), 33-35.

pollutants without bringing on a world-wide ecological disaster. Subtle changes may already have started a chain-reaction in that direction. The true costs of our environmental destruction have never been subjected to proper accounting. The credits are localized and easily demonstrated by the beneficiaries, but the debits are widely dispersed and are borne by the entire population through the disintegration of physical and mental health, and, even more importantly, by the potentially lethal destruction of ecological systems. Despite social, economic, and political barriers to proper ecological accounting, it is urgent and imperative for human society to get the books in order' ³⁴.

At the spring hearings, discussed in Chapter 3, one congressman had submitted a letter from Jacques Cousteau who, in the words of the congressman, was 'the person most expert on the oceans of the world', and whose 'testimony is the best available to alert us to the damages we have done to our oceans and to the dangers we face if we do not act quickly and constructively' ³⁵. The House report quoted one portion of this letter ³⁶: 'Because 96 percent of the water on earth is in the ocean, we have deluded ourselves into thinking of the seas as enormous and indestructible. We have not considered that earth is a closed system. Once destroyed, the oceans can never be replaced. We are obliged now to face the fact that by using it as a universal sewer, we are severely over-taxing the ocean's powers of self-purification. The sea is the source of all life. If the sea did not exist, man would not exist. The sea is fragile and in danger. We must love and protect it if we hope to continue to exist ourselves' ³⁷. The report also underscored the global scope of the ocean dumping problem. It explained that Thor Heyerdahl 'had found evidence of pollution and dumping of materials throughout his trip from Africa to the West Indies' ³⁸. The House report summarized that

³⁴ *House report no. 92-361*, July 17, 1971, 11-12. From Paul R. Ehrlich and Anne H. Ehrlich 'The Food-from-the-Sea Myth', *Saturday Review*, April 4, 1970. For House debate on the Committee report, see the *Congressional Record*, September 8, 1971, 30862.

³⁵ *Ocean Dumping of Waste Materials*, 161.

³⁶ For full letter, see *ibid.*, 161-162.

³⁷ *House report no. 92-361*, July 17, 1971, 12.

³⁸ *Ibid.*, 12.

'these issues formed the focus and background for the hearings on the Administration's ocean dumping legislation' ³⁹.

The administration's proposal to ban the dumping of chemical and biological warfare agents and high-level radioactive wastes had the full support of the committee. The committee considered high-level wastes, referred to as 'hot' radioactive wastes, so hazardous that it recommended an absolute ban on disposal at sea. An AEC spokesman had assured the committee that AEC did not consider resuming ocean dumping of low-level wastes which, as described in Chapter 1, had been almost completely phased out since 1963 in the United States ⁴⁰. Hearing reports advocated that an international agreement on radioactive waste dumping at sea be established. They included papers, provided by conservation groups, advocating 'restraint and careful planning in nuclear exploitation of the oceans', and stressing an urgent need for 'worldwide agreements limiting radioactive pollution' ⁴¹.

The more detailed Senate report covered both the views for and against dumping. The report nonetheless was unmistakably precautionary and prohibitory in tone. It quoted extensively from Cousteau's statement at the 'International Conference on Ocean Pollution', held after the House report was issued, and frequently used images, arguments and passages from his statement. A portion of the Senate report said: 'We have treated the oceans as enormous and indestructible –145 million square miles of surface – the universal sewer of mankind. Previously we thought that the legendary immensity of the ocean was such that man could do nothing against such a gigantic force. But the real volume of the ocean is very small when compared to the volume of the earth and to the volume of toxic wastes that man can produce with his technological capability. The water reserve on our spaceship is very small. And again, as Captain Cousteau has said: 'The cycle of life is intricately tied with the cycle of water. Anything done against the water is a crime against life. The water

³⁹ *Ibid.*, 12.

⁴⁰ *Ocean Dumping of Waste Materials*, 205–07 and 264.

⁴¹ *Ocean Dumping of Waste Materials*, 373–77.

system has to remain alive if we are to remain alive on this earth' ⁴². Parts of this passage, stressing norms and ethical concerns but little scientific evidence, was later repeatedly quoted in the Senate debate on the dumping bill ⁴³.

Instead of reasoning as Realism's rational egoists exclusively concerned with the protection of American national interests, key United States politicians thus perceived ocean dumping as a fundamentally global problem concerning all mankind. The House Committee report said: 'The Committee wishes to emphasize its awareness that the types of problems with which [the ocean dumping bill] deals are global in nature. We are not so blind as to assume that in dealing with the problems created by our own ocean dumping activities, we are thereby assuring the protection of the world's oceans for all mankind. Other nations, already moving to grapple with these troublesome issues, also will and must play vital roles in this regard' ⁴⁴. A sense of guilt for past polluting activity further suggested that the United States took the initiative to begin controlling ocean dumping globally: 'At the same time, however, the committee recognizes that the United States has been heavily involved in ocean dumping activities and that the kinds of materials that our highly industrialized, commercial nation may be forced to dispose of may be particularly hazardous to the health of the oceans' ⁴⁵. Furthermore, in terms more commonly used by complex interdependence theorists, rather than Realists or Rationalistic Realists, the Committee report urged the United States to play a key leadership role: 'Even more importantly, we believe strongly that someone must take the first steps' ⁴⁶.

In Congress, Cousteau's statement, originally appearing in the *Washington Post* and reprinted in the *Congressional Record*, that 'The oceans are in danger of dying. The

⁴² *Senate report no. 92-451*, November 12, 1971, 4237.

⁴³ *The Congressional Record*, October 13, 1972, 36044.

⁴⁴ *House Report no. 92-361*, July 17, 1971, 14.

⁴⁵ *Ibid.*, 14.

⁴⁶ *Ibid.*, 14. The need for U.S. leadership had also been stressed during hearings. See statement of congressman Lawrence Coughlin in *Ocean Dumping of Waste Materials*, 161.

pollution is general' was repeated frequently, as was his and Heyerdahl's descriptions of pollution encountered in isolated and previously unspoiled parts of the oceans ⁴⁷. Cousteau's support for the administration bill given earlier was also repeated ⁴⁸. The soundness of the two explorers' statements and policy advocacy was not questioned. Debatable knowledge was not debated. Moreover, the abundant scientific uncertainties which surrounded ocean dumping necessitated immediate action instead of restraint. Senator Hollings declared: 'The seas are dying according to Jacques Cousteau, but we have not done much to find out whether he is right or not. And if we wait much longer, we may not have the luxury of time to find out. Because if the oceans die, we die' ⁴⁹. Some proposed even more stringent regulation ⁵⁰.

It was, as would be expected, congressmen especially from states contiguous to the Great Lakes and from the coastal states who most actively supported control of ocean dumping. Undoubtedly, politicians also felt under pressure to demonstrate willingness to protect the environment ⁵¹. But the high number of votes with which the bill passed both in the House and Senate reflected genuine concern over the environment among the public

⁴⁷ The *Congressional Record*, September 9, 1971, 31151 and 31354. Also repeated during the hearings on ocean dumping. See, for instance, *Ocean Dumping of Waste Materials*, 139. According to a three-paragraph article: "Oceans Are Dying,' Cousteau says'. 'The oceans are dying. The pollution is general'. That's the appraisal of Jacques Yves Cousteau, back from 3 1/2 years' exploration and movie-making around the world. 'People don't realize that all pollution goes to the seas. The earth is less polluted. It is washed to by the rain which carries everything into the oceans where life has diminished by 40 per cent in 20 years,' the underwater explorer said'. Printed in the *Washington Post*, September 17, 1970. The article was reprinted the *Congressional Record*, October 6, 1970, 35134.

⁴⁸ 'Men of all nations must join together in an effort to save our seas. I am sure that by such measures as are called for in H.R. 805 (the Administration's proposal) we will succeed'. The *Congressional Record*, October 13, 1972, 36044.

⁴⁹ Senator Hollings. The *Congressional Record*, November 24, 1971, 43074.

⁵⁰ The *Congressional Record*, September 9, 1971, 31129-31160.

⁵¹ One congressman said: 'The general public feeling is that government is unresponsive and that the individual is powerless to affect his environment. That is not the case when legislation such as this is enacted'. The *Congressional Record*, September 9, 1971, 31155. Another congressman said during the House debate on the dumping bill: 'We can afford to wait no longer. We must pass this bill. We must demonstrate to the American people that Congress is ready, willing - and, yes, able - to act in this area of critical need. Let us not delay'. The *Congressional Record*, September 8, 1971, 30859-60.

as well as political and administrative leaders⁵². One Republican Senator saw the United States ocean dumping regulation as 'the result of our relatively sudden realization that the sea is not a bottomless septic tank, but a delicately balanced ecosystem dependent upon the good sense of man for its continued existence'⁵³. Similarly, on Congress' motives for overwhelmingly supporting an amendment to a water pollution bill to study limitations on DDT, the *Congressional Quarterly* wrote in spring of 1970: 'To a certain extent, members were rushing to get on the bandwagon. 1970 is an election year, and public concern over the fate of the environment has never been higher. But evidence indicated that much of the new concern in Congress is sincere – and may continue after the current frenzy of activity slows down'⁵⁴. Several conservation and wildlife preservation groups supported ocean dumping regulation, but were not actively involved in the political process⁵⁵. Leadership by key politicians and ecologists thus was crucial as public concern over ocean dumping and marine pollution generally was only moderate despite attempts to focus attention on this particular issue⁵⁶.

Economic costs of United States ocean dumping regulation

The economic costs of United States ocean dumping regulation gave raise to concern. Like

⁵² The House passed the ocean dumping bill by a vote of 304 to 3. The Senate passed the ocean dumping bill by a vote of 73 to 0.

⁵³ 'Dumping of Waste Materials', the *Congressional Quarterly. Weekly Report*, December 11, 1971, 2548–49.

⁵⁴ 'Pollution: Everyone Wants a Piece of the Action', the *Congressional Quarterly. Weekly Report*, April 24, 1970, 1135.

⁵⁵ For House debate, see letters from the Sierra Club, Friends of the Earth, and others in the *Congressional Record*, September 8, 1971, 30853 and 30857. See also the *Congressional Record*, September 9, 1971, 31151–52. For Senate debate, see the *Congressional Record*, November 24, 1971, 43060.

⁵⁶ Interview with Charles Lettow. See also Barry Newman 'The Sea: Pollution of Oceans Is Enormous Threat, But Few People Care', *The Wall Street Journal*, October 2, 1973.

other pieces of regulation to protect the environment, domestic regulation would impose economic costs on United States industry which, in the absence of global regulation, would benefit foreign industry. In the case of ocean dumping U.S. government representatives and industrialists were concerned over the possible economic implications regarding especially European and, to a lesser extent, Japanese industries, and great importance was attached to finding an international forum where those problems also could be tackled⁵⁷. Thus the importance of institutional choice in a new era of policy-making was evident. Because Japan was not a participant in NATO, the U.S. Administration disapproved of using NATO as the primary forum for negotiating an international agreement on ocean pollution from oil discharges from ships⁵⁸. The Organization for Economic Cooperation and Development (OECD), an organization of developed countries where the problems were to a greater degree in common than they would be in Stockholm, was favored by the United States for dealing with international trade implications of environmental regulation⁵⁹. In the case of an international ocean dumping convention and other problems of the marine environment, however, the United States preferred to work through the United Nations system, and thus the Stockholm Conference, as it included nations with substantial oceanographic capabilities

⁵⁷ The Senate ocean dumping report reads: 'Most of the subjects...are important not only environmentally but economically as well. Since much of current economic concern stems from the relative competitive position of different nations in world markets, it is important to get as many nations as possible to impose like environmental restraints upon themselves...the U.S. domestic legislation can promote international agreement by treating the subject of ocean dumping in international waters separately. [In order to avoid law of the sea issues, the proposal for U.S. dumping regulation was based on the right to regulate transportation from U.S. ports and by U.S. registered ships]. By taking this route, the U.S. can tend to equalize out competitive position relative to European industry. Under the proposed U.S. draft convention these practices would have to change, resulting in a considerable economic impact'. *Senate report no. 92-451*, November 12, 1971, 4242-4243. The issue of disadvantage to U.S. economic interests was also raised by a representative from private industry at the *International Conference on Ocean Pollution*, 27.

⁵⁸ See the *Congressional Record*, April 1, 1971, 9209.

⁵⁹ The reasons for the choice of OECD were explained before the Congressional hearing *U.N. Conference on Human Environment: Preparations and Prospects*. Hearings before the Committee on Foreign Relations. United States Senate. 92nd Congress. May 3, 4, and 5, 1972.

(e.g. the Soviet Union, Japan) and large maritime fleets (e.g. Liberia, Panama) ⁶⁰.

While the economic implications of ocean dumping regulation were modest, but anyway gave rise to concern, the potential economic costs of international environmental regulation that might be agreed on in Stockholm gave rise to serious concern in the United States. The economic consequences of differing national standards jeopardized international trade. Furthermore, international trade war seemed a real threat as there was considerable pressure within the U.S. Congress and the administration to impose countervailing duties where other countries did not maintain standards comparable to U.S. standards ⁶¹. Such a trade war would probably escalate as the environment increasingly became an issue also in Europe; the environment was already an issue in Japan. The U.S. State Department thus intended to use the Stockholm Conference for reaching agreement on international regulations and standards in order to protect national economic interests and avoid trade

⁶⁰ See also Ann L. Hollick 'Bureaucrats at Sea', in Ann L. Hollick and Robert E. Osgood, *New Era of Ocean Politics* (Baltimore: The John Hopkins University Press, 1974), 65. Other U.S. considerations, though of less importance, were: (1) the need for global monitoring of pollution in the marine environment, (2) the desirability of broadly-based research on climatological problems, (3) the importance of augmenting agricultural production in the LDCs by increasing the amount of food from the sea, and (4) the possibility of assisting the developing countries by cooperative exploitation of mineral resources in the seabed. See the report *U.S. Priority Interests in the Environmental Activities of Committee on International Affairs*. An excerpt is reprinted in the *Congressional Record*, April 1, 1971, 9209-9212. The exclusion of the Soviet Union from the OECD was seen as the principal drawback of this organization. See *U.N. Conference on the Human Environment: Preparations and Prospects*, 63.

⁶¹ United States Assistant Secretary of Commerce Harold C. Passer warned of the possibility of a trade war in a speech on October 6, 1970, when he said: 'In those cases where prices increase (to meet pollution control costs), U.S. goods would be at a competitive disadvantage in world trade. In order to avoid a major deterioration of our balance of payments position, remedial action would be necessary. Perhaps the most desirable action would be the setting of international pollution standards. An international convention of the world's countries could be convened for the purpose of reaching agreement on pollution standards. If an international agreement on pollution standards cannot be reached, the U.S. may find it necessary to levy border taxes on imports and rebates on exports to reflect the added production costs of pollution standards. This is obviously a less desirable solution, because it might violate existing GATT rules and because it would be difficult to determine the extent to which the imposition of pollution standards adds to production costs'. Quoted in *U.N. Conference on Human Environment: Preparations and Prospects*, 68.

disruptions⁶². Similarly, to protect U.S. economic interests, members of the Senate wanted U.S. delegates to the Stockholm Conference to 'advocate and support multilateral accords to achieve standards and regulations of environmental protection enforceable by the United Nations or multilateral economic sanctions'⁶³.

Also in the case of ocean dumping would international agreement offer an international solution to the economic costs imposed by domestic regulation. As a U.S. official participating in the negotiations explained: 'One reason the United States strongly supported an ocean dumping treaty in the first place was its hope that other nations – especially industrialized ones – will establish environmentally protective regulations similar to our own. To the extent they do not, foreign industry may gain a competitive edge, since the price of its products will not reflect the costs of pollution abatement. And so, once enactment of domestic ocean dumping legislation was foreseen, the United States became enthusiastically instrumental in establishing an international control mechanism reflecting our domestic law'⁶⁴. In short, agreement on international regulation would imply that also foreign industry should reflect the costs of pollution control in its products.

Thus, on the economic side, soon-to-be realized domestic regulation created incentives to establish an international regime and prompted United States international leadership in ocean dumping regulation. To protect national economic interests, the United

⁶² *International Cooperation in the Human Environment through the United Nations*, 37–38. Hearings before the Subcommittee on International Organization and Movements of the Committee on Foreign Affairs. House of Representatives. 92nd Congress. March 15 and 16, 1972, 37–38.

⁶³ *U.N. Conference on Human Environment: Preparations and Prospects*, 54. See also Allen L. Springer 'United States Environmental Policy and International Law: Stockholm Principle 21 Revisited' in John E. Carroll, ed., *International Environmental Diplomacy: The Management and Resolution of Transfrontier Environmental Problems* (Cambridge, New York; Cambridge University Press, 1988), 46–52.

⁶⁴ Robert J. McManus 'The New Law of Ocean Dumping. Statute and Treaty', *Oceanus* 6 (Sep.–Oct. 1973), 26. One Congressman had pointed out how an international agreement on ocean dumping could pave the way for US. national regulation: 'Agreements reached at a 1971 international conference [i.e. the International Conference on Ocean Pollution] would be important to the 92nd Congress in its deliberations on a national policy on ocean dumping. It seems quite possible to me that such agreements as could be reached in the international arena this year would have an important bearing on actions which the Congress might need to take to bring about a desired national policy on ocean dumping'. Congressman William V. Roth, Jr., the *Congressional Record*, April 1, 1971, 9209.

States was in strong support of international regulation as this could provide an acceptable solution to the economic costs of domestic regulation. The Stockholm Conference was the best forum for reaching agreement on international regulation, both from the economic and the environmental perspective. Hence, the United States tabled a proposal for a global dumping convention at the first meeting of the Intergovernmental Working Group on Marine Pollution (IWGMP), a negotiation group established by the Preparatory Committee of the Stockholm Conference.

Conclusion

In the late 1960s, several spectacular mishaps and incidents of pollution had attracted American attention to pollution of rivers, lakes and harbors. Attention to pollution of the ocean from dumping, however, was provoked by the problem of dumping of dredged spoils into the Great Lakes, which provoked concerns for dumping in the ocean, and the Army's dumping of nerve gas off the coast of Florida. Although no severe damage had been inflicted on the ocean environment, ocean dumping was singled out for regulation. This approach, in President Nixon's words, of 'acting rather than reacting' to prevent marine pollution from dumping also made political sense to politicians under pressure to demonstrate a willingness to act ⁶⁵.

Public concern about the health of the oceans was new in the late 1960s. It was a fortunate combination of focusing events, a new influential public idea and a group of determined congressmen which resulted in regulation of ocean dumping in the United States. It was this combination of elements which had been mentioned in the opening remarks at one of the Congressional hearings on ocean dumping in 1971: 'It seems that no one knows the volume – and I think that is really an understatement – of wastes that have been dumped in the oceans in the past years. In fact, until recently, the question was scarcely asked and

⁶⁵ Robert M. Smith 'Panel Urges Curbs on Ocean Dumping; Nixon Hails Report', *New York Times*, October 8, 1970.

then only by an obscure group of scientists, known as ecologists. Fortunately, however, in the last few years the entire question of ocean disposal of waste material has been thrust into prominence, and I think appropriately so, by the recently disclosed dumping of nerve gas and oil wastes off the coast of Florida, by the dumping of sewage and other municipal wastes off New York Harbor, and a number of other and similar instances' ⁶⁶. In the wake of a series of spectacular environmental accidents in the ocean and examples of dumping causing 'death' in Lake Erie and other large water bodies the idea of pollution of the ocean from dumping, which had started among an insignificant group of scientists at an earlier date, was used by a group of congressmen to effectively set new norms for ocean protection. To attract public and political attention to the need for regulation, prominent ecologists and environmentalists spread the simple, powerful idea that the 'oceans are dying'.

Contradicting the claim made by Realists and Rationalistic Realists, ocean dumping was seen as an international problem involving all states. Protection of the national interest thus necessitated that potentially all states would work together in controlling ocean dumping. But an international policy would be realized only if states could agree on a definition of the problem. This could not be achieved by coercion by instead some form of international persuasion and education.

⁶⁶ Senator Alton Lennon *Ocean Dumping of Waste Materials*, 1.

CHAPTER 5

THE INTERNATIONAL DUMPING REGIME AND COMPLEX INTERDEPENDENCE THEORY

For complex interdependence theorists, ecological issues cause states to depend on each another for attainment of human well-being and protection of the environment. The nature of interdependence issues compels states to cooperate within international regimes.

According to this body of theory, military force is not an available means to influence international policy under conditions of complex interdependence. These theorists would predict that the United States, or another powerful state, would create the international dumping regime by demonstrating to other states the advantages of cooperation. However, international organizations would play an insignificant role in the regime-building process. According to Keohane and Nye: 'Leadership will not come from international organizations, nor will effective power' ¹.

As regards the international dumping regime, the regime-building process was far from a 'governments only' affair. It was intimately interwoven with the United Nations Conference on the Human Environment in 1972, the Stockholm Conference, where organizers attempted to secure the environment a permanent place on the global agenda. The Stockholm secretariat organized the negotiations on the international dumping regime so that a treaty could be ready for signature by governments at the conference. Agreement on this regime would prove governments' willingness to start protecting the environment. An agreement was reached within a few months after the conference.

Popular ecology themes from the Biosphere Conference in September 1968, discussed in Chapter 3, dominated the view on nature-society relationships in Stockholm. But the large number of participating states from North and South and the attendance of 550 non-governmental organizations and many individuals representing mass movements or special

¹ Keohane and Nye, *Power and Interdependence*, 240.

interest groups distinguished this conference from previous United Nations-sponsored environment conferences². Furthermore, conference resolutions and recommendations urged that concrete international machinery for environmental protection be established. The Stockholm Conference thus was a political conference with 'the full rigor of diplomatic protocol'³.

Contrary to the predictions of complex interdependence theorists, the Stockholm secretariat played an important catalytic role in the regime-building process. High-level United Nations officials significantly influenced both pre-negotiation and negotiation⁴. Tensions between developed and developing countries, major differences in governments' commitment to protecting the environment, scientific uncertainties concerning environmental impact of substances, and lack of global attention to ocean dumping jeopardized the construction of the international dumping regime. However, due to the Stockholm secretariat these obstacles were overcome. Equally important, the secretariat effectively mobilized international public opinion and pressure during the preparations for the conference. International pressure was a significant element in reaching agreement on the international dumping regime.

² See the discussion of the Stockholm Conference from an international relations perspective in John R. Handelman, Howard B. Shapiro and John A. Vasquez, *Introductory Case Studies for International Relations: Vietnam, The Middle East, and the Environmental Crisis* (Chicago, Illinois: Rand McNally College, 1974).

³ Nigel Hawkes 'Human Environment Conference: Search for a Modus Vivendi' *Science* 175 (18 February 1972), 736. See also discussion in John McCormick, *Reclaiming Paradise*, 90 ff.

⁴ Prenegotiation has usefully been defined as 'the span of time and activity in which the parties move from conflicting unilateral solutions for a mutual problem to a joint search for cooperative multilateral or joint solutions...The nature of the activity lies...in arriving at and in convincing the other party to arrive at the conclusion that *some* joint solution is possible'. I. William Zartman 'Prenegotiation: Phases and Functions' in Janice Gross Stein, ed., *Getting to the Table: The Processes of International Prenegotiation* (Baltimore: The John Hopkins University Press, 1989), 4.

The Stockholm Conference and ocean pollution from dumping

The idea to convene a high-level United Nations conference in order to focus the attention of the international community on the need for international action on the environment originated with Sverker Aström, head of Sweden's mission at the United Nations, New York. A member of the Swedish delegation made the formal proposal at a meeting of U.N.'s Economic and Social Council (ECOSOC) in July 1968. The council's resolution calling for the conference was then debated by the U.N. General Assembly. The assembly adopted the draft document without alteration in December 1968. Under the resolution the coming United Nations conference should 'provide a framework for comprehensive consideration within the U.N. of the problems of the human environment in order to focus the attention of governments and public opinion on the importance and urgency of this question and also to identify those aspects of it that can only or best be solved through international cooperation and agreement'⁵.

Michel Batisse, the organizer of the UNESCO Biosphere Conference in 1968, appointed a Swiss scientist, Jean Mussard, as Secretary-General of the coming conference. Mussard planned to organize an international meeting which would focus on scientific aspects of the environment. Political and economic aspects of environmental protection were ignored. At that point, it seemed more likely that the coming conference would produce scientific reports and books, and probably financial support to UNESCO, rather than concerted governmental action.

FAO and WHO (World Health Organization), both bypassed in the early planning phase, did not share UNESCO's intentions for the coming conference. Sverker Aström, who in his published recollections wrote 'from the very beginning we emphasized the need for rapid action', realized that the preparations did not develop as he intended⁶. Together with a few high-level United Nations officials Aström persuaded U Thant, the then Secretary-

⁵ U.N. General Assembly resolution 2398 (XXIII), December 3, 1968.

⁶ Quoted from Wade Rowland, *The Plot to Save the World: The Life and Times of the Stockholm Conference on the Human Environment* (Toronto: Clarke, Irwin, 1973), 34.

General of the United Nations, to replace Jean Mussard. In December 1969, a U.N. resolution shifted the direction of the coming conference 'to serve as a practical means to encourage and to provide guidelines for action by governments and international organizations'⁷. Maurice Strong, a former Canadian businessman who had recently been appointed as head of the Canadian International Development Agency, replaced in the Fall 1970 Mussard as Secretary-General of the conference⁸. From then on, an international policy conference started to take shape. The official title of the conference was changed and, as both FAO and WHO hoped, emphasized now the 'human aspects' of the environment⁹. This shift in emphasis implied that political and economic aspects, as well as the proper role of science and technology in environmental protection, should move to the fore. An action-oriented approach to the preparations for the conference as well as for the conference itself was also developed by the Stockholm secretariat.

The secretariat, some twenty people, was aware that one single United Nations conference on the environment could not suddenly bring governments to massively cooperate on environmental protection. Many developing countries suspected that environmental protection was simply another way for developed countries to slow down their industrial development. At the same time, protection of their economies and sovereignty made developed countries oppose any bold attempts at international cooperation on these matters. The secretariat nonetheless hoped for the beginning of environmental protection on a global scale.

The secretariat established a Preparatory Committee, a group consisting of 27 governments, with strong representation from the third world, which at its first two meetings

⁷ General Assembly resolution 2581 (XXIV), December 15, 1969. Quoted in Wade Rowland, *The Plot to Save the World*, 35.

⁸ The United Nations General Assembly confirmed Maurice Strong's appointment as Secretary-General of the Stockholm Conference on December 7, 1970. Strong was already in charge of the preparations at that point and had met with the Preparatory Committee.

⁹ From the beginning Strong emphasized that concrete action should be taken in Stockholm. 'Opening Remarks by Maurice F. Strong, Secretary-General Designate, United Nations Conference on Human Environment, at Informal Meeting of Preparatory Committee for the Conference'. U.N. Centre for Economic and Social Information, CESI Note/13, 10 November 1970.

looked for particular areas for future international cooperation on pollution control. The U.N General Assembly resolution – 'to identify those aspects of it that can only or best be solved through international cooperation' – led the Preparatory Committee in their search for parts of environmental problems that were joint ¹⁰. The Committee focused on areas outside national authority and areas under national authority of concern to most governments.

The secretariat tried to convince governments that at least a number of pollutants and ways in which pollution occurred due to their nature only, or best, could be solved through international cooperation. Among these pollutants of 'broad international significance', as they were called in 'basic papers' produced by specialized agencies of the United Nations and presented during the preparatory process, three types were identified: those whose effects were felt beyond the national jurisdictions in which the pollutants were released to the environment; those who affected international trade; and those that occurred in many states ¹¹. Global aspects of marine pollution were emphasized in separate basic papers ¹². The Secretariat hoped to demonstrate that there were particular pollutants which from a global perspective should be controlled.

The oceans, the stratosphere and Antarctic seemed strong candidates for the first category, while maintenance and restoration of soils and conservation seemed strong candidates for the third category. However, protection of the marine environment did by far attract the most attention as a particular area in which it was hoped action could be undertaken in Stockholm. The secretariat then took the initiative to convene an international working group on marine pollution, officially named the Intergovernmental Working Group on Marine Pollution (IWGMP), to prepare action in this particular field.

Far from all governments saw ocean dumping as a global environmental problem.

¹⁰ Interview with Peter S. Thacher, member of the Stockholm secretariat, Cambridge, 2 May 1991.

¹¹ For the 'basic paper', which was commissioned by the secretariat and produced at the United Nations Institute for Training and Research (UNITAR), see Daniel Serwer 'International Co-Operation for Pollution Control', in John Lawrence Hargrove, ed., *Law, Institutions, and the Global Environment* (New York: Oceana Publications, 1972), 178–207.

¹² For the United Nations Institute for Training and Research (UNITAR) report concerned with marine pollution, see Oscar Schachter and Daniel Serwer 'Marine Pollution Problems and Remedies'.

Most governments were in fact not concerned over ocean dumping. Only in those countries where environmentalism had gained a foothold, namely developed countries and especially the United States, did ocean dumping cause concern. Thus, it was in the United States, where prophecies of environmental catastrophes were a peculiar characteristic of the ecology debate as well as a favorite theme of the ecology elite, that the idea that the oceans were dying first gained political importance and ocean dumping was seen as a global problem¹³. As a former U.S. ambassador to the United Nations later noted caustically: 'We have become great producers and distributors of crisis. The world environmental crisis, the world population crisis, the world food crisis, are in the main American discoveries – or inventions – opinions differ'¹⁴.

¹³ My view on the American ecology debate and its influence on the international environmental movement is supported by John McCormick, *Reclaiming Paradise: The Global Environmental Movement*, 69–87. For the difference between the American and the European approach to the environmental 'crisis', see Wade Rowland *The Plot to Save the World*, 124. *Science* wrote: 'The many environmental meetings that have preceded Stockholm have shown that Americans tend to take a much gloomier view of the situation than do Europeans...a wide gap between U.S. and European attitudes [has been noted]. British environmentalists habitually take an optimistic view... of the future of mankind...The more apocalyptic visions of the future remain a minority taste in Britain, though a growing one...But so far there is no substantial public pressure in favor of a more radical stance; the environmental movement here is still a collection of pressure groups with no real constituency'. Nigel Hawkes 'Human Environment Conference: Search for a Modus Vivendi,' *Science* 175 (February 1972), 738. An American economist's account of one of the many environmental meetings prior to Stockholm said: 'For Americans, who are used to believing that their problems are always the biggest in the world, it was comforting, if somewhat frightening, to encounter the growing ranks of those from other countries who think that their environmental disruption may be just as serious. For those of us who take pride in leadership, there will probably be some compensation in the fact that the United States is still about five years ahead both in the dimensions of its problem and in the public awareness of what is happening. Nevertheless, more and more scientists, economists and citizens all over the world are being aroused by the dangers of pollution...Strangely enough, the most radical and iconoclastic voices raised on behalf of the environment at the conference came from the Americans...That David Brower of the Friends of the Earth should respond that way was not too surprising, but that such Establishment types as Stewart Udall, former Secretary of the Interior, or the scholarly Raymond Fosberg of the Smithsonian Institution should share his views puzzled otherwise sophisticated Europeans'. Marshall I. Goldman 'Pollution International: Has the Environment a Future?' *The Nation*, October 18 1971, 358–59. See also Jonathon Porritt, *Seeing Green: The Politics of Ecology Explained* (London: Blackwell, 1989), Chap. 16. For an overview of American 'environmental globalism' or 'world-order environmentalism' literature, see the Appendix in Richard A. Falk, *This Endangered Planet* (New York: Random House, 1971).

¹⁴ Daniel Patrick Moynihan 'The United States in Opposition' in Karl Brunner, ed., *The First World and The Third World: Essays on the New International Economic Order* (Rochester, N.Y.: University of Rochester Policy Center Publications, 1978), 131.

Especially in the eyes of China, Brazil, and India, the affluent Western societies, who were facing severe self-inflicted environmental problems, intended through the Stockholm Conference to impose new environmental regulations on developing countries which would cause industrial and economic stagnation. Some developing countries even saw global environmental standards as a deliberate strategy of the developed countries aimed at halting the development of poor countries¹⁵. In Stockholm, developing countries thus launched an attack on the developed countries, especially the United States, and demanded compensation and assistance in development¹⁶.

Developing countries' rejection of global environmental standards did not come as a surprise to the Stockholm secretariat. Representatives of developing countries had at meetings arranged by the secretariat made it clear that they were opposed to such standards and that they saw pollution with global effects as a by-product of the intensity of industrial activity in the highly developed countries¹⁷. However, Maurice Strong assured in his 'round-the-world-lobbying to organize the conference' that land use, drastic erosion, spreading deserts, and loss of wetlands and watersheds, all topics most relevant to developing countries, would be on the Stockholm agenda¹⁸. In addition, conference organizers kept

¹⁵ At a meeting prior to Stockholm delegates from developing countries warned that they saw banning of DDT as genocide. 'And global environmental standards, they said, were merely a means of perpetuating underdevelopment by inhibiting industrialization and economic growth in the Third World'. Nigel Hawkes 'Human Environment Conference: Search for a Modus Vivendi' *Science* 175 (18 February 1972), 737. See also 'The Big Cleanup' *Newsweek*, June 12, 1972, 36-43.

¹⁶ 'An unexpected theme of the two-week conference, now at its half-way point, has been the insistence that because the advanced nations are responsible for the largest amount of environmental pollution to date, they owe the developing countries both reparations and assistance in development'. Gladwin Hill 'China Denounces U.S. on Pollution: Reparations to Poor Nations Demanded in Stockholm' *New York Times*, June 11, 1972. See also Gladwin Hill 'Sense of Accomplishment Buys Delegates Leaving Ecology Talks' *New York Times*, June 18, 1972.

¹⁷ See 'Founex Report on Development and Environment' *International Conciliation* (January 1972), 7-37. For a good discussion, see Lawrence Juda 'International Environmental Concern: Perspectives of and Implications for Developing Countries', in David W. Orr and Marvin S. Soroos, eds., *The Global Predicament: Ecological Perspectives on World Order* (Chapel Hill: The University of North Carolina Press, 1979), 90-107.

¹⁸ 'The Big Cleanup', *Newsweek*, June 12, 1972, 40. See also Allen L. Springer 'United States Environmental Policy and International Law: Stockholm Principle 21 Revisited', 50.

family planning, a politically very sensitive issue, off the agenda in Stockholm in the hope not to alienate developing countries ¹⁹. This was part of the price paid for persuading underdeveloped countries to come to a conference they have no heart for' ²⁰.

As regards ocean dumping, the view of the group of developed countries and that of the group of developing countries differed dramatically. Developing countries generally did not see themselves as polluters of any significance and did not consider ocean pollution their problem. Nor did scientists from developing countries pay much attention to ocean pollution. As a spokesman of the scientific community from the developing countries explained before a United States Congressional hearing: 'Ocean and higher atmosphere pollution, that is to say the two phenomena with the greatest global effects, have almost not been considered [by Third World scientists]. I would dare to interpret this fact as the feeling that the less developed countries are judging themselves only in a very small measure responsible for the occurrence of these pollutions and that therefore the solutions should also be undertaken by the industrialized countries' ²¹. In his comments on the Stockholm secretariat's proposal to identify pollutants of broad international significance, the Brazilian delegate to the Stockholm Conference wrote: 'The examination of this list of major pollutants of international significance shows clearly that (with only marginal exceptions) the great polluters are the highly industrialized countries. Starting from radionuclides (practically 100 per cent of whose production and dissemination is imputable to a few highly developed countries) and going right on down the list of all the other major pollutants, the overwhelming discharge of effluents is the consequence of the developed countries' recent

¹⁹ A columnist from Nigeria's Lagos Daily Times offered his view as: 'The idea of family planning as peddled by the Euro-American world is an attempt to keep Africa weak'. Quoted in 'The Big Cleanup', *Newsweek*, June 12, 1972, 43. A U.N. conference on population was instead planned for 1974. See Wade Rowland, *The Plot to Save the World*, 126-127.

²⁰ Nigel Hawkes 'Human Environment Conference: Search for a Modus Vivendi' *Science* 175 (18 February 1972), 737.

²¹ Statement by Dr. Francesco Di Castri, the Vice President of the Scientific Committee on Problems of the Environment, International Council of Scientific Unions, before the 1971 US Senate hearing *International Environmental Science*. Joint Colloquium before the Committee on Commerce, United States Senate, and the Committee on Science and Atmosphere, House of Representatives. May 25 and 26, 1971. 92nd Congress, 37.

technologies and of their high level of industrial as well as primary production (particularly in over-fertilized, over-herbiced, and synthetically controlled agriculture). The contribution to this type of pollution by developing countries is, in absolute terms, extremely small and in relative terms practically nil'²². A report from the Indian National Science Academy likewise did not count ocean pollution among existing global environmental problems²³.

Negotiating the international dumping regime

Within one year, the IWGMP met four times. At the fifth session held in London from October 30 to November 13, 1972, a global dumping convention was signed. This group was established by the Stockholm secretariat as part of the preparations for the Stockholm Conference and was intended to produce an action program for future international control of marine pollution to be presented at the conference.

The first session of the IWGMP took place from 14 to 18 June 1971 at IMCO headquarters, London, under the sponsorship of the British government. Thirty-three governments had sent representatives²⁴. Representatives of the Stockholm secretariat, GESAMP, IOC, FAO, IAEA, WMO, and UNESCO also attended, together with representatives of IMCO. An observer from the United Nations Group of Experts on Long-Term Scientific Policy and Planning was also present.

From the outset, the participants agreed that many forms of action were needed, due

²² Miguel Ozorio de Almeida *The Confrontation between Problems of Development and Environment, International Conciliation* (January 1972), 48.

²³ *International Environmental Science*, 223–24. See also India, Summary of the Indian National Report in *The Human Environment, vol.2: Summaries of National Reports, Environment Series 201* (Washington, D.C.: Woodrow Wilson International Center for Scholars, 1972), 35–40.

²⁴ Algeria, Argentina, Australia, Belgium, Brazil, Canada, Chile, Cuba, Cyprus, Denmark, France, Ghana, Iceland, Iran, Italy, Japan, Madagascar, Malta, Mexico, Morocco, the Netherlands, Norway, Peru, Philippines, Portugal, Spain, Sweden, Turkey, United Arab Republic, United Kingdom, United States of America, the Soviet Union, and Yugoslavia.

to the variety of human activity on land and at sea, in order to prevent marine pollution. Yet in addition to drawing up a comprehensive plan for preservation of the marine environment it was decided to single out particular aspects of marine pollution where it might be possible to conclude a treaty at the Stockholm Conference ²⁵. A United States draft convention, titled 'Regulation of Transportation for Ocean Dumping Convention', and regional arrangements to protect seas or groups of seas were the main instances mentioned in this connection. While discussions on regional arrangements had to wait until the next session, since detailed proposals did not exist, widespread support for a global arrangement for dumping control was expressed ²⁶.

Under the United States draft convention, the convention should apply to dumping by all means of transportation while other marine pollution sources, for instance land-based sources like pipelining from the coast, would be excluded from the convention. The transportation of all materials from land for the purpose of dumping at sea would be prohibited unless a permit was issued by relevant state authorities. For that purpose, each state should establish criteria for the issue of dumping permits. These criteria, which gave rise to debate, generally should be designed to 'avoid degrading or endangering human health, jeopardizing marine life, and economic uses of the ocean' ²⁷. States should then notify an international registry as to the kinds and amounts disposed of, the location of disposal site, and other relevant data.

The question of the prohibitory and restrictive stance, or lack of same, of the United States draft convention stirred debate. A number of states thought that the convention should

²⁵ *Report of the First Session of the Inter-Governmental Working Group on Marine Pollution, London. 14-18 June 1971*. UN doc. A/CONF.48/TWGMP.I/5. 21 June, 1971, 5.

²⁶ According to Christian A. Herter, Jr, Special Assistant of the Secretary of State for Environmental Affairs: 'It was not felt in London that at this point it was possible to deal with what you might call coastal and estuarine pollution because there are enormously complicated problems involving jurisdictional boundaries and all sorts of things, and as you are fully aware, the so-called law of the sea conference is designed to deal with these problems of territorial jurisdiction...It was felt if we can get anything done at Stockholm at all, let's keep it fairly simple, it may not be the world's most meaningful thing, but at least it is a start'. *International Conference on Ocean Pollution*, 35.

²⁷ UN doc. A/CONF.48/TWGMP.I/5, 6.

primarily prohibit ocean dumping and only consider for disposal those materials 'whose harmless effects could be demonstrated in the light of existing knowledge and experience'²⁸. Referring to the work done by GESAMP, it was suggested that a distinction should be made between substances; whereas some substances might be prohibited, in other instances dumping might be allowed, subject to a license being obtained²⁹. Other countries found the suggestions of the United States draft more acceptable. The United States draft did not distinguish between permitting and prohibiting ocean dumping³⁰. Sweden, which in January 1972 passed a law prohibiting ocean dumping altogether, found the U.S. proposal too lax³¹. Moreover, the criteria for issuance of dumping permits left too much discretion to individual states. In support of deletion, Canada suggested that elements of the GESAMP definition of marine pollution should be incorporated in the United States proposal. Since the draft convention did not specify what criteria should be followed to distinguish between general permit and special permit, it was also inquired what the limits of the general permit would be. Speaking in reply, the United States agreed, to some extent, with the views expressed and declared that the draft would be revised to take into account the points raised with respect to dumping criteria and the need for international principles and guidelines to harmonize among national regulatory approaches. In general, the draft was only intended to be the first step toward an international regulatory arrangement.

With respect to pollutants to be regulated by the convention, it was agreed to focus on a number of pollutants: urban effluents, oil, toxic and persistent substances (e.g. organochlorine pesticides and other persistent chlorinated hydrocarbons), metals which caused accumulation processes in the food chain (e.g. mercury and other heavy metals), and

²⁸ *Ibid.*, 6.

²⁹ The Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) was established by several specialized agencies of the United Nations in 1969.

³⁰ The US draft read: 'No party shall issue permits for the transportation of such material for dumping if the dumping thereof in the ocean would unreasonably degrade or endanger human health, welfare or amenities, or the marine environment, ecological systems, or existing or future economic use of the ocean'. Article 3 (b). UN doc. A/CONF.48/TWGMP.I/5, Annex 5, 4.

³¹ See *International Legal Materials (ILM)*, vol. 11, no. 5. September 1972, 1115-16.

industrially derived organic wastes (e.g. pulp and paper mill wastes and organic wastes from refineries)³². The list was not intended to be definitive, and could be revised to take into account scientific advice given by advisory bodies such as GESAMP. In fact, the listed pollutants were identified on the basis of advice given by GESAMP³³. Importantly, radioactive substances were not among the listed pollutants. Pointing out that existing arrangements already were in place, see Chapter 1, the United States and Britain did not intend to include radioactive wastes in the list of pollutants.

As the first meeting came to the end, a general optimism prevailed as to the possibility of reconciling the different approaches to regulation of ocean dumping. However, the question as to whether the emphasis should primarily be put on prohibiting ocean dumping remained. Canada, among others, favored a strong anti-dumping policy while the United States draft convention, as mentioned, made no mention of prohibition of dumping³⁴. As one observer put it, the United States draft proposed little more than a straight 'licence to dump' regime³⁵. However, the IWGMP decided to continue negotiating a global dumping convention. A feel of urgency was unmistakable here. In the unusually forthright and impelling words of the meeting report's summary of conclusions: '...there are specific actions which should be prepared for completion at the time of the United Nations Conference on the Human Environment...certain particular actions were identified which, if taken in the near future, could materially improve the situation and serve as evidence of the

³² UN doc. A/CONF.48/TWGMP.I/5, 8.

³³ The recommendations of GESAMP in Annex IV of the GESAMP Report of the Third Session.

³⁴ 'General Principles on Ocean Disposal', submitted by Canada. 'A. There should be general prohibition on use of the international areas of the oceans for the disposal of materials' B. The only materials that should be considered for disposal in such areas are those whose deleterious effects can be assessed with confidence taking into account factors such as assimilation by the food chain and distribution by physical processes such as ocean currents. General Considerations. A. There should be no assumption that the oceans have an excess assimilative capacity. B. The localization of the disposal of materials into waters not within the international area of the oceans would permit a more ready assessment of the effects. C. Materials of long persistence and toxicity should not be disposed of into any area of the sea'. UN doc. A/CONF.48/TWGMP.I/5, Annex 6.

³⁵ Rodney N. Duncan The 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes at Sea', *Journal of Maritime Law and Commerce* 5 (January 1974), 30.

utility of international co-operation to protect the oceans. Proposals with regard to the control of ocean dumping are a specific step for which preparation should go forward with urgency'³⁶. The option of a global dumping convention appeared to be within reach in the immediate future.

The second session of the IWGMP took place in Ottawa from 8 to 12 November 1971. The session was attended by representatives from forty-two governments and representatives from the Stockholm secretariat, GESAMP, FAO, UNESCO and its IOC, WHO, UNITR, WMO, IMCO, and IAEA³⁷. In general discussion, the working group 'reaffirmed the importance of urgent and effective action against marine pollution, especially by dumping'³⁸.

Although recent progress toward regional institution-building was welcomed by the IWGMP – the so-called Oslo Convention on the Control of Marine Pollution by Dumping from Ships and Aircraft had been drafted October 22, 1971 – many states were in agreement that action also at a global level was necessary in order to link together and complement regional arrangements³⁹. Several developing countries thought that the Oslo Convention should not serve as model for the global dumping convention. Instead, it was crucial that a convention not have loopholes allowing developed countries to dump substances which under no circumstances should be dumped. This point was repeated during the final negotiations at the London Conference⁴⁰. But a global convention should, on the other hand, not hinder the industrialization of developing countries. Brazil had made this clear

³⁶ UN doc. A/CONF.48/TWGMP.I/5, 13.

³⁷ Algeria, Argentina, Australia, Barbados, Belgium, Brazil, Canada, Chile, Colombia, Cuba, Denmark, Ecuador, Finland, France, Gabon, Ghana, Guatemala, Iceland, India, Iran, Italy, Ivory Coast, Japan, Kenya, Libyan Arab Republic, Malaysia, Malta, Mexico, the Netherlands, New Zealand, Norway, Peru, Portugal, South Africa, Spain, Sweden, United Republic of Tanzania, United Kingdom, United States of America, the Soviet Union, and Zambia.

³⁸ 'Report of the Intergovernmental Working Group on Marine Pollution on its Second Session', UN Doc. A/CONF.48/TWGMP.II/5, 22 November 1971, 7.

³⁹ UN doc. A/CONF.48/TWGMP.II/5, November 22, 1971, 8.

⁴⁰ Archival material (R.I.j.no.82.B.89) December 6, 1972, 3.

already at the first session ⁴¹. In addition, smaller Western European countries, like the Netherlands and Finland, pointed to the risk of too vague rules of exemption from the lists of substances banned by a global convention ⁴².

To that end, a drafting group set up on an open-ended basis produced a number of provisional articles. Several draft articles took a firmer prohibitory and restrictive stance compared to the first United States draft convention ⁴³. Moreover, although as yet unspecified, a distinction between 'general permits' and 'special permits' was made ⁴⁴. In addition, the dumping of a number of substances was directly prohibited by the provisions of the draft. Importantly, disagreement with respect to whether radioactive waste should be regulated by the convention now had emerged. Draft articles put radioactive waste in 'brackets', indicating that the issue was unresolved ⁴⁵.

⁴¹ At the first session, Brazil pointed out that 'to jeopardize the development of countries and the corresponding growth of industries and transportation, in spite of negative factors involved, is not something to envisage with a realistic eye'. Further, Brazil proposed that developing countries planned anti-pollution measures according to their economic possibilities, and also suggested assistance to the developing countries in controlling their marine economic resources. UN doc. A/CONF.48/TWGMP.I/5, Annex 13, 1-2.

⁴² Archival material (R.1. j.no. 82.B.89.) December 6, 1972, 3.

⁴³ The first article read: 'The contracting parties pledge themselves to take all possible steps to prevent the pollution of the sea by substances that are liable to create hazards to human health, harm living resources and marine life, damage amenities or interfere with other legitimate uses of the sea'. UN doc. A/CONF.48/TWGMP.II/5, 9. General criteria for issue of permits took also a firmer prohibitory and restrictive stance. Article 7 read: 'No party shall grant permits for dumping if the dumping of matter or the continued dumping thereof would [materially] endanger human health, welfare or amenities, the marine environment, living and other marine resources, ecological systems, or other legitimate uses of the sea'. *Ibid.*, 10.

⁴⁴ Article 2. *Ibid.*, 9.

⁴⁵ Article 3 said: 'It is forbidden to dump at sea toxic mercury, cadmium, organohalogen [and organosilicon] compounds, [and oil and derivative hydrocarbons], other than those which are rapidly converted in the sea into substances which are biologically harmless, except as noted in article IV. [The dumping of biological and chemical warfare agents and [high level] radioactive waste is also prohibited]. The dumping of other matter which has a deleterious effect on the marine environment equivalent to the properties of the matter referred to above is also prohibited'. *Ibid.*, 9-10. Similarly, Article 8, which referred to 'special permit' still without a more precise definition, stated: 'For such substances as [radioactive wastes], arsenic, lead, copper and zinc, and their compounds, cyanides and fluorides, and pesticides, a special permit for each dumping shall be required(...)'. *Ibid.*, 11. However, because the question of regulatory authority over radioactive waste was unresolved, a distinct reference to IAEA still

North-South conflicts did not significantly influence the Ottawa session. Anticipating the coming conflict, Spain recognized, among several identified duties of international cooperation, the need for assistance from 'states at higher levels of technological and scientific development' to those states which would request it ⁴⁶. However, time did not permit discussion of this principle.

The Ottawa session had decided that the IWGMP should meet again and draft, if possible, a convention on ocean dumping before the Stockholm Conference ⁴⁷. In the words of the meeting report, the session in Reykjavik from 10 to 15 April, 1972, was convened 'in the hope that agreement on concrete global action might be reached before the United Nations Conference on the Human Environment' ⁴⁸. As initiation of cooperation at regional levels appeared unlikely given the complicated problems involved and the short time available for negotiation, the meeting was convened under the more indicative working title 'Intergovernmental Meeting on Ocean Dumping'. It was attended by representatives from 29 states and observers from FAO, IMCO and IAEA ⁴⁹.

The meeting established a drafting group. The group was presented with a negotiation text consisting of the draft convention proposed by the United States, together with draft articles produced at the previous meeting, the Oslo convention, and draft articles proposed by Canada. To prevent pollution of the sea, the United States suggested that 'The Parties pledge themselves to take all feasible steps'; the Oslo Convention and the text from the previous meeting agreed that 'The Contracting Parties pledge themselves to take all

appeared in the text: 'Nothing in this convention supplants any recommendations designed to regulate the disposal of any material adopted by the International Atomic Energy Agency'. See Article 12, *ibid.*, 12.

⁴⁶ UN doc. A/CONF.48/TWGMP.II/5, Annex 4, paragraph 11.

⁴⁷ Archival material (R.I. j.no. 82.B.89, May 1, 1972), 1.

⁴⁸ 'Report of the Intergovernmental Meeting on Ocean Dumping', UN doc. IMOD/4, 15 April 1972, 2. For this decision see also UN doc. A/CONF.48/TWGMP.II/5, 12.

⁴⁹ Algeria, Argentina, Australia, Belgium, Canada, Denmark, Federal Republic of Germany, Finland, France, Ghana, Iceland, India, Iran, Ireland, Ivory Coast, Japan, Kenya, Malta, Mexico, the Netherlands, Nigeria, Norway, Portugal, Singapore, Spain, Sweden, Tunisia, United Kingdom, and United States of America.

possible steps'; and finally, Canada proposed that 'States Parties pledge themselves' ⁵⁰. After considering the various drafts and the proposal of the drafting group the meeting reached agreement on a formulation saying: 'Each Party pledges itself to use its best endeavors to prevent the pollution of the sea by matter that is liable to cause harm to the marine environment and its living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water, or reduction of amenities' ⁵¹.

The phrase 'to use its best endeavors' was obviously less binding than any phrase examined by the drafting group. The phrase occurred because developing countries were opposed to draft general provisions which they found would impose unacceptable constraints on their economies. While developing countries supported that annexes and dumping permit criteria were as stringent as possible they opposed that general provisions proclaimed an overall restrictive and prohibitory dumping policy. Essentially, while developing countries were in favor of stringent standards they wished to avoid obligations which could hinder their industrialization. Negotiators expected this conflict to resume at Stockholm ⁵².

The question of which substances would be totally prohibited to dump, the so-called blacklisted substances, and which substances might be dumped under certain conditions, the so-called greylisted substances, was from the beginning seen as being of fundamental importance for the convention. Because of the technical nature of such decisions a working group on the annexes, composed of specialists mainly representing the industrialized countries, was established. The deliberations of the working group were later debated in the general meeting. High-level radioactive wastes were allocated to the black list, officially Annex I. This meant a total prohibition on dumping. Other forms of radioactive wastes,

⁵⁰ See 'Composite Articles on Dumping from Vessels at Sea'. Produced by the Canadian delegation. Ottawa, Canada, April 7, 1972.

⁵¹ Text of Draft Articles of a Convention for the Prevention of Marine Pollution by Dumping'. UN doc. IMOD/2, 3.

⁵² Archival material (R.I., j.no. 82.B.89) May 1, 1972, 7.

medium-level and low-level forms, were not mentioned ⁵³. The inclusion of high-level radioactive wastes, and 'agents of biological and chemical warfare' in the black list was fiercely contested.

The revised United States draft convention was silent with respect to radioactive waste dumpings. Yet the position of the United States was that such activity should not be regulated by the future global dumping convention but should instead remain under the IAEA ⁵⁴. In contrast, the draft article proposed by Canada listed high-level radioactive wastes in the group of substances which were prohibited.

Canada attempted in the subsequent debate, massively supported by all developing countries, to include high-level radioactive waste in the black list. The United States and Britain opposed this and argued that the measures to protect against radioactive contamination, it was said, were best taken through IAEA ⁵⁵. They proposed that radioactive waste only should be referred to in general terms. In their view, an article similar to article 14 of the Oslo Convention, the only mention of radioactive waste in this convention, should be drafted ⁵⁶.

To settle the issue it took a long debate during which the developing countries were supported by Spain and Portugal, while other Western European states chose not to comment on this controversial matter. In the end, a Canadian compromise which put high-level

⁵³ Text of Draft Articles of a Convention for the Prevention of Marine Pollution by Dumping'. Annex I, II and III. UN doc. IMOD/2.

⁵⁴ The draft convention said: 'Nothing in this Convention shall affect the Regulation of the disposal of any matter which is or may be the subject of recommendations of the International Atomic Energy Agency'. Article 6, United States Draft Convention (from U.S. Department of State Telegram POL-3, UN, March 23, 1972) in *'Composite Articles on Dumping from Vessels at Sea'*.

⁵⁵ Archival material (R.I., j.no. 82.B.89,) May 1, 1972, 3.

⁵⁶ The Oslo article 14 reads: 'The Contracting Parties pledge themselves to promote, within the competent specialized agencies and other international bodies, measures concerning the protection of the marine environment against pollution caused by oil and oily wastes, other noxious or hazardous cargoes, and radioactive materials'. See text in ILM, vol.11, no.2, March 1972, 262-266. The parties to the Oslo Convention had agreed that this convention should not cover oil and radioactive materials. The formulation of article 14 indicated also that the member states had agreed to cooperate within the relevant fora. Archive material R.I.82. B.83, December 13, 1971.

radioactive wastes in square brackets, indicating that the issue still was outstanding, in addition copied article 14 of the Oslo Convention, implying that regulation of radioactive waste should be done through the IAEA, was adopted. In this way, the draft would make a general commitment to take measures against pollution from radioactive waste. However, radioactive waste would not be covered by the operative part of the convention. This diplomatic compromise did not even mention IAEA⁵⁷. In the end, the Ottawa session issued a 'Text of a Draft Articles of A Convention for the Prevention of Marine Pollution', instead of a 'Text of Draft Convention for the Prevention of Marine Pollution'. In brief, the session failed to resolve the disagreements⁵⁸.

In summary, the question of whether to regulate dumping of radioactive waste under the convention was still unsettled. As the United States thought that regulation of radioactive waste as well as bacteriological and chemical weapons in an inappropriate and unreasonable way introduced a disarmament aspect into the dumping convention, this decision was without doubt one of the most contentious issues for the coming Stockholm Conference⁵⁹. Many reservations on the part of the developing countries, Canada and to a lesser extent Spain and Portugal also promised severe obstacles to attainment of agreement at Stockholm. Negotiators expected that developing countries would fiercely support stringent standards and at the same time oppose any hindrances to their own industrialization⁶⁰. It furthermore seemed doubtful if the Stockholm Conference, with a considerably larger number of developing countries and Eastern European states, would be able to reach agreement.

⁵⁷ Article 11 read: 'The parties pledge themselves to promote, within the competent specialized agencies and other international bodies, measures concerning the protection of the marine environment against pollution caused by oil and oily wastes, other noxious or hazardous cargoes, radioactive materials and agents of biological and chemical warfare'. 'Text of Draft Articles of a Convention for the Prevention of Marine Pollution by Dumping', UN doc. IMOD/2, 6.

⁵⁸ Archival material (R.I., j.no. 82.B.89,) August 11, 1972, 2.

⁵⁹ Archival material (R.I.j.no. 82.B.89.) May 1, 1972, 6 and (R.I.j.no. 82.B.89,) December 6, 1972, 19.

⁶⁰ Archival material (R.I.j.no.82.B.89) May 1, 1972, 7.

As the Stockholm Conference was approaching, time became scarce. Once again a session of the IWGMP was called for the purpose of resolving outstanding issues. This session took place in London on 30 and 31 May 1972. The sole working document was the text drawn up at Reykjavik in April. Seventeen nations sent delegates, Canada being represented by an observer ⁶¹. No representatives from United Nations or other international organizations were present.

The outstanding disagreements were not resolved. However, an agreement on a proposed new text of the black list which listed high-level wastes was reached. In addition, the precise definition of these wastes would be prepared by IAEA ⁶². The Stockholm Conference was less than two weeks away and many states wished to postpone the conditions of the proposed convention until after Stockholm. A number of states stressed the importance of awaiting the conclusions of the forthcoming conference before any further meetings were set. Britain then announced a plenipotentiary meeting to sign the convention in the late summer of 1972 ⁶³.

The issue of marine pollution control attracted considerable attention when the United Nations Conference on the Human Environment met in Stockholm from 5 June to 12 June 1972. *Nature* wrote that this issue was 'every delegation's favorite cause', and the chief delegates of Britain and the United States urged action on ocean dumping ⁶⁴. Both the draft convention and marine pollution principles were dealt with by Committee III (pollution and organizational matters). But the draft convention on ocean dumping was not subject to any substantial negotiations. It was evident that several countries wanted more time to study the draft and that no international agreement would be signed into international law.

⁶¹ Algeria, Australia, Belgium, Denmark, Federal Republic of Germany, France, Iceland, India, Ivory Coast, Japan, Kenya, the Netherlands, Norway, Spain, Sweden, the United Kingdom and the United States of America.

⁶² The text said: 'High-level radioactive wastes as specified by the IAEA, in co-operation with other international bodies, as unsuitable for dumping at sea'. 'Intergovernmental Meeting on Ocean Dumping. London, 30 and 31 May, 1972'. UN doc. A/CONF.48/C.3/CRP.19/, Annex C, June 6, 1972.

⁶³ *Ibid.*, 2.

⁶⁴ 'Politics, Bureaucracy and the Environment', *Nature* 237 (1972), 363-64.

But marine pollution was addressed on a more general level. One principle of the Human Environment Declaration from the conference and eight detailed recommendations of the Stockholm Action Plan dealt specifically with marine pollution. The recommendation on ocean dumping urged immediate action: 'Refer the draft articles and annexes contained in the report of the inter-governmental meetings at Reykjavik, Iceland, in April 1972 and in London in May 1972...to a conference of Governments to be convened by the Government of the United Kingdom of Great Britain and Northern Ireland in consultation with the Secretary-General of the United Nations before November 1972 for further consideration, with a view to opening the proposed convention for signature at a place to be decided by that Conference, preferably before the end of 1972' ⁶⁵. Governments clearly felt under pressure to demonstrate willingness to act. 'For all their differences', the *New York Times* wrote, '114 countries felt it necessary to show concern for the environment. They agreed on a large number of recommendations, such as an end to whaling and the regulation of ocean dumping, that are useful if not binding. They began the creation of new international machinery' ⁶⁶. Substantial negotiations would take place at the London Conference. While there were only few concrete comments on the draft convention when the U.N. Seabed Committee soon thereafter met in Geneva, developing countries repeated that they were vehemently opposed to global pollution control standards ⁶⁷.

⁶⁵ Recommendation 86 (d) of the Stockholm Conference Action Plan as approved by the United Nations General Assembly. Reprinted in Wade Rowland, *The Plot to Save the World*, 174.

⁶⁶ Anthony Lewis 'One Confused Earth', *New York Times*, June 17, 1972. It was evident that an ocean dumping convention was at the top of the list of concrete accomplishments at the Stockholm Conference. To take the positive things first: the conference resolved to establish an international convention on marine dumping, the details to be worked out at a London meeting in October this year and the convention to be open for signature by the end of 1972'. Nigel Hawkes 'Stockholm: Politicking, Confusion, but Some Agreements Reached', *Science* 176 (June 1972), 1308.

⁶⁷ Commenting on the draft convention on ocean dumping, developing countries insisted that 'the Articles failed to distinguish between developed and developing countries in terms of their relative capacity to pollute the oceans. It was feared thereby that an unfair burden would be imposed on developing countries in the event of such a convention coming into force. It was pointed out that an international law to control dumping must, in the first place, avoid authorizing present practices of dumping by industrialized countries, a possibility which has been protested by a large majority of States already'. Quoted from Robert L. Friedheim 'Ocean Ecology and the World Political System', 179.

Ninety-two nations met in the London Conference from October 30 to November 13, 1972. The Stockholm Conference had contributed significantly to generate interest in the conference and socialist and developing countries were better represented than at earlier meetings⁶⁸. The British Secretary of the State for the Environment, in opening 'The Inter-governmental Conference on the Convention on Dumping of Wastes at Sea', urged the negotiators to reach agreement on the convention which, if it was agreed, would be 'the first tangible fruit of Stockholm'⁶⁹.

The final version of article 1 said: 'Contracting Parties shall individually and collectively promote the effective control of all sources of pollution of the marine environment, and pledge themselves especially to take all practicable steps to prevent the pollution of the sea by dumping of waste and other matter that is liable to create hazards to human life, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea'⁷⁰. The content of this article should be seen in the light of article 2: 'Contracting Parties shall, as provided for in the following Articles, take effective measures individually, according to their scientific, technical and economic capabilities, and collectively, to prevent marine pollution caused by dumping and shall harmonize their policies in this regard'⁷¹.

Beginning in Reykjavik, the general provisions thus took an even less prohibitory and restrictive stance: states should 'promote the effective control', a less binding verbal phrasing, 'of all sources of pollution of the marine environment', leaving 'all practicable steps' to tackling pollution of the sea by dumping. In short, concrete measures should only be taken with respect to ocean dumping. Furthermore, the phrase 'practicable steps', an elaboration

⁶⁸ As Charles F. Lettow wrote: 'The Stockholm Conference did much to generate interest in the London Conference and produce the large and representative gathering of nations there'. 'The Control of Marine Pollution', in Erica L. Dolgin and Thomas G. P. Guilbert, eds., *Federal Environmental Law* (St. Paul, Minn.: West Publishing Company, 1974), 665.

⁶⁹ 'Conference Meets on Dumping of Wastes at Sea' *Nature* 240 (November 3 1972), 4.

⁷⁰ See Appendix A.

⁷¹ *Ibid.*

of the phrase 'according to their capability' from Reykjavik, implied that regulatory efforts of states would be based upon individual technical possibilities, as the phrase 'possible steps' indicates, and other factors, especially economic capabilities⁷². Article 2, which also had been redrafted several times during the negotiations, had similarly a new modifier saying 'according to their scientific, technical and economic capabilities'. Developing countries had proposed and strongly supported the phrases 'to take all practicable steps' and 'according to their scientific, technical and economic capabilities'. Obviously, instead of uniform global pollution standards their intention was to lessen the burden of dumping reduction on developing countries⁷³.

The evaluation of the black and grey lists took place in a group of experts with delegates from Canada, France, Indonesia, Kenya, Mexico, Spain, Tunisia, Britain, the United States, and the Soviet Union. The group was informed that it should not debate whether radioactive waste and bacteriological and chemical weapon should remain on the black list⁷⁴. The group examined both the draft article from Reykjavik, which had put high-level radioactive wastes in square brackets, and the alternative formulations from London. The group proposed an amended version of the latter and agreed that states should

⁷² Archival material (R.1, j.no. 82. B.89) December 6, 1972, 5. See also Gr.J.Timagenis, *International Control of Marine Pollution*, 183. For the Reykjavik text, see article 2 in 'Text of Draft Articles of a Convention for the Prevention of Marine Pollution by Dumping'. IMOD/2, 3.

⁷³ It is here relevant to remind of the content of principle 23 of the Stockholm Declaration. It reads: 'Without prejudice to such criteria as may be agreed upon by the international community, or to standards which will have to be determined nationally, it will be essential in all cases to consider the systems of values prevailing in each country and the extent of the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries'. See Wade Rowland' *The Plot to Save the World*, 143. For the so-called 'double standards', see Gr.J.Timagenis, *ibid.*, 77-79, 178, and 193-95. See also Allen L.Springer 'United States Environmental Policy and International Law: Stockholm Principle 21 Revisited', 50.

⁷⁴ In the terms of reference given to the technical working group: 'To explore the scientific and technical aspects only of [] passages (i.e. high-level radioactive wastes and agents of biological and chemical warfare) in the Annexes'. 'Report of Technical Working Party', UN doc. DWS(T)7 1st Revise. Archival material (R.I.j.no. 82.B.89,) December 6 1972, 2.

take into account international standards and regulations ⁷⁵. IAEA was not mentioned, however, although the group agreed on the amendment after it had 'fully considered' an IAEA report on the subject ⁷⁶. Significantly, the technical working group now listed radioactive wastes which were not included on the black list, i.e. medium and low-level radioactive wastes, in the grey list. Thus, the group proposed that these wastes might be dumped when a special permit was issued and the recommendations of the competent international body in this field were followed. Again, the group did not designate the competent international body ⁷⁷.

It was subsequently agreed by the IWGMP that radioactive waste which IAEA found unsuitable for dumping, because of health, biological, or other reasons, were prohibited from being dumped. Apart from the strengthened role of IAEA, the final convention text of the black list and the proposed amendment from London were quite similar ⁷⁸. Similarly, the grey list now included a new clause stating that radioactive waste, which was not subject to regulation by Annex I, might be dumped when a special permit was issued and IAEA guidelines and recommendations were followed ⁷⁹. In retrospect, the issue of regulation of radioactive waste had been more of a hindrance to completion of the convention at an earlier stage of the negotiations. The final agreement, which clearly was a necessary solution to a very contentious issue, and was also perceived in this way, meant that important regulatory decisions remained with IAEA ⁸⁰.

Heightened international expectations were essential for the successful completion of

⁷⁵ The following version of the article was agreed to: 'High-level radioactive wastes defined as unsuitable including the ecological viewpoint for dumping at sea, by the competent international body in this field'. *Ibid.*, 2.

⁷⁶ *Ibid.*, 3.

⁷⁷ Annex II, D said. 'Radioactive wastes not included in Annex 1. In the granting of permits for the dumping of these wastes, the States' Parties should follow the recommendations of the competent international body in this field'. *Ibid.*, 5.

⁷⁸ See Appendix A, annex I, 6.

⁷⁹ Appendix A, annex II, D.

⁸⁰ Archival material (j.no. 82.B.89,) December 6, 1972, 19.

the negotiations. Negotiators felt that high international expectations put on their shoulders by the Stockholm Conference pressured them to solve outstanding jurisdictional issues from earlier meetings. One U.S. negotiator explained that the fact that 'everyone was anxious to complete an effective Convention' resulted in a clause – the clause itself was a strong reason why governments were willing to conclude the negotiations – which stated that the convention would not prejudice the Third United Nations Conference on the Law of the Sea (UNCLOS III) beginning in 1973⁸¹. A second U.S. negotiator pointed out that keen attention by mass media had a decisive influence on the final outcome: 'Ultimately, the text of an agreement was initialed by representatives of 61 nations, but only after the newspapers had reported, accurately enough, that negotiations were on the verge of bitter collapse, and only after the conference was extended for three days'⁸². The Danish delegation report also emphasized the weight of international expectations and newly emerging international norms for environmental protection: 'That the negotiations – in spite of all difficulties – were concluded with a signed draft of convention is, no doubt, due to the fact that all participants – also the Soviet Union – felt committed by the recommendations and declarations of the Stockholm Conference, whose first concrete result now has manifested itself'⁸³.

⁸¹ Terry L. Leitzell 'The Ocean Dumping Convention – A Hopeful Beginning,' *San Diego Law Review* 10 (1973), 512. Law of the sea issues such as width of the coastal zone and enforcement rules on the high seas were a serious threat to agreement at the London Conference. As *Nature* correctly wrote: 'Agreement was not easy to achieve – the conference overran by three days and at one point almost broke down – partly because of fears that the convention might prejudice the United Nations Law of the Sea Conference planned for next year. As a result there is a clause specifically stating that the convention does not prejudice that conference'. 'Agreement Reached on Dumping at Sea', *Nature* 240 (November 1972), 120. See Appendix A, article 13.

⁸² Robert J. McManus *The New Law on Ocean Dumping. Statute and Treaty*, 29.

⁸³ Archival material (j.no 82, B.89. December 6, 1972), 23. Because of the unsettled German issue and the refusal to the GDR of diplomatic recognition the Soviet Union and the eastern European countries, with the exception of Rumania, were absent from the Stockholm Conference.

Conclusion

As the complex interdependence model would predict, the United States took the initiative to cooperate globally on ocean dumping control. To key political leaders in the United States, international leadership implied the willingness, as quoted in Chapter 4, to 'take the first steps' to deal with the problem⁸⁴. But this chapter has also shown that the construction of the international dumping regime does not fully confirm the predictions of the complex interdependence model since the Stockholm secretariat played a very catalytic role in the regime-building process.

While there was concern about ocean dumping in the United States and parts of Western Europe, this problem did not in itself result in international cooperation. Developing countries thought that developed countries were responsible for the problem since they had created it. Furthermore, developing countries opposed the economic costs of pollution control. The existence of an 'ecological interdependence' issue thus did not prompt international cooperation as complex interdependence theorists tend to think.

Chapter 6 will show that the Stockholm secretariat was involved in resolving important issues such as scientific uncertainties concerning environmental impact of substances and major differences in governments' commitment to protect the environment which potentially could jeopardize the negotiations. This chapter demonstrated that international pressure was an essential element in reaching agreement on the international dumping regime. Chapter 6 will also show that, contrary to the predictions of all three models tested in this study, the Stockholm secretariat mobilized international public opinion and pressure during the preparations for the Stockholm Conference.

⁸⁴ House Report no. 92-361, 14.

CHAPTER 6

EXPLAINING REGIME FORMATION: LESSONS FROM OCEAN DUMPING

The three previous chapters examined the construction of the international dumping regime from the perspectives of three dominant theoretical explanations of international cooperation: the epistemic community, the Realist and Rationalistic Realist, and the complex interdependence models. Each chapter focused on different steps and aspects of the regime-building process. Those particular aspects and phases of international regime-building to which the models pay most attention were examined. This seems the best way to adequately test models.

The epistemic community model raises the issue of whether a group of ecology-oriented scientists persuaded and pressured decision-makers to regulate ocean dumping, the Realist model addresses the question of which motives and reasons prompted the United States to provide international leadership in the regime-building process, and the complex interdependence model addresses the question of how international agreement to cooperate was reached. Since these models are rivals, they disagree about which steps and aspects are the most essential in the construction of international regimes. The examined models could suggest explanations of all three questions but would emphasize the aspects and steps that each model considers the most significant. But they might supplement each other exactly because they emphasize different steps and aspects of international regime-building. To draw the theoretical conclusions, this chapter examines how well the three models account for the steps and aspects of regime-building they consider to be the most important. This discussion is also useful as the basis for the model proposed in Chapter 9 for the formation of global regimes for environmental protection based on this case study.

The epistemic community model

Reflectionists primarily focus on cognition and perception. In the case of the international dumping regime, Reflectionists correctly predict that a change in perception of the health of the oceans preceded regulation. To be sure, regulation would not have been established had a change in perception not occurred. As regards epistemic communities, Peter Haas points out that they 'are channels through which new ideas circulate from societies to governments as well as from country to country' ¹. While this claim certainly is justified, this study shows that there exist other channels for communication of ideas and scientific knowledge and that epistemic communities compete, deliberately or not, with those channels. Chapter 3 showed that congressmen were faced with conflicting scientific advice in the early 1970s. Two groups of experts offered profoundly conflicting advice. While the epistemic community model does not rule out this possibility, the presumption that only one epistemic community advises decision-makers is taken for granted. Put differently, this model assumes one epistemic community per policy. Consequently, it is unclear what the existence of more than one group of scientists means in terms of scientists' influence on policy. The epistemic community model does not give an answer to this question ².

This study suggests that a group of scientists was unable to significantly influence policy development because it did not effectively communicate its advice and ideas to the public and decision-makers. The coherence, attractiveness, persuasiveness and other qualities that make ideas successful and influential do not explain why those ideas failed to

¹ Peter M. Haas 'Introduction: Epistemic Communities and International Policy Coordination' *International Organization* 46 (Winter 1992), 27.

² Note the following conclusion from a study of Mediterranean pollution. 'Most important, however, the disagreement among scientists on pollutant sources, pathways, fates, and effects serves to maintain a political momentum that keeps the issue alive. Governments, international agencies, and publics have somehow come to accept the problem of Mediterranean pollution as a continuing challenge'. Baruch Boxer 'The Mediterranean Sea: Preparing and Implementing a Regional Action Plan' in David A. Kay and Harold K. Jacobson, eds., *Environmental Protection: The International Dimension* (Totowa, N.J.: Allanheld, Osmun, 1983), 274.

influence policy³. A testimony given before a Congressional hearing in 1972, quoted in Chapter 3, illustrates the point. Before explaining his view of the ocean dumping problem to the Congressional committee, a marine geologist who was opposed to a complete ban on ocean dumping said: 'I fully recognize that this approach, as in my statement here, favors ocean disposal of all of certain types of wastes may seem contrary to everything you have heard or read regarding waste disposal at sea'⁴. This shows that more than one source of ideas with potential policy implications existed. It also strongly indicates that a community of professional waste managers and its supporters had been unsuccessful in effectively contradicting claims made by more visible and vocal scientists and ecologists⁵. As a result, this study shows, the anti-dumping idea became the dominant one and was even looked upon as being morally superior to all other views⁶. As the marine geologist himself was aware: 'I recognize also that in the present era of aroused public interest in the environment, in which ecology has become virtually a 'motherhood issue', there are certain significant hazards, both politically and professionally, in what at first may seem to favor what others might term pollution'⁷. Sociologists' studies of how policy issues are defined have similarly concluded: 'The public arena is not a field on which all can play on equal terms; some have

³ With respect to the influence on Keynesian ideas on policy-making it has similarly been noted that 'if it is to influence policy, an idea must come to the attention of those who make policy'. Peter A. Hall 'Conclusion: The Politics of Keynesian Ideas' in Peter A. Hall, ed., *The Political Power of Economic Ideas: Keynesianism across Nations* (Princeton: Princeton University Press, 1989), 370.

⁴ Dr. David D. Smith in *Ocean Waste Disposal*, 206.

⁵ For a study of American environmental leaders enjoying intense mass media coverage in the 1960s and 1970s, see Rae Goodell, *The Visible Scientists*.

⁶ Mark H. Moore has made similar observations in his study of the impact of ideas on policy-making. He writes: '...ideas seem to guide public action...The ideas define the conventional wisdom in the area, set out the questions for which evidence is necessary, suggest the alternative policies that are plausibly effective, and (most important), keep alternative formulations of the problem off the public agenda....Perhaps 'keeping ideas off the agenda' is too strong a formulation. But dominant ideas have certainly relegated competing definitions of the problem to relative obscurity. Those who advance these alternative conceptions...often felt they were not only risking their reputation for knowledge in the area, but also trying the patience and tolerance of their audience'. Mark Moore 'What Makes Public Ideas Powerful', 72-73.

⁷ Dr. David D. Smith in *Ocean Waste Disposal*, 206.

greater access than others and greater power and ability to shape the definition of public issues...At any specific moment, all possible parties to the issue do not have equal abilities to influence the public; they do not possess the same degree or kind of authority to be legitimate sources of definition of the reality of the problem, or to assume legitimate power to regulate, control, and innovate solutions' ⁸. Thus, networks of scientists and experts are not the only 'channels through which new ideas circulate from societies to governments as well as from country to country' and such networks might unsuccessfully communicate policy relevant ideas and knowledge to the public and decision-makers compared to other policy advocates and might for that reason be unable to influence policy.

It is also important to note that a group of congressmen was determined to 'clean up the oceans' despite conflicting expert advice. As described in Chapter 4, this group was not pressured and persuaded as the ecological epistemic community model predicts. These politicians allied themselves with prominent scientists and leaders of the environmental movement in order to influence and mobilize public opinion and political leaders and to establish ocean dumping regulation. This group combined Congressional hearings, mass media and environmental leaders in order to communicate new ideas. 'Pollution ideas are', as it has been pointed out, 'an instrument of control' ⁹. Chapter 4 quoted from Senator Hollings' closing remarks at the 'International Conference on Ocean Pollution': 'So the only way I know – I could say these things over and over again – but the only way we are ever going to get this message through is with people with the brilliance and dynamism of you three [Commoner, Heyerdahl, and Hugh Downs] here this morning getting the attention of the American public and in turn of our colleagues here in the Congress to move in the right direction' ¹⁰. This flatly contradicts the predictions of the epistemic community model

⁸ Joseph R. Gusfield, *The Culture of Public Problems: Drinking-Driving and the Symbolic Order* (Chicago: The University of Chicago Press, 1981), 8.

⁹ Mary Douglas and Aaron Wildavsky, *Risk and Culture*, 47.

¹⁰ Senator Hollings *International Conference on Ocean Pollution*, 126. For policy makers using the mass media, instead of technical reports and briefing papers, to focus the attention of other policy makers on problems, see John W. Kingdon, *Agendas, Alternatives, and Public Policies*, 63. See also Martin Linsky 'The Media and Public Deliberation', in Robert B. Reich, ed., *The Power of Public Ideas*, 206.

which is only concerned with decision-making as it takes place within national and international bureaucracies and, in addition, ascribes little influence to public opinion. While Peter Haas downplays the influence of Jacques Cousteau in the case of the Med Plan, this case shows that congressmen were keenly aware that Cousteau and other articulate science celebrities and prominent, vocal scientists and ecologists could play an important role when the need for regulation was to be identified and new norms for ocean protection were to be established. This further illustrates that politicians are hardly the passive consumers of ideas that epistemic community theorists assume them to be. Politicians themselves might be actively involved in spreading policy-relevant ideas and it then becomes difficult to distinguish in a meaningful way between producers, consumers, and communicators of ideas¹¹. It is also evident from this study that ideas do not have to be true in an absolute sense in order to have a significant impact on policy development¹². Policy advocates, sometimes called policy entrepreneurs, deliberately push a simplistic understanding of the problem in order to mobilize support¹³. The idea that 'the oceans are dying' or 'the sea is dead' clearly illustrates this. Therefore, understanding policy development requires examination of how successfully networks of scientists influence decision-makers and, as repeatedly stressed in this study, influence public opinion compared to other policy advocates.

How mass media influence national and international public policy issues by communicating scientific information and values is ignored in the epistemic community literature. This study shows that it is important to examine the role mass media play when policy relevant ideas and policy proposals concerning environmental protection are

¹¹ For example, Senator Gaylord Nelson wrote an article titled 'Stop Killing Our Oceans' which was published in *Reader's Digest*, February 1971, and reprinted in the *Congressional Record*, February 8, 1971, 2035-36. Senator Nelson was the first to propose U.S. ocean dumping regulation in Congress in February 1970. See the *Congressional Record*, February 19, 1970, 4088-94.

¹² For other examples and discussion, see Thomas K. McCraw, *Prophets of Regulation* (Cambridge, Mass.: Harvard University Press, 1984), 304. See also James Q. Wilson 'The Politics of Regulation', in Wilson, ed., *The Politics of Regulation*, 384-87.

¹³ For a discussion of policy entrepreneurs, see John W. Kingdon, *Agendas, Alternatives, and Public Policies*, 129-30, 188-93, and 214-15. See also James Q. Wilson 'The Politics of Regulation', 370-71.

communicated to politicians and the public. Other studies have similarly observed that politicians may use mass media to communicate ideas and focus attention on particular issues and that policy-makers often use the mass media, instead of technical reports and briefing papers, to focus the attention of other policy-makers on policy problems ¹⁴.

An idea reaches the public slowly and policy based on the idea happens only long after its birth because channels of communication are ineffective and its intended audience is not sufficiently receptive. It is difficult to say in a meaningful way that advocacy of an idea by an epistemic community had significant implications for policy development in cases where several years pass between an ideas' birth till its adoption into policy. Chapter 1 mentions that public concern about radwaste disposal had emerged in some coastal states in the United States already in the late 1950s. Furthermore, as mentioned in Chapter 4, Cousteau led a successful campaign to prevent the French Atomic Energy Commission's dumping of radioactive wastes into the Mediterranean in 1960. Rachel Carson, who later wrote *Silent Spring*, the book that warned America about the dangers from DDT and other supposedly extremely toxic pesticides and chemicals, also condemned American ocean dumping of radioactive waste ¹⁵. In the revised 1961 edition of Carson's science bestseller *The Sea Around Us*, she called dumping of nuclear waste an 'ominous problem' and made it clear, without actually saying so, that dumping should be stopped: 'The problem, then, is far more complex and far more hazardous than has been admitted. Even in the comparatively short time since disposal began, research has shown that some of the assumptions on which it was based were dangerously inaccurate. The truth is that disposal has proceeded far more rapidly than our knowledge justifies. To dispose first and investigate later is an invitation to disaster, for once radioactive elements have been deposited at sea they are irretrievable. The mistakes that are made now are made for all time' ¹⁶. While

¹⁴ See John W. Kingdon, *Agendas, Alternatives, and Public Policies*, 62–63. See also Martin Linsky 'The Media and Public Deliberation', in Robert B. Reich, ed., *The Power of Public Ideas*, 206.

¹⁵ Rachel Carson, *Silent Spring* (Greenwich, Conn.: Fawcett, 1962).

¹⁶ Rachel Carson, *The Sea Around Us* (New York: New American Library, 1961), x–xii. The original book version, first published in 1951, was silent on radwaste disposal. The is also true of the 1957 edition. See *The Sea Around Us* (New York: Oxford University Press, 1957).

only indirect evidence exists, it seems clear that Carson's warning was forgotten in early 1971, and that it probably never reached many people¹⁷. The important point here is that the idea that radwaste disposal was a threat to all oceans emerged more than a decade before the same idea was adopted into regulation in the United States in 1972, and that it apparently had faded away in the intervening period. Thus, the case of radwaste disposal regulation is anomalous for those epistemic community theorists who are concerned with the way *new* ideas are being adopted into policy. Nonetheless, it raises the question whether significant insight into policy development is gained by pointing to those who initially produced an idea which only later was adopted into policy. In the conclusion of an important study of the relationship between ideas and policy development: 'Thus the key to understanding policy change is not where the idea came from but what made it take hold and grow'¹⁸.

While the epistemic community model is primarily concerned with international policy change, epistemic community theorists conclude that shared, or at least non-rival, perceptions of the environmental problem among developing and developed countries facilitated international regime-building in the Mediterranean. Thus, the model would predict that the international dumping regime would not be built in a situation where a few developed countries saw ocean dumping as an international problem, while developing countries generally thought that developed countries, since they had created the problem, should solve it¹⁹. The three previous chapters showed that the international dumping

¹⁷ Senator Gaylord Nelson, the leading Senate authority on ocean pollution, wrote that 'even Rachel Carson, in her 1951 book *The Sea Around Us*, saw the oceans as one last haven, safe forever...Yet some marine biologists *now* say grimly that, unless we act, the current accelerating pace of ocean pollution will put an end to significant life in the sea in 50 years or less'. 'Stop Killing Our Oceans', reprinted in the *Congressional Record*, February 8, 1971, 2035. (Italics added). None of those interviewed during this study were aware that Rachel Carson had commented on radwaste disposal.

¹⁸ John W. Kingdon, *Agendas, Alternatives, and Public Policies*, 76.

¹⁹ Peter Haas has briefly commented on the formation of the international dumping regime. His account emphasizes the role played by the Stockholm secretariat: 'As early as February 1971, Dan Serwer, a consultant to the United Nations Institute for Training and Research (UNITAR), and Peter Thacher (seconded to Maurice Strong's staff for the preparation of UNCHE from the U.S. State Department, later to be director of the Geneva Regional Office supervising the Regional Seas Programme, and ultimately deputy executive director of UNEP) identified marine dumping and land-based sources as key areas that were not covered by international legislation. With Strong, they realized that regulating land-based

regime was not constructed by governments pressured and persuaded by an ecological epistemic community. Furthermore, as shown below, it was clear to negotiators that knowledge about environmental effects of ocean dumping was incomplete.

Finally, Ernst Haas has suggested that the leadership style of Maurice Strong might be based on a 'privileged body of knowledge' used to persuade governments ²⁰. It is concluded below that Maurice Strong and his staff preparing the Stockholm Conference indeed did perform crucial leadership in the formation of the international dumping regime as well as in the Stockholm Conference. But again, persuasion through use of scientific documentation of environmental damage was only one aspect, and most likely a rather insignificant one, of the leadership style of Strong and the Stockholm secretariat.

Realism and rationalistic realism

Realists and Rationalistic Realists assume that states are self-interested egoists concerned with protecting their political independence and maintaining economic growth in an anarchic world. They would correctly stress that the international dumping regime was an expansion of United States domestic regulation onto the international level. This group of scholars would further point out that since the regime would harmonize costs of pollution control across countries, which would neutralize economic costs imposed on U.S. industry by domestic regulation, a strong economic incentive existed to act as a leader in the regime-

sources was an unrealistic goal at that time because of the cost of regulation and its contentious nature, but hoped to control them later. At UNCHE they encouraged delegates to recommend the prompt adoption of a dumping treaty: what became the London dumping convention'. *Saving the Mediterranean*, 78. Peter Haas occasionally uses the word 'problem' in a way that ignores that while developing countries agreed that international environmental problems existed they at the same time resisted any responsibility for the occurrence of such problems. See *Saving the Mediterranean*, 209. Chapter 5 gives several examples of how developing countries wanted 'disownership' of international environmental problems. For a discussion of disownership of public problems, see Joseph R. Gusfield, *The Culture of Public Problems: Drinking-Driving and the Symbolic Order*, 12-13.

²⁰ *When Knowledge is Power*, 226. Haas attributes the same leadership style to Mostafa Tolba (presently director of UNEP). But as Chapter 8 and Chapter 9 will show, characterizing Tolba's leadership in this way is problematic.

building phase. In short, Realists could claim that the regime was created by a hegemon, the United States, acting in self-interest. Apparently, this case would add no new insight into international regimes since, in Stephen Krasner's formulation, 'the prevailing explanation for the existence of international regimes is egoistic self-interest. By egoistic self-interest I refer to the desire to maximize one's own utility function where that function does not include the utility of another party. The egoist is concerned with the behavior of others only insofar as that behavior can affect the egoist's utility'²¹. Furthermore, egoistic self-interest would also explain that developing countries were opposed to international regulation entailing economic costs for their economies, and that large nuclear nations would protect, although they failed to do so, their regulatory autonomy with regard to radwaste disposal by resisting the regulation of these dumpings under the international dumping regime.

But governments did not reach agreement out of concern for the national interest as understood by Realists and Rationalistic Realists. Brazil refused to sign the dumping convention in London because it did not go far enough in terms of ocean dumping reduction. The head of the Brazilian delegation told the press that the convention 'defends the interests of the developed countries, polluters every one'²². Sweden followed a policy of strict control of dumping at home as well as abroad. Britain had already joined a regional agreement protecting its waters against ocean dumping, i.e. the Oslo convention, and President Nixon had signed American ocean dumping legislation to protect the Atlantic Ocean six weeks before governments met in the London Conference. Britain's decision to join the international dumping regime thus cannot be understood as only motivated by concern for its own waters. As the evidently proud British Under-Secretary of State for the Environment declared at a press conference after the agreement was reached in London in November 1972: 'It is an important step in controlling indiscriminate dumping in the sea. Nations are now going to take effective control not only of their territorial waters, but of the

²¹ Stephen D. Krasner 'Structural Causes and Regime Consequences: Regimes as Intervening Variables', in Krasner, ed., *International Regimes*, 11. Similarly, Keohane 'regards regimes as largely based on self-interest'. *After Hegemony*, 57.

²² Nigel Hawkes 'Sea Dumping Talks Clear Snags', *The Observer*, November 12, 1972. 'Compromise Pact on Waste-Dumping at Sea Likely', *The Daily Telegraph*, November 13, 1972.

whole sea' ²³. The international press, including the *New York Times*, quoted the American delegation leader in London, Russell Train, who declared that the convention represented 'a historic step toward the control of global pollution' ²⁴. He further said that the conference had met the goal set by the Stockholm Conference and that the agreement provided 'practical evidence of the increasing priority the nations of the world are giving to environmental problems' ²⁵.

Chapters 3 and 4 showed that Realists and Rationalistic Realists would have to examine the domestic level in order to understand how the initiative to establish the international dumping regime grew out of domestic regulation in the United States. However, this body of theory has not developed a theory of domestic politics which can be tested against this case. It is a further complicating factor that while preserving territorial and political integrity are core objectives of a hegemonic state, and, for Realists, serve the national interest, protection of the oceans against dumping can hardly be seen as closely associated with such objectives. This complicates the Realist analysis although scholars sympathetic to Realism have suggested how policies that are not closely associated with preserving territorial and political integrity sometimes should be looked upon as examples of the national interest ²⁶. Chapters 3 and 4 showed that Realists following such an

²³ Robert Bedlow '57 Nations Sign Pollution Treaty to Control Dumping at Sea', *The Daily Telegraph*, November 11, 1972. That the British government joined the international dumping regime in the hope that it would strengthen existing marine pollution control is only a theoretical possibility since British politics did not begin to 'green' before the late 1980s. See Chapter 9, footnote (83). With respect to consequences for regulation of ocean dumping the British Under-Secretary of State for the Environment pointed out after the London Conference: 'I do not think that the convention of itself will place on British industrialists any obligation which we do not already expect them to carry'. 'International Treaty Drawn up to Control Dumping in the Sea', *The Guardian*, November 14, 1972.

²⁴ 'Policing the Dumpers', *Newsweek*, November 27, 1972.

²⁵ Jules Arbose '91 Nations Agree on Convention to Control Dumping in Oceans', *New York Times*, November 14, 1972. For full text of statement by Russell E. Train, then Chairman of CEQ, see 'London Conference Agrees on Ocean Dumping Convention', *Department of State Bulletin*, December 18, 1972, 710-11.

²⁶ Stephen D. Krasner describes 'an inductive approach' to the definition of the national interest as follows: 'The statements and preferences of central decision-makers can nevertheless be used to define the national interest if two conditions are met: these preferences do not consistently benefit a particular class or group, and they last over an extended period of time. A public act of the state is one that affects

approach would still have to explain that the ocean dumping problem was perceived as an essentially international problem which necessarily demanded cooperation among states in order to be dealt with in an effective way. Perhaps Realists would discard some of the views held by Congress committees as extremist and examples of a temporary ecology fad. One such example, from the Congress committee report, is quoted earlier: 'The Committee wishes to emphasize its awareness that the types of problems with which [the ocean dumping bill] deals are global in nature. We are not so blind as to assume that in dealing with the problems created by our own ocean dumping activities, we are thereby assuring the protection of the world's oceans for all mankind. Other nations, already moving to grapple with these troublesome issues, also will and must play vital roles in this regard'²⁷. However, understanding some policy proposals supported by Congressional committees as defending national interest while other views are not defending national interest would be theoretically unsatisfactory. Furthermore, Realist theory does not indicate how to distinguish between policies which should be seen as genuinely defending national interest and those policies which should not be seen as genuinely defending national interest. Moreover, such methodological and theoretical problems are significantly worsened in this case where a new policy is emerging next to existing ones.

Similar to the epistemic community model, the Realist model thus has difficulties in explaining that the United States and other Western countries saw ocean dumping as an international problem of some significance. More generally, this model faces significant problems since policy development in this case cannot be explained by pointing to states' interests; the way states defined their interests was changing. In this case, policy development can only be explained satisfactorily when it is realized that the view of the health of the oceans changed significantly in the beginning of the 1970s as compared to

the whole community. This is not to say that all citizens will be affected in precisely the same way. However, if there are gains from a policy, these must not always accrue only to a particular group or class. If there are losses, these must not always fall on a particular group or class. Furthermore, the preferences of central decision-makers must not be directed solely to their own personal interests, if they are to be termed the national interest'. Krasner, *Defending the National Interest: Raw Materials Investments and U.S. Foreign Policy* (Princeton, New Jersey: Princeton University Press, 1978), 43.

²⁷ House report no. 92-361, July 17, 1971, 14.

earlier, especially in the Western world²⁸. A British scientist and former editor of *Nature* wrote in 1972 that incidents of pollution, he mentioned recent discoveries of large amounts of mercury in Pacific tuna fish, had helped to create 'the impression that the oceans of the world are in some general sense polluted and that the pollution stems from industrial activity of a kind which is characteristic of the twentieth century'²⁹. Prominent economist and ecologist Barbara Ward, one of the authors of the 'conceptual framework' of the Stockholm Conference published under the title *Only One Earth*, vividly described the same change in ideas at a series of distinguished lectures held in Stockholm concurrent with the United Nations conference there³⁰: 'There are ideas and concepts which, when I wrote them in our preliminary draft last year, made me wonder how far out I could be. Yet today Ministers of the Crown are saying them and that is surely as far in as you can get...In today's debate, as you no doubt noticed, delegates talked above all of the vulnerability of the oceans. Yet only a year ago, this was an entirely new idea. Now it is a *lieu commun*, a near-platitude...The progress toward truism means that the new ideas are penetrating human consciousness with incredible rapidity'³¹.

In particular the ocean dumping problem was seen as essentially an indivisible international public bad since ocean currents were thought to mix wastes and transport them to even far corners of the seas. As an U.S. marine scientific community insider noted, a new

²⁸ For a sophisticated treatment of the role of ideas in policy development, see Giandomenico Majone 'Ideas, Interests and Policy Change', to appear in Harry Redner, ed., *A Sceptical Child of the Enlightenment: Studies in the Thought of C.E.Lindblom* (Westview Press). See also Majone, *Evidence, Argument and Persuasion in the Policy Process*, 145-66. Insightful observations on the role of ideas are made in John W. Kingdon, *Agendas, Alternatives, and Public Policies*, 131-34. For the role of ideas in regulation, see James Q. Wilson 'The Politics of Regulation', 357-94. See also Mark H. Moore 'What Makes Public Ideas Powerful?', 55-83. See also John S. Odell, *U.S. International Monetary Policy: Markets, Power, and Ideas as Sources of Change*, 58-78.

²⁹ John Maddox, *The Doomsday Syndrome*, 117.

³⁰ Speakers included Thor Heyerdahl, Sir Solly Zuckerman, Aurelio Peccei (cofounder of the Club of Rome), Georges Bananescu, Gunnar Myrdal, Lady Barbara Ward Jackson and René Dubos. See Wade Rowland, *The Plot to Save the World*, 38.

³¹ Barbara Ward 'Speech for Stockholm', in Maurice F. Strong, ed., *Who Speaks for Earth?* (New York: W.W. Norton, 1973), 21-22.

international view on this issue emerged about 1970: 'There unfolded an awareness that waste of national origin dumped at sea may be distributed globally. While such threats were not regarded as immediate or of crisis proportions, the pervasiveness of the fluid media potentially exposed all nations to the same risk and uncertainty. So whatever the geopolitical and geoeconomic considerations in debate, no matter how parochial the arguments, participants came to recognize that all questions shared a central core of scientific, technical, and economic facts not constrained by political or institutional boundaries or ideology'³². This international idea joined states together and no nation alone could solve the problem. In such a situation, Realism's egoistic self-interests, as opposed to common or shared interests, do not explain policy change³³.

On the other hand, it is by no means evident that Realism, except in its most orthodox formulations, necessarily must ignore the power of ideas³⁴. There is,

³² Edward Wenk, Jr., *The Politics of the Ocean* (Seattle: University of Washington Press, 1972), 425. For example, one Congressman said immediately before the Senate passed the ocean dumping bill: 'I think we also have to understand that the European nations, in particular, have been using the oceans as a dumping ground, as an easy economical way of getting rid of industrial and human waste, and the oceans have currents, just like the rivers, as we know, so the debris and waste going into the oceans from Western European countries, Japan, and any industrialized nations, finds its way to the shores of this land, just as the debris and waste which we put in the oceans along our coast finds its way to London, Stockholm, and other parts of the world'. *The Congressional Record*, November 24, 1971, 43071. At a 1972 meeting of the U.N. Seabed Committee one U.S. delegate similarly said that 'marine pollution knew no national boundaries'. Sonja A. Boehmer-Christiansen, *Limits to the International Control of Marine Pollution*. Unpublished Ph.D. thesis, University of Sussex, 1981, 30. See also 'U.S. and UN Debate Man's Uses and Abuses of the Sea', the *Congressional Quarterly Weekly Report*, May 15, 1970, 1303-04.

³³ Robert Keohane points out that egoism does not necessarily exclude concern for others' welfare. *After Hegemony*, 120-25. For a discussion of egoistic interests versus altruism, see Steven Kelman 'Why Public Ideas Matter', in Robert B. Reich, ed., *The Power of Public Ideas*, 31-53. In my view of self-interest, I disagree with the one Oran Young recently has argued. He writes that 'self-interest is a broad concept; it includes a devotion to intangible values, such as the achievement of a peaceful world' and that some (entrepreneurial) 'leaders are often willing to take their compensation in intangible currencies such as...the achievement of some larger personal goal (for example, the uniting of Europe or the preservation of species). 'Political Leadership and Regime Formation: On the Development of Institutions in International Society', 296-97.

³⁴ The literature which stresses perception and knowledge often claims, implicitly or explicitly, that states make 'mistakes', that states are incompletely rational, and so forth, and that Realism by ignoring perception and knowledge is an imperfect theory. These theorists also claim that cognitive heuristics make states employ their power with less efficiency than if they had not been under the influence of such heuristics. This literature has not shown, however, that psychological and ideological factors *necessarily*

furthermore, good reasons to assume that political leaders are fully aware that ideas might play an important role in furthering national interests. As Senator Warren G. Magnuson, for example, declared when he submitted a resolution to the Senate in 1970 to create a world environmental institute: 'Surely the time has come for the United States to take the lead and propose creation of the Institute to the nations of the world. The time has come for us to realize that world leadership and prestige are based on the power of ideas, not on the power of weapons' ³⁵.

Realists and Rationalistic Realists would have difficulties explaining how international agreement on the dumping regime was reached. Realists claim that regime formation would be very unlikely in a situation of significantly opposed interests among developed and developing countries and they would expect that the hegemon, perhaps together with other powerful states, necessarily would have to use side-payments, force or manipulation of incentives in order to build the regime. Rationalistic Realists predict that large groups only with severe difficulties can reach agreement and they expect that the hegemon, perhaps assisted by other powerful states, would transform a large group of states negotiating the international dumping regime into smaller, more manageable groups of states. Neither of these predictions are confirmed by this case. Chapter 2 mentioned that collective action theorists predict that a large group of governments encourages governments to free-ride, since the group will provide the collective good despite free-riders who therefore are not strongly motivated to join the group. However, a very different pattern of behavior is observed in this case. A large group of governments increases the pressure on governments to join, especially when public opinion, national and international, encourages collective action ³⁶.

make states behave 'sub-optimally' in all situations. In other words, it is not clear that perception and heuristics are not a help to states in solving problems and realizing their interests. For an example, see Nancy Kanwisher 'Cognitive Heuristics and American Security Policy', *Journal of Conflict Resolution* 33 (December 1989), 652-75.

³⁵ *International Environmental Science*, 131.

³⁶ Discussing how voluntary movements succeed to provide public goods when Olson's theory would predict their failure, Mary Douglas and Aaron Wildavsky note that 'sometimes the mass media help to

Importantly, the series of events examined in this study show that all states do not have the same ability to define the scope and purpose of international regimes for environmental protection. A hegemon, or a group of powerful states, probably assisted by an international organization, is much more able to put their imprint on international institutions for environmental protection than are less powerful states. Put differently, environmental problems causing concern to a hegemon, or groups of powerful states, are likely to set the international environmental agenda. Chapter 9 will add supporting evidence to this conclusion.

The remaining part of this chapter will show that the Stockholm secretariat played an essential role in the negotiations on the international dumping regime. Realists' preferences for systemic explanations leave little attention to the constructive role an international organization can play in the regime-building process. It will also become clear that the United States leadership most likely was a necessary condition, but not a sufficient one, for the construction of the international dumping regime.

Complex interdependence theory

These theorists predict that the structure of ecological interdependence issues make cooperation among states more likely. The complex interdependence model correctly predicts that the United States took the lead and attempted to initiate cooperation by demonstrating to other nations the advantages of cooperation. In order to do so, as political and administration leaders recognized, the problem had to be dealt with effectively at home³⁷. As described in Chapter 4, one Congress-sponsored international conference dealt

build up the equivalent of small-group, face-to-face social pressures'. *Risk and Culture*, 116.

³⁷ As a Senator declared just a few weeks before government representatives met in the London Conference: 'If the United States does not take the affirmative action to secure authority to control ocean dumping from its own shores, we cannot expect to be persuasive or to maintain the credibility of our leadership on this issue at the international meeting in London'. Senator Buckley, the *Congressional Record*, October 3, 1972, 33311. A representative from the CEQ, Dr. Gordon J.F. MacDonald, said before a Congressional hearing: 'If the United States is in fact to exercise leadership in this critical area,

specifically with the issue of ocean dumping while other conferences and international meetings brought foreign decision-makers, scientists, representatives from international organizations and the Stockholm secretariat together as part of United States' preparations for the conference ³⁸. This fits well with the model since it gives considerable attention to international organizations and transnational coalitions. It also introduces more actors into the process through which states' interests are defined than do the epistemic community model and Realist model.

But although the complex interdependence model best explains the construction of the international dumping regime, it cannot explain why the way states defined their interests changed, the emergence of a new perception of the health of the ocean in the early 1970s, and how domestic and international factors were interacting in this process since it ignores domestic politics ³⁹. For the same reason, it cannot explain why the United States took the initiative to establish an international regime. Neither does it predict that the Stockholm secretariat was deeply involved in essential steps in the regime-building process.

Chapter 5 showed that the Stockholm secretariat took the initiative to establish first the Preparatory Committee and later the IWGMP. However, the secretariat did much more to move governments toward agreement ⁴⁰. To help negotiations on the international dumping convention, the secretariat introduced the notion, innovated by lawyers and scientists within the United Nations, that substances could be classified into so-called black

if it is to persuade other nations to control their ocean disposal of wastes, then it is essential that the United States first put its own house in order. In my opinion, prompt and favorable action by Congress to establish effective regulation of ocean dumping is a prerequisite to action by other nations'. *Ocean Waste Disposal*, 153.

³⁸ Among others the *International Conference on Ocean Pollution, International Environmental Science, U.N. Conference on Human Environment: Preparations and Prospects*

³⁹ No single theory of domestic politics exists today to explain international cooperation. For a recent overview of the dominant approaches, see Helen Milner 'International Theories of Cooperation Among Nations', 494-95.

⁴⁰ See Appendix B.

and grey lists by an international convention⁴¹. It should be prohibited to dump blacklisted substances, while special care should be taken and permission should be given before greylisted substances were dumped⁴². The secretariat recognized that categorizing substances on the basis of available knowledge of their environmental impact in separate lists annexed to the convention had several advantages. By using this approach the contents of the lists could be updated and adjusted as new knowledge of pollutants developed without it being necessary to negotiate the entire convention text. In itself this would mean a major innovation of the standard treaty form⁴³. Recent experiences showed that lack of knowledge about pollutants was a significant barrier to international agreement⁴⁴. The black and grey lists system also offered a solution to this problem as scientific uncertainties,

⁴¹ Interview with Sachiko Kuwabara, August 26, 1991, New York. Telephone interview August 27, 1991. Member of the Stockholm secretariat and U.N. representative at negotiations on the London Dumping Convention.

⁴² The so-called Oslo Convention, which regulates dumping in the North Sea, pioneered the use of black and grey lists. As in the negotiations on the international dumping regime, the negotiators followed the advice of GESAMP, an expert group established in 1969 by the United Nations. For the Oslo Convention, see F. Bjerre and P.A. Hayward 'The Role and Activities of the Oslo and Paris Commissions', in T.J. Lack, ed., *Environmental Protection: Standards, Compliance and Costs* (Chichester: Ellis Horwood, 1984), 142-57.

⁴³ For the study requested by Maurice Strong and presented to the preparatory committee suggesting the separation of the adjustable 'technical part' from the more permanent 'diplomatic part' of an international treaty, see Paolo Contini and Peter H. Sand 'Methods to Expedite Environment Protection: International Ecostandards,' *The American Journal of International Law* 66 (1972), 37-59. These two FAO lawyers' study was originally titled 'Methods to Expedite the Adoption and Implementation of International Rules and Standards for Environmental Protection', U.N. Doc. A/Conf.48/PC(II)/Conf. Room Paper No. 3, 8 February, 1971.

⁴⁴ For example, the Special Assistant to the Secretary of State for Environmental Matters, Christian A. Herter, explained at an international meeting organized by the United States Congress in 1971 about a recent attempt to reach an agreement on control of oil pollution of the oceans: 'It is very difficult to persuade a number of countries that normal spillage - cleaning of tanks, this kind of thing - in the ocean produced a very serious threat in terms of the total ocean...a certain amount of scientific information was produced by experts pointing out the hazards to marine life of oil pollution. But it was perfectly clear that more scientific information and research on this topic was required, and the lack of it made the political process more difficult'. Senator George Miller, chairman of Committee on Science and Astronautics, then summed up: 'Isn't it true that a lack of this information and the necessity for it is one of the great handicaps that we have not only in getting international cooperation but getting cooperation within our own country on these problems, that a lot of people do not quite comprehend or understand?'. *International Environmental Science*, 45.

i.e. lack of complete knowledge, concerning the impact of pollutants on the marine environment could be acknowledged without jeopardizing agreement. As one U.S. delegate to the negotiations later described, the black and grey lists helped negotiators to overcome this obstacle to agreement: 'There was very little disagreement over the scientific portions of the Convention. All accepted the concept of an annexed list of substances banned from ocean dumping. Another annexed list would contain substances requiring special care before dumping could be permitted. The delegations recognized that present knowledge of the effect of substances in the marine environment was quite deficient, and accordingly, the lists were prepared in light of a rapid amendment procedure for the annexes' ⁴⁵. At the first session of the IWGMP, Maurice Strong had been at pains to stress that sufficient knowledge existed to act against specific pollutants ⁴⁶. United Nations experts had furthermore recognized that it was very unlikely that governments would support the creation of an international agency with planning and enforcement powers. They hoped instead for 'direct cooperation between non-diplomatic officials in different countries' ⁴⁷. They also hoped to separate the technical from the diplomatic part in international environmental negotiations, science from politics, as the black and grey lists did.

The secretariat was also aware that the black and grey lists were a moderate, stepwise approach which allowed even reluctant governments to join an international dumping regime and thereby be looked upon as pro-environment at a point where the public, especially in the Western world, was considerably concerned over the environment. This would make

⁴⁵ Charles F. Lettow 'The Control of Marine Pollution', in Erica L. Dolgin and Thomas G. P. Guilbert, eds. *Federal Environmental Law*, 665.

⁴⁶ Strong told the IWGMP: 'It must be acknowledged that we lack sufficient knowledge today on which to base all future decisions... But we do know enough to begin to take some of the important decisions that must be made, and I hope that this group will begin now to determine what action can be taken and needs to be taken on the basis of existing knowledge. The recommendations of GESAMP, the Group of Experts on the Scientific Effects of Marine Pollution, are clear on this point; that the time for action is at hand'. 'Address by the Secretary-General of the Conference - Mr. Maurice F. Strong'. *Report of the First Session of the Inter-Governmental Working Group on Marine Pollution, London, 14-18 June 1971*. U.N. doc. A/CONF.48/TWGMP.I/5, 21 June 1971. Annex IV, 2.

⁴⁷ Oscar Schachter and Daniel Serwer 'Marine Pollution Problems and Remedies', 104. See, for example, Edward Cowan 'U.S., Canada Asked to Save the Lakes', *New York Times*, September 11, 1970.

good political sense also for developing countries as they feared that future 'environmental aid' would reduce existing funds for development aid and that public pressure in donor countries would channel resources away from developing countries which were looked upon as being 'anti-environmental'. The black and grey lists system effectively gave governments the option of not doing everything immediately. As the secretariat wished, it avoided a take-it-or-leave-it, or an all-or-nothing, dilemma ⁴⁸. It was also hoped that the approach in this way would help delegations in overcoming resistance to join a global regime back home in their capitals. On this particular advantage of the black and grey lists, one member of the Stockholm secretariat summarized: 'The black list allows you to have a grey list' ⁴⁹.

The secretariat was aware that the black and grey lists had other advantages which all could have a constructive influence on the negotiations. Primarily, the approach was instrumental in reaching agreement on banning dumping of at least some pollutants. Further, it demonstrated to developing countries that developed countries were serious about controlling ocean dumping. Finally, developing countries generally would have no reason to worry about the economic consequences of ocean dumping regulation since they would have few, if any, of their substances blacklisted. Thus, the black and grey lists in reality imposed heavier burdens on those governments who were more concerned over pollution, and lesser burdens on those who were not as concerned. Chapter 5 showed that developing countries actually favored stringent black and grey lists but were opposed to draft general provisions which they feared would impose unacceptable constraints on their economies. In conclusion, the Stockholm secretariat recognized that the relatively straightforward notion of black and grey lists had important advantages in environmental negotiations in which developed and developing countries participated.

Chapter 5 mentioned that the secretariat realized early on that developing countries indeed were very skeptical about a need for international regulations and standards. It therefore considered it very important that developing countries did not suspect that the

⁴⁸ See Appendix B, point 8.

⁴⁹ Interview with Sachiko Kuwabara, August 26, 1991, New York. Telephone interview August 27, 1991.

United Nations was on the side of the developed countries and it wished to demonstrate that a global interest existed in controlling certain pollutants. It was hoped that the 'basic papers' on pollutants of 'broad international significance', mentioned in Chapter 5, would help to accomplish this. The secretariat hoped in particular to appease the fear of some developing countries – most importantly, Brazil – towards agreeing to control at least some pollutants.

It was due to the secretariat that the international community's willingness to protect the environment was at stake in the negotiations since the convention would be the first global regime for environmental management to embody the success of the Stockholm Conference⁵⁰. Chapter 5 showed that governments meeting in the London Conference felt committed by recommendations agreed to at the conference. 'And naturally', one experienced negotiator said caustically earlier the same year, 'everyone wants to see at least one treaty result from a Conference as heralded in advance as Stockholm is'⁵¹. It is thus clear, although the examined models either disagree or are silent on this aspect, that governments can be pressured to demonstrate willingness to cooperate by a well-organized, highly visible international environmental conference raising domestic costs of non-cooperation. The case of the international dumping regime shows that an international environmental conference can achieve this when public policy is not enjoying strong domestic support, especially in times of changing public opinion. Chapter 7 will add supporting evidence to this conclusion.

⁵⁰ For the success of the Stockholm Conference, see Anthony Lewis 'One Confused Earth', *New York Times*, June 17, 1972; Gladwin Hill, 'Sense of Accomplishment Buys Delegates Leaving Ecology Talks' *New York Times*, June 18, 1972; 'Global Environment', *New York Times*, June 19, 1972; Nigel Hawkes 'Stockholm: Politicking, Confusion, but Some Agreements Reached' *Science* 176 (23 June, 1972), 1308–10; 'Mr Strong's Recipe', *Nature* 237 (June 23), 1972.

⁵¹ Allan I. Mendelsohn 'Ocean Pollution and the 1972 United Nations Conference on the Environment' *Journal of Maritime Law and Commerce* 3 (January 1972), 391. According to Wade Rowland: 'It was not until the committee (the Preparatory Committee) met for the third time in September of 1971 that it had become clear that the job of educating the public and their political leaders had already been partly accomplished through the explosion of public interest in environmental matters, and that the Stockholm conference would have to produce some concrete action if it were to be taken seriously by observers around the world'. *The Plot to Save the World*, 87.

The secretariat was intensely involved in enhancing the conference's visibility ⁵². Mass media and prominent international scientists and ecologists, among others several 'visible scientists' who earlier had participated in Congressional hearings, played an essential role in focusing global attention on the conference and thereby the environment, thus increasing domestic pressure on governments ⁵³. Mostly Maurice Strong, but also other members of the secretariat, met with representatives from the international scientific community, governments, the business community, and environmentalists in various combinations and fora around the globe ⁵⁴. The Secretary-General of the Stockholm

⁵² Marvin S. Soroos has concluded that 'the preparations for and subsequent convening of the Stockholm Conference in June 1972 apparently heightened environmental consciousness internationally'. 'Trends in the Perception of Ecological Problems in the United Nations General Debates,' *Human Ecology* 9 (March 1981), 30. The Stockholm Conference was undoubtedly effective in galvanizing international expectations. 'Greater expectations will be raised than can practically be achieved'. Philip H. Abelson 'After the Stockholm Conference', *Science* 175 (11 February 1972), 3. In May the *Science* editorial found it 'obvious that what is most needed now is a severe cutback in our expectations – else the affair will go down as a failure'. Hans H. Landsberg 'Can Stockholm Succeed?', *Science* 176 (19 May 1972), 751.

⁵³ Thor Heyerdahl spoke at the distinguished lectures series held concurrent with the Stockholm Conference, as well as to the IGWMP. Using more dramatic statements than at previous occasions, he said: 'Quiet recently, it has become more and more apparent that some of the changes Man is imposing on his original environment could be harmful to himself; in fact they could even lead to global disaster...Only in recent years have we begun to understand the interaction of the extremely complex ecosystem...Since life on land is so utterly dependent on life in the sea, we can safely deduce that a dead sea means a dead planet'. Reprinted in the *Congressional Record*, October 13, 1972, 35753–35756.

Maurice Strong had asked René Dubos and Barbara Ward to prepare the 'conceptual framework' for the Stockholm Conference. The study was published under the title *Only One Earth: The Care and Maintenance of a Small Planet* – *Only One Planet* was the conference slogan – and was conveniently for sale at the time of the conference. This book was telling evidence of the environmental concern of the late 1960s and the beginning of the 1970s. *Only One Earth: The Care and Maintenance of a Small Planet* (New York: Norton, 1972).

⁵⁴ It should be noted that many representatives of the scientific community were sceptical about the quality of scientific knowledge about environmental impact of pollutants. For example, at the distinguished lecture series held concurrent with the Stockholm Conference the Swedish economist Gunnar Myrdal, one of the 'world's leading scientific and intellectual people' credited in *Only One Earth*, the unofficial conference report, made devastating criticism of the popular 'Club of Rome' study *The Limits to Growth*. He criticized the 'inexcusably careless manner in which so-called futuristic research is now often pursued' and emphasized that the 'all estimates upon which the warnings for depletion and pollution are founded are utterly uncertain'. Myrdal quoted in support René Dubos, who also lectured at the Stockholm series: 'The existing knowledge of the natural sciences is not sufficient to permit the development of effective action programs'. Gunnar Myrdal 'Economics of an Improved Environment', in Maurice F. Strong, ed., *Who Speaks for Earth?*, 70–71.

Conference and the secretariat acted as a pressure group on behalf of the global environment. None of the models examined predict that an international secretariat might pressure governments to cooperate by forming coalitions with domestic groups and by mobilizing public opinion and support ⁵⁵.

Already in November 1970 the secretariat singled out ocean dumping as a strong candidate for global agreement in Stockholm and advocated agreement in this area at meetings with the Preparatory Committee ⁵⁶. The secretariat was searching for problems which governments collectively could start doing something about by establishing an international regime. Although land-based sources of marine pollution supposedly accounted for as much as ninety percent of marine pollution, insufficient knowledge about these sources and much higher economic costs associated with their control made land-based marine pollution a very unlikely candidate for international regulation. Scientific evidence of pollution from ocean dumping also made this issue easier to tackle. Since oil pollution from ships would be dealt with at an IMCO conference in 1973, dumping was left as the 'last key maritime source' of ocean pollution. The secretariat thus saw the possibility to 'close off one remaining source' and in this way demonstrate that governments were able and willing to act ⁵⁷. When it established the IWGMP, as one United States negotiator put it, 'the stage was set for the United States to table a draft ocean dumping treaty' ⁵⁸. The secretariat thus succeeded to focus international negotiations on an area of possible global agreement and establish a useful negotiation forum for the hegemon, the United States.

In summary, to reach agreement on an international dumping treaty, the Stockholm Secretariat followed a multifaceted strategy. First, the secretariat helped governments in

⁵⁵ Other scholars have reached different conclusions. Eugene Skolnikoff writes: 'that the secretariats of international organizations may come to play an important role as mobilizers of public opinion, and thus as pressure groups on their own'. *The International Imperatives of Technology*, 96.

⁵⁶ 'Opening Remarks by Maurice F. Strong, Secretary-General Designate, United Nations Conference on Human Environment, at Informal Meeting of Preparatory Committee for the Conference', 4.

⁵⁷ Interview with Peter S. Thacher, August 14, 1991. Stonington, Connecticut.

⁵⁸ Robert J. McManus *The New Law on Ocean Dumping. Statute and Treaty*, 29.

identifying areas of common concern and environmental problems which could be solved through international cooperation. Second, the secretariat fashioned and advocated a treaty form which could expedite international environmental negotiations, in addition could tackle the problem of insufficient knowledge and, further, could accommodate the interests of both developed and developing countries, namely the black and grey lists system. Third, the secretariat galvanized world public opinion in order to pressure states to act and focused international expectations on an international dumping regime, i.e. an area of possible global agreement. The secretariat's strategy combined both sticks and carrots.

Conclusion

Chapter 2 concluded that the three models examined – the Realist, the epistemic community, and the complex interdependence models – disagree on many theoretically important issues. This chapter has shown that the three models all disregard essential aspects of how the international regime for controlling ocean dumping was built. Chapter 7 will demonstrate that similar aspects have been essential in the case of global termination of radwaste disposal.

First, and most importantly, there is widespread agreement that public opinion, hardly mentioned in the international regimes literature, has no effect on international cooperation on the protection of global commons such as the oceans⁵⁹. Even students of international cooperation on environmental protection minimize the role of public pressure, nationally and internationally, as well as the impact of public opinion. This negligence of public pressure stems from Realists' preoccupation with coercion and 'power' as the only available instruments of control and, on the other hand, Reflective scholars' preoccupation with knowledge and perception.

⁵⁹ Undoubtedly other cases exist. There is agreement, for example, that worldwide concern was a key factor behind the agreement on the Limited Test Ban Treaty of 1963. See McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years* (New York: Random House, 1988), 460. See also Ralph E. Lapp, *The Radiation Controversy* (Greenwich, Conn.: Reddy Communications), 16.

Second, all three models tested here exclude the domestic level from their understanding of international regime-building. This chapter has repeatedly concluded that examination at the domestic level is necessary in order to understand the origins of the international dumping regime. It is also evident that scientists are only one among many domestic groups influencing policy development. This chapter has stressed the need to include the role of ideas in policy development. The observations made here mostly concern policy-making in the United States, and therefore do not necessarily apply to other countries. However, the importance of developing testable theories of domestic politics in studies of international regimes is repeatedly stressed.

Third, international organizations, taken in their own right, and NGOs play an insignificant role in the theories tested here. The epistemic community model tends to erase the boundaries between national and international bureaucracies and does not pay much attention to NGOs. Of the three models examined, this model is the one most open to the possibility that an international secretariat would play a catalytic role and would facilitate negotiations among governments. Similar to the complex interdependence model, however, it ignores the role of mass media, public opinion and international pressure.

Finally, Reflective theorists and Realists agree that anarchy characterizes international politics. They conclude that states cannot be forced to act against their self-interest however defined ⁶⁰. This chapter, like Chapter 7 will do, has raised some doubts about this assumption.

In summary, the three models examined here only focus on certain aspects of international regime-building but might supplement each other and in this way give a better understanding. This study shows that detailed examination must include, not exclude, all the levels at which international regime-building takes place. Existing models artificially separate the domestic and the international levels, and interests and power are, equally

⁶⁰ Kenneth Waltz writes: 'States are self-regarding units. State behavior varies more with differences of power than with differences in ideology, in internal structure of property relations, or in governmental form. In self-help systems, the pressures of competition weigh more heavily than ideological preferences or internal political pressures'. 'Reflections on *Theory of International Politics: A Response to My Critics*', 329.

artificially, seen as antithetical to ideas and knowledge. Better models should fit together, not separate, all aspects and actors that contribute to international regime-building.

CHAPTER 7

REVISING THE INTERNATIONAL DUMPING REGIME

As mentioned in Chapter 1, the international dumping regime declared a global ban on dumping of low-level radioactive waste in the world's oceans in 1983. This ban marked the most significant policy development in the history of the regime as well as in the entire history of control of radwaste disposal¹. Although legally non-binding, the ban and the forces supporting it have effectively terminated radwaste disposal in the world's oceans, a practice that had been in use since 1946. Ocean dumping has been suspended since 1982 although several major nuclear nations – principally the United States, Britain and Japan – still do not have permanent land-based storage facilities for their low-level radioactive waste and consequently have a considerable stake in disposal at sea².

The ban marked the convergence of pressure from the public, trade unions, international environmental interest groups, and governments. Contrary to the predictions of the Realist model, the ban was, therefore, not established through American leadership. For complicated reasons, the United States in fact opposed – and still does – the ban. Neither was the ban, as epistemic community theorists would predict, a result of an international network of ecology-oriented marine scientists pressuring and persuading policy makers to terminate radwaste disposal. If anything, the authority vested in scientific expertise within the regime was recently seriously challenged. While small states used coalition-building and the regime's decision-making procedures to their advantage, as the complex interdependence model predicts might happen, the international environmental interest group Greenpeace provided international leadership by mobilizing opposition as well

¹ For a review of the pollution control results reached within the regime prior to the moratorium on radwaste disposal, see M.G. Norton 'The Oslo and London Dumping Conventions', *Marine Pollution Bulletin* 12 (1981), 145–49.

² For the present situation of those three nations, see Chap. 1, footnote 43.

as turning international public opinion against ocean dumping of radioactive materials.

Protests against radwaste disposal

As mentioned in Chapter 1, Britain was dumping low-level radioactive waste in the Atlantic Ocean annually from 1949 onwards. Starting in 1967, waste delivered by Britain, the Netherlands, Belgium and Switzerland was periodically dumped in a deep part of the Atlantic Ocean under a voluntary system of international supervision administered by the NEA/OECD. While the dumping operations did comply with the international dumping regime when it entered into force in 1975, several non-dumping nations were opposed to them. In 1978, at the consultative meeting of the members of the international dumping regime, 'many delegations expressed the view that radioactive waste disposal in the ocean should be discouraged and that prohibition of dumping high-level radioactive wastes should be retained'³. Similar to the 1958 United Nations Law of the Sea Conference, described in Chapter 1, the conflict surrounding radwaste disposal was unresolved. Pro-dumping and anti-dumping governments had moreover been unable to reach an agreement at a meeting held in Lisbon, in 1966⁴.

Greenpeace, which since its founding in Canada in 1971 has become the world's largest, most effective international environmental pressure group, launched a campaign in 1978 against the European dumping in the Atlantic Ocean⁵. Greenpeace has by staging

³ IMO document III/12 *Report of the Third Consultative Meeting*, 24 October 1978, 16.

⁴ A.W. van Weers, B. Verkerk and C. Koning 'Sea Disposal Experience of the Netherlands', in *Proceedings of the Symposium on Waste Management at Tucson*, 1982, 451.

⁵ A member of the National Audubon Society, a U.S. environmental group struggling to acquire a newer, tougher image, recently explained: 'We want to be Greenpeace but we don't want to parachute off bridges'. Anne Raver 'Old Environmental Group Seeks Tough New Image', *New York Times*, June 9, 1991. Greenpeace has 'a reputation as the main green influence on public opinion', 'Green Groupies', *The Economist*, June 6, 1992, 37. For Greenpeace's early history, see John McCormick, *Reclaiming Paradise. The Global Environmental Movement* (Bloomington and Indianapolis: Indiana University Press, 1989), 143–45.

spectacular 'happenings' or series of focusing events called campaigns by Greenpeace focused the attention of the international public and mass media on whaling, sealing, nuclear testing and other 'environmental crimes' ⁶. The nuclear industry feared that the campaign also was intended to mobilize public opinion to prevent a resumption of dumping by the United States or a start of such operations by Japan ⁷. Greenpeace hoped to obstruct the dumping operation by positioning inflatable dinghies underneath the dumping ship's platforms from which the containers were rolled into the sea. The dinghies were operated from the Rainbow Warrior, the same ship used to protest against French nuclear tests on the Polynesian island of Mururoa in the South Pacific ⁸.

Starting in 1978, Greenpeace intended to hinder the annual European dumping operation taking place at a site 4000 m below sea level, located approximately 700 kilometers off Spain's north-west coast. A Greenpeace ship followed a freighter to the dump site. At a press conference in Britain Greenpeace showed film of their unsuccessful attempts to stop the dumper ship tipping more than five thousand barrels of radioactive waste into the sea. Greenpeace charged that the dumping violated the rules of the international dumping regime, a claim rejected by the British government, declaring that the material dumped only had insignificant amounts of radioactivity ⁹. In the summer of 1979, Greenpeace again set

⁶ Greenpeace has since its beginning been an anti-nuclear organization working to reduce nuclear weapons, nuclear weapons testing, and nuclear power. Its nuclear-free seas campaign has aimed at 'ridding the seas of nuclear weapons'. See Greenpeace 'Greenpeace..for a cleaner, safer earth'. In a newsletter released in relation to the campaign against radwaste disposal it explained: 'A ban on dumping of radioactive waste would hasten the death of the nuclear industry, particularly in the U.K.'. Quoted in Simon Rippon 'Ocean Disposal', *Nuclear News* (March 1983), 79. For how Greenpeace initially got involved in the dumping of nuclear waste in the Atlantic Ocean, see Fred Pearce, *Green Warriors. The People and the Politics Behind the Environmental Revolution* (London: The Bodley Head, 1991), 54.

⁷ Simon Rippon 'Ocean Disposal', 76-79.

⁸ A major international scandal followed when in 1985 the Rainbow Warrior was blown up by French agents in Auckland harbour, New Zealand. For a pro-Greenpeace account of the explosion of Rainbow Warrior, see Bengt Danielsson and Marie-Thérèse Danielsson, *Poisoned Reign: French Nuclear Colonialism in the Pacific* (Penguin Books 1986), ix-xv.

⁹ Michael Morris 'Dangerous' Waste Dumped', *The Guardian*, July 25, 1978. For Greenpeace's campaign within Britain, I draw on the recent book of Andrew Blowers, David Lowry, and Barry D. Solomon, *The International Politics of Nuclear Waste* (London: Macmillian, 1991), 74-85. A good

out to obstruct the dumping. The British press reported how the dumper ship crew's used powerful fire hoses to prevent the protesters from placing dinghies under the cranes dumping drums of radioactive waste into the sea ¹⁰.

In 1982, three Dutch ships were responsible for the annual dumping operation. The international press reported how dinghies launched from the Rainbow Warrior were placed under the ships' cranes. The population on the Spanish northwest coast, which was strongly protesting against the dumping, had dispatched two trawlers with local politicians on board to escort the Greenpeace ship to the dumping site. Dumping was suspended 24 hours after two drums struck a dinghy carrying Greenpeace protesters ¹¹. Spanish politicians' appeal by loudspeakers to the captain in command also interrupted the operation, which however was resumed, but then finally cancelled ¹². After this incident, the European Parliament adopted a resolution urging the European Commission to employ 'any procedures at its disposal, either action within the Community framework, or through international agreements to stop this dumping of nuclear waste' ¹³. At this point, 'the issue of the annual dump was developed into an international scandal' by Greenpeace ¹⁴.

Several European governments soon responded to the Greenpeace campaign. Within a month after the incident, the Dutch government officially suspended all dumping of radioactive waste. 'This ministry is convinced that ocean-dumping is a safe disposal for wastes,' said a spokesman for the Dutch Ministry of Public Health and Environment, 'but it

source of information is the Greenpeace documentary film *'Desperate Measures'*, which follows the Greenpeace campaign from its beginning in 1978 through 1982.

¹⁰ Tony Allen Mills 'Atomic Waste Dumpers Foil Saboteurs', *The Daily Telegraph*, July 13, 1979.

¹¹ No one was injured in the accident. 'Dutch Ship Stops Dumping Nuclear Waste', *New York Times*, August 30, 1982.

¹² 'A Dutch Ship Resumes Dumping Nuclear Waste Off Northern Spain', *New York Times*, August 31, 1982.

¹³ Quoted by Ursula Wassermann 'Disposal of Radioactive Waste', *Journal of World Trade Law* 19 (1985), 427.

¹⁴ Fred Pearce, *Green Warriors*, 54.

is clear that our society does not want ocean-dumping'¹⁵. Transport and loading of waste had in the last two years been possible only because police thwarted protests organized by Greenpeace¹⁶. Considerable public protest at a time when Dutch politics was increasingly becoming 'green' caused the government to reverse its policy¹⁷.

In Spain, the Greenpeace campaign galvanized massive public protests against dumping in the Atlantic Ocean off the Spanish coast and the government intended as a consequence to end the dumping¹⁸. In particular the population of the north-west Galician coast, mostly ocean-oriented communities where fishing is one of the main industries, was strongly protesting against dumping. In the summer of 1982, local politicians and thousands of people carrying anti-dumping posters welcomed the Greenpeace crew when it arrived in port in Vigo in Galicia after having protested against dumping. The Spanish government had since 1980 been increasingly under pressure to stop dumping. The Socialist government headed by Prime Minister Felipe Gonzalez which came to power in 1982 thus intended to stop the dumping taking place off the Spanish coast¹⁹.

In 1980, there were also protests in Zeebrugge, Belgium, where demonstrators caused considerable damage to instruments on the bridge of a freighter leaving to dump in the Atlantic²⁰. In 1982, national attention was attracted to the issue when the mayor of Bruges'

¹⁵ 'Dutch to Stop Dumping Nuclear Wastes at Sea', *New York Times*, September 23, 1982.

¹⁶ 'Nuclear Dumping Leads to Clash', *New York Times*, August 21, 1982. A.W. van Weers, B. Verkerk and C. Koning 'Sea Disposal Experience of the Netherlands', 461-62.

¹⁷ Personal communication, Dutch delegate to the 1991 consultative meeting of the London Dumping Convention, November 1991. For short history of the 'greening' of the Netherlands, see Graham Bennett 'The History of the Dutch National Environmental Policy Plan', *Environment* 33 (1991), 7-8.

¹⁸ The Spanish government has later prepared a comprehensive study of public attitudes on the issue, presented to the LDC. See IMO. Inter-Governmental Panel of Experts on Radioactive Wastes Disposal at Sea. *Intersessional Studies on Radioactive Waste Dumping at Sea. Political Aspects. Submitted by Spain*. IMO Doc. LDC/IGPRAD 2/2/6, August 1988.

¹⁹ Interview with Jose Juste Ruiz, Spanish delegate to the LDC meetings, London, (November 29, 1991).

²⁰ 'Demonstrations Against Low-Level Sea Dumping', *Nuclear News* (August 1980), 72-73. A.W. van Weers, B. Verkerk and C. Koning 'Sea Disposal Experience of the Netherlands', 461-62.

attempt to prevent shipment of waste destined for the ocean through his territory was overruled by the Belgium government ²¹. The Belgium government did not, however, change its dumping policy.

In 1979, Japan announced that it planned to experimentally dump radwaste at a site north of the Mariana Islands in the South Pacific ²². According to the Japanese government, the plan conformed to the regulations of the international dumping regime. Japan, whose geography lacks sufficient long-term geologic stability for repository sites, ships spent fuel to Europe for reprocessing at either Sellafield, Britain, or Le Hague, France ²³. Under the Japanese plan, 5,000 to 10,000 drums of nuclear waste would be dumped in 1981 when Japan would become member of the international dumping regime. The dumping would be expanded to up to 100,000 curies a year after the Japanese government had verified the safety of its experimental program.

A mission from the Commonwealth of the Northern Mariana Islands, however, soon presented a formal anti-dumping petition representing seventy organizations with a total membership of more than 12 million to the Japanese Diet ²⁴. The Japanese government was also asked to send officials to the islands for discussions. Encouraged by the United

²¹ Gerald Bourke 'Europeans Seek Answers to Nuclear Waste Buildup', *Chemical Engineering* 90 (February 7, 1983), 25-26.

²² 'Japan Plans to Begin Ocean Disposal', *Nuclear News*, November 1980, 20.

²³ These shipments as well as the subsequent storage of plutonium in Japan have caused considerable international controversy. See Stansfield Turner and Thoman Davies 'Plutonium Terror on the High Seas', *New York Times*, May 28, 1990; David E. Sanger 'Japan Edges Close to Nuclear World', *International Herald Tribune*, November 26, 1991; Paul Leventhal and Sharon Tanzer 'Plutonium: Time for a Global Ban', *International Herald Tribune*, January 15, 1992; 'Dangerous Cargo', *The Economist*, April 18, 1992; David E. Sanger 'Tokyo Cautioned on Nuclear Storage', *International Herald Tribune*, April 4, 1992; 'Japan May Put Off Plutonium Plans', *International Herald Tribune*, April 21, 1991; 'Japanese Affirm Plutonium Policy', *International Herald Tribune*, April 22, 1992; Michael Richardson 'Asia Warns Japan on Plutonium Shipments', *International Herald Tribune*, July 7, 1992; 'Japan Plutonium Cargo Ship to Sail', *International Herald Tribune*, August 19, 1992.

²⁴ 'Mariana Islanders Protest Plans by Japan to Dump Atomic Waste', *New York Times*, August 3, 1980; Jon Van Dyke, Kirk R. Smith, and Suliana Siwatibau 'Nuclear Activities and the Pacific Islanders', *Energy* 9 (1984), 741; James B. Branch 'The Waste Bin: Nuclear Waste Dumping and Storage in the Pacific', *AMBIO* 13 (1984), 329. See also 'Nuclear Fears Voiced for the South Seas', *New York Times*, October 29, 1982.

States, Japanese scientists and politicians toured the region in August and September, trying to persuade governments that the dumping was safe. The campaign failed, however, and the following month the New Guinea Foreign Minister told the United Nations General Assembly that the long-term effects of dumping could be catastrophic²⁵. In October 1980, the Governors of Hawaii, Guam, American Samoa and the Northern Mariana Islands issued a statement opposing the dumping of radioactive waste planned by Japan and the United States – plans by the United States will be discussed below – and declared that their organization, the Pacific Basin Development Council, 'totally opposes the dumping of radioactive nuclear waste in any part of the Pacific Basin'²⁶. In February 1981, Japan announced that it, in response to the protests, had put off its plan to begin experimental dumping later the same year²⁷. A complex combination of governmental considerations and domestic opposition apparently led to that decision²⁸. Instead, after the Japanese

²⁵ Rowan Callick 'A Storm Beneath the Calm', *Far Eastern Economic Review*, November 7, 1980, 40. See also James B. Branch 'The Waste Bin: Nuclear Waste Dumping and Storage in the Pacific', *AMBIO* 13 (1984), 328.

²⁶ Robert Trumbull 'Pacific Governors Oppose Dumping Atom Wastes', *New York Times*, October 5, 1980.

²⁷ Henry Kram 'Islanders Fight Japan's Plan to Dump Atom Waste', *New York Times*, March 18, 1981. 'Japan. Seabed Dumping Delayed as Other Nations Object', *Nuclear News* (March 1981), 61–62.

²⁸ Japan's desire to act in a responsible way internationally motivated this decision then, as well as later. Takao Kuramochi, first secretary, Embassy of Japan, Washington, D.C. Interviewed August 30, 91. This consideration might have been given some weight by the Japanese government as the United States has recently urged Japan to join, or even provide international leadership behind, efforts to protect the environment. Thoman L. Friedman 'Baker to Japan: Share the Global Burden', *International Herald Tribune*, November 12, 1991. In 1980, however, Japanese fishermen, fearing adverse effects from dumping on the fish stocks which constitute their livelihood, threatened to use their boats to hinder dumping. Robert T. Trumbull 'Pacific Governors Oppose Dumping of Atom Wastes', *New York Times*, October 5, 1980; see also John Junkerman 'Deep-Sixing the Atom', *The Progressive* 45 (December 1981), 32. In 1980, the government of the Commonwealth of the Northern Marianas reportedly threatened to exclude Japanese vessels from its fishing zone should dumping operations commence. Daniel P. Finn 'Nuclear Waste Management Activities in the Pacific Basin and Regional Cooperation on the Nuclear Fuel Cycle', *Ocean Development and International Law Journal* 13 (1983), 216. The following considerations have also been suggested to explain Japan's decision not to dump: 'Japan's forbearance appears to have resulted from a mix of considerations: Japan has been cultivating an image of peace and conciliation in an effort to live down its prewar reputation as the Pacific Basin's strong-arm bully; it has made substantial investments in the island nations and territories, and wants to make more; and it does not want to jeopardize its fishing privileges within the exclusive economic zones of existing or emerging island

government hopefully had appeased the fears of the Oceanian and Southeast Asian countries, it planned to dump small amounts of radioactive waste and only if proved safe, which was expected, would full-scale dumping begin, probably in 1987 or later ²⁹. In August 1984, however, Japanese officials of the Japanese Science and Technology Agency reportedly admitted that they were prepared to break their 1980 assurance not to dump without the consent of the Pacific nations ³⁰. After an uproar in the Pacific, representatives of the same agency later assured that dumping would only happen 'with the understanding' of the Pacific nations ³¹.

In November 1980, Japan and the United States started a joint program to study the possibilities for interim storage of high-level radioactive waste on Palmyra Island, an isolated Pacific island located approximately 1000 miles south of Honolulu ³². In addition to its suitable geology and other properties, it was hoped that such a remote storage site for high-level radioactive waste would not arouse public protests ³³. Intended to avoid

nations. Indeed, should these privileges be jeopardized by ocean dumping, Japan's politically powerful fishing industry would probably put a quick stop to it'. Luther Carter, *Nuclear Imperatives and Public Trust: Dealing with Radioactive Waste*, 364.

²⁹ Takehiko Ishihara 'Ocean Dumping of Low-Level Waste in Japan: Past and Future', in *Proceedings of the Symposium on Radioactive Waste Management at Tucson*, 469-70.

³⁰ Jane Dibblin 'Paddling in the Nuclear Pool', *New Statesman*, 1 March 1985, 18-19. In 1980, officials of the Japanese Science and Technology Agency noted it was still 'not necessary to get approval of foreign governments'. Don Kirk 'Double Standards in Japan's Nuclear Policy', *New Statesman*, September 5, 1980, 4. In 1981, a leading official of the same agency reportedly said: 'We will continue to have a plan to dump. We did not give up the plan'. Henry Kamm 'Islanders Fight Japan's Plan to Dump Atom Waste', *New York Times*, March 18, 1981.

³¹ Jane Dibblin 'Britain Is In the Dock', *New Statesman*, September 20, 1985, 21.

³² George C. Wilson 'Tiny Pacific Isle of Palmyra Targeted as Nuclear Dump', *Washington Post*, August 18, 1979. James B. Branch 'The Waste Bin: Nuclear Waste Dumping and Storage in the Pacific', *AMBIO* 13 (1984), 328. John Edwards 'The Fuel Nobody Wants', *Far Eastern Economic Review*, August 8, 1980.

³³ Around the same time, some experts hoped for similar solutions to problems of public acceptance of European high-level waste: 'While there appears to be general agreement among Europeans that low- and medium-level wastes will have to be disposed of on their own territories, some specialists are still concerned about public acceptance of high-level wastes, even in the deepest deposit of granite, salt, volcanic rock or clay. They would be happier if it was carried far away - to a midocean island or a sea-

reprocessing (a process in which the valuable uranium and plutonium are recovered from 'spent' fuel rods), which entails the danger of proliferation of nuclear weapons, the proposal envisaged that up to 10,000 tons of high-level radioactive waste, delivered by Japan, Korea and Taiwan, would be stored for 30 years and then moved to a permanent storage site. Although the plan only involved storage of high-level radioactive waste on land, it added momentum to Pacific protests against radwaste disposal³⁴. The proposal confirmed widespread beliefs in the region, in the words of a lawyer acting as council to the people of Bikini, 'that the United States continues to treat the Pacific islands as its back-yard dumping grounds, disregarding the interests and legitimate rights of their inhabitants'³⁵. Atom bombs tests in the Pacific, which began in 1946, had thus caused the development of very strong regional resentment towards nuclear tests and disposal of radioactive materials³⁶. Regional efforts at controlling and reducing nuclear testing and radioactive waste disposal, which dated back to 1976, led in 1985 to signing of the South Pacific Nuclear-Free Zone Treaty, the so-called Rarotonga Treaty. Signed on Hiroshima Day, 6 August 1985, this treaty bans, among other things, ocean dumping of radioactive wastes anywhere within the South Pacific Nuclear Free Zone³⁷.

bed depository'. Walter Sullivan 'Nuclear Waste Disposal: Bold Innovations Abroad Instructive for U.S.', *New York Times*, August 31, 1982. Similarly, the 'unstable nature' of most European governments made most experts hope for 'some dim and distant sub-seabed site' for high-level waste. Gerald Bourke 'Europeans Seek Answers to Nuclear Waste Buildup', *Chemical Engineering* 90 (February 7, 1983), 25-26.

³⁴ George C. Wilson 'Plan for Storing Nuclear Wastes on Pacific Atoll Strongly Protested'. *Washington Post*, August 23, 1979.

³⁵ Jonathan M. Weisgall 'The Nuclear Nomads of Bikini', *Foreign Policy* 39 (1980), 97.

³⁶ Jon Van Dyke, Kirk R. Smith, and Suliana Siwatibau 'Nuclear Activities and the Pacific Islanders', 733-50.

³⁷ The treaty was signed by Australia, Cook Islands, Fiji, Kiribati, New Zealand, Niue, Tuvalu, and Western Samoa. Article 7 of the treaty requires each zone member to undertake: '(a) not to dump radioactive wastes and other radioactive matter at sea anywhere within the South Pacific Nuclear Free Zone; (b) to prevent the dumping of radioactive wastes and other radioactive matter by anyone in its territorial sea; (c) not to take any action to assist or encourage the dumping by anyone of radioactive wastes and other radioactive matter at sea anywhere within the South Pacific Nuclear Free Zone; (d) to support the conclusion as soon as possible of the proposed Convention relating to the protection of the

In the United States, there existed a real possibility that some forms of radioactive waste again would be ocean dumped. Toward the end of the 1970's, the United States ocean dumping regulation – the essentially precautionary and prohibitory Marine Protection, Research, and Sanctuaries Act of 1972, described in Chapters 3 and 4 – came under some attack. There were indications that existent stringent ocean dumping regulation would be relaxed as Congress and the courts became painfully aware of the realities of strict regulation, namely considerable pollution-control costs and insufficient alternatives. At the same time it was alleged that parts of the oceans had an ability to assimilate some wastes³⁸.

The U.S. Environmental Protection Agency (EPA) began around the same time to look to the oceans as a possible disposal alternative for both low-level and high-level radioactive wastes. Public concern over disposal of radioactive waste made it extremely difficult, if not impossible, to find sufficient permanent disposal facilities on land³⁹. In addition, when weighing the costs and benefits of regulation, as the Reagan administration urged EPA to do, ocean disposal of old nuclear submarines was clearly more attractive than

natural resources and environment of the South Pacific region and its protocol for the prevention of pollution of the South Pacific by dumping, with the aim of precluding dumping at sea of radioactive wastes and other radioactive matter by anyone anywhere in the region'. For this treaty, see Michael Hamel-Green 'The Rarotonga South Pacific Nuclear-Free Zone Treaty', in Ranginui Walker and William Sutherland, eds., *The Pacific. Peace, Security, and the Nuclear Issue* (Tokyo: The United Nations University, 1988), 93-122. See also Andrew Mack 'Nuclear Allergy' in the South Pacific', *The Pacific Review* 2 (1989), 320-33.

³⁸ James P. Walsh 'U.S. Policy on Marine Pollution: Changes Ahead', *Oceanus* 24 (1981), 20-24. Allan Bakalian 'Regulation and Control of United States Ocean Dumping: A Decade of Progress, An Appraisal for the Future', *Harvard Environmental Law Review* 8 (1984), 193-256.

³⁹ See statement by Roger J. Mattson, Office of Radiation Programs, U.S. EPA, given before 'Radioactive Waste Disposal Oversight'. Hearings before the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries. House of Representatives. November 20, 1980, 436-54. A US EPA official explained in 1981: 'With increasing public concern for waste management practices on land and the need to find permanent disposal sites, the United States is again looking towards the oceans as a possible alternative to land disposal for both low-level and high-level radioactive waste'. Robert S. Dyer 'Sea Disposal of Nuclear Waste: A Brief History', in Thomas C. Jackson, ed., *Nuclear Waste Management: The Ocean Alternative* (New York: Pergamon Press, 1982), 11. See also Philip Shabecoff 'Agency May Alter Atom Waste Policy', *New York Times*, January 15, 1982.

land disposal ⁴⁰. There seemed also to be a growing consensus among marine scientists that radwaste disposal would cause no significant risks to either human health or the marine environment ⁴¹.

Starting in 1980, EPA was thus revising existing regulation so that thousands of tons of slightly contaminated soil left over from the World War II Manhattan project and more than 100 retired nuclear submarines, each representing more than 50,000 curies of radioactive waste, could be dumped at sea ⁴². A report sponsored by EPA noted, however, that 'the disposal of radioactive waste into the ocean evokes strong feelings. There are those who feel that radioactive materials should be completely prohibited from deep ocean disposal'. The report concluded that, 'it is naive to believe that all other countries will accept a position of not permitting the disposal of packaged low-level waste when for certain countries it is the only option available to them' ⁴³. It would soon become clear, however, that the report underestimated the potential political impact of those 'feelings', both in the United States and elsewhere.

A possible change of EPA's policy on disposal of radioactive materials in the ocean sparked considerable alarm within the environmental community. Around the time it became known, public attention was attracted to radioactive waste dumped from the 1946 to 1970

⁴⁰ Land disposal was estimated to cost well over \$100 million, ocean disposal less than \$10 million. Both the U.S. Navy's cost estimates, which did not include costs of monitoring over a period of several hundred years, and its scientific documentation claiming that no harm would be inflicted on the marine environment and human health, were criticized by groups opposing the Navy's plans. See *Joint Comments of Environmental and Other Citizen Organizations in Response to the Department of Navy's Draft Environmental Impact Statement on the Disposal of Decommissioned, Defueled Naval Submarine Reactor Plants*. Submitted by the Center for Law and Social Policy and the Oceanic Society. 30 June 1983.

⁴¹ Leslie Roberts 'Ocean Dumping of Radioactive Waste', *BioScience* 32 (November 1982), 773-6.

⁴² Luther J. Carter 'Navy Considers Scuttling Old Nuclear Subs', *Science* 209 (26 September 1980), 1495-97. Colin Norman 'U.S. Considers Ocean Dumping of Radwastes', *Science* 215 (5 March 1982), 1217-9.

⁴³ Amelia Ann Hagen *An Analysis of International Issues Associated with Ocean Disposal of Low-Level Radioactive Waste* (McLean, Virginia: The MITRE Corporation, 1980), 7-1/2.

as drums were found unexpectedly and previously unknown dump sites were disclosed ⁴⁴. EPA sent some of its researchers to examine a former site near Boston for health effects ⁴⁵. As the EPA scientists expected, however, no evidence of harm was turned up ⁴⁶. The public visibility of the issue was further heightened as environmental groups organized public policy forums and 'citizen workshops' that addressed past dumping in the United States, legal aspects of international regulation, and plans to bury high-level radioactive waste in the deep seabed ⁴⁷. Hearings on the early dumping were held in, among other places, San Francisco, California, and Boston, Massachusetts, and a hearing on the U.S. Army's proposed dumping of decommissioned submarines was held in North Carolina ⁴⁸. Environmental pressure groups, conservationist groups, private citizens, local business leaders, and commercial fishermen's organizations all advocated a ban on disposal of radioactive waste in the ocean. The Oceanic Society, a Washington-based environmental group which publishes the magazine *Oceans* - 'for people who love the sea' - challenged the scientific basis of the Navy's proposal. The Oceanic Society, which, as mentioned in Chapter 4, had been involved in the early 1970s' hearings on the issue, was by 1980s coordinating the U.S. opposition

⁴⁴ The US navy had bound the EPA to secrecy. See Carol Polsgrove 'Second Choice. Nuclear Dumping on the High Seas', *Oceans* 14 (May-June 1981), 65.

⁴⁵ 'Contamination Survey Set for Boston Harbor', *New York Times*, September 18, 1982.

⁴⁶ For the expectations of the EPA researchers, see 'Offshore Waste Study Begun', *New York Times*, September 21, 1982. Compared to samples taken in areas where no dumping had occurred, the dumpings were not found to have caused detectable levels of radioactivity in Massachusetts Bay. See 'Radwaste in Massachusetts Bay', *BioScience* 33 (February 1983), 87. See also Alan B. Sielen 'Sea Changes? Ocean Dumping and International Regulation', 26.

⁴⁷ The proceedings of a public policy forum held in Washington, D.C., and organized by the Oceanic Society, see below, are published in Thomas C. Jackson, ed., *Nuclear Waste Management. The Ocean Alternative*. This is the only existing publication which brings together relevant political, scientific, and regulatory issues in a comprehensive and balanced way. For these citizen workshops, see footnote 49 below.

⁴⁸ 'Ocean Dumping of Radioactive Waste off the Pacific Coast'. Hearing before A Subcommittee of the Committee on Government Operations. House of Representatives. 96th Congress. October 7, 1980. 'Disposal of Decommissioned Nuclear Submarines'. Hearing before the Committee on Merchant Marine and Fisheries. House of Representatives. 96th Congress. October 19, 1982.

against ocean dumping of radioactive wastes ⁴⁹. The governor of New Jersey similarly called the proposal to dump off the New Jersey coast 'a very severe potential health hazard' ⁵⁰.

To head off the Reagan Administration's proposal, the House of Congress approved in September 1982 legislation imposing a two-year moratorium on any dumping of low-level radioactive waste ⁵¹. Despite ocean scientists and experts assuring that the involved risks were minuscule, the practice was perceived as a threat to the marine environment. 'As a common-access resource, the ocean is not protected by the same economic and political forces that protect private property,' said one of the bill's sponsors, 'It is up to the members of Congress to provide a voice for the ocean and to insure that the ocean has sufficient protection. We are specifically charged with the mandate of providing our citizens and our future generations a healthy and unpolluted ocean environment' ⁵².

At the end of the moratorium, the bill required EPA to make a comprehensive environmental statement before a permit for ocean disposal of low-level radioactive waste

⁴⁹ The Oceanic Society represented the following twenty-five environmental and public-interest groups in the debate on the Navy's proposal: The American Cetacean Society, Ban Ocean Nuclear Dumping (B.O.N.D.), CAN-Disarm, Center for Environmental Education, Clean Water Action Project, Committee to Bridge the Gap, Critical Mass Energy Project, Environmental Defense Fund, Farallon Foundation, Friends of the Earth, Greenpeace, U.S.A., Hudson River Sloop Clearwater, Inc., National Audubon Society, Natural Resources Defense Council, Nuclear Free Pacific, Nuclear Information Resource Service, Ocean Education Project, Palmetto Alliance, Scenic Shoreline Preservation Conference, Sierra Club, Southwest Research and Information Center, Union of Concerned Scientists, United Methodist Church Joint Law of the Sea Project, United Methodists General Board of Church and Society, and Wilderness Society. The Oceanic Society and some of the above groups also organized a series of citizen workshops on the proposal to dump aged nuclear submarines in Boston, MA; Washington, D.C.; Winston-Salem, NC; Beaufort, NC; Charleston, SC; Eureka, CA; and Seattle, OR. See '*Joint Comments of Environmental and Other Citizen Organizations in Response to the Department of Navy's Draft Environmental Impact Statement on the Disposal of Decommissioned, Defueled Naval Submarine Reactor Plants*', 1-4. See also 'Oceanic Society Leads Opposition to Nuclear Dumping', *Oceans* 16 (September-October 1983), 70.

⁵⁰ 'Kean Assails Proposal On Dumping A-Waste', *New York Times*, March 28, 1982.

⁵¹ 'House Backs Moratorium on Ocean Dumping', *New York Times*, September 21, 1982. Joseph A. Davis 'Legislation to Strengthen Rules on Ocean Dumping Approved by the House', the *Congressional Quarterly, Weekly Report*', 40 (September 25 1982), 2386.

⁵² Norman E. D'Amours, democrat from New Hampshire, chairman of the Subcommittee on Oceanography, *Congressional Record*, September 20, 1982, H 7261.

could be issued. Congress was given 30 days to review and block issuance of each permit which made it very unlikely that any dumping permit would be issued within a short period of time⁵³. The Senate approved the bill in December 1982 although powerful Senators and President Reagan were opposed to it⁵⁴. The sponsors in the House outmaneuvered them, however, by attaching it to a gas-tax bill supported by the Senate and President Reagan⁵⁵. In 1984, the U.S. Navy made it official that it had decided to bury the defueled radioactive engine compartment of its retired submarines on government-owned land⁵⁶.

In summary, unlike in the early 1970s, when few European governments, i.e. Britain, Switzerland, the Netherlands, and Belgium, were dumping low-level radioactive waste, the United States and Japan planned to start ocean dumping in the 1980s. Since the mid-1970s, several nuclear nations had furthermore been examining the technical and scientific feasibility of high-level radioactive waste disposal into the deep ocean seabed⁵⁷. The regulatory situation had thus changed dramatically compared to 1972 when the international dumping regime had been constructed. The United States ocean regulation, i.e. the Marine Protection, Sanctuaries, and Research Act from 1972, strictly regulated low-level waste disposal. Its sponsors in Congress had, as described in Chapter 4, been strongly opposed to dumping 'hot' high-level radioactive waste at sea. International pressure had in 1972 forced

⁵³ Failure by Congress to act within 30 days on a permit request results in a legislative veto, resulting in a denial of the permit. The bill's sponsors deliberately chose this procedure because they expected it was extremely unlikely that Congress within so brief time could consider a permit. Personal communication from U.S. source who has asked to remain anonymous.

⁵⁴ *The Congressional Quarterly. Weekly Report*, 40 (December 25, 1982): 3138.

⁵⁵ Personal communication from U.S. source who has asked to remain anonymous. See also footnote (53) above.

⁵⁶ 'Navy Prefers to Bury Subs', *Science News* 125 (May 26/June 9, 1984), 358. Philip Trupp 'Nuclear Subs to Settle on Dry Land', *Oceans* 17 (July 1984), 34-35.

⁵⁷ In the period 1976-82, the following countries participated in the Seabed Working Group of the Nuclear Energy Agency of the OECD: Australia, Belgium, Canada, the Commission of the European Communities, Federal Republic of Germany, France, Italy, Japan, Netherlands, Switzerland, Britain, and the United States. See David A. Deese 'Seabed Emplacement and Political Reality', *Oceanus* 20 (1977), 47-63. See also Clifton E. Curtis 'Legality of Seabed Disposal of High-Level Radioactive Wastes under the London Dumping Convention', *Ocean Development and International Law* 14 (1985), 383-415.

the United States and Britain to include radwaste disposal under the international dumping regime.

At the same time, European environmentalists and the Spanish population located nearest to the dump site protested ever more vocally against dumping of low-level radioactive waste in the Atlantic Ocean. As the case of the Netherlands illustrates, public opinion in Europe was increasingly questioning the wisdom of existing policy. In the United States, the Reagan administration's plans to dump radioactive materials had been met with considerable public protests and legislation to halt dumping was passed by Congress. Japanese plans were also put on hold due to protests voiced throughout the Pacific region.

The international dumping regime 1983–85: Regime change despite resistance

A significant number of the governments attending the seventh consultative meeting of the international dumping regime, held in February 1983 at IMO headquarters in London, were unwilling to let dumping of low-level radioactive waste at sea continue. Some governments were in favor of stopping dumping immediately, others would rather phase out dumping. Banning radwaste disposal required, however, that the grey and black lists to the London Dumping Convention, discussed in Chapter 5, be amended. In accordance with the London Dumping Convention, low-level radioactive waste would have to be moved from the grey list to the black list. The convention stipulated, furthermore, that any amendment to the black and grey lists 'will be based on scientific or technical considerations'⁵⁸. Those governments seeking to halt radwaste disposal would consequently have to present scientific and technical evidence proving that such practice was harmful and should be banned under the convention⁵⁹.

By 1983, the two Pacific islands Kiribati and Nauru had become members of the

⁵⁸ See Appendix A , article 15 (2).

⁵⁹ The convention puts the onus of proof on those wanting to halt pollution. See Appendix A, article 1.

international dumping regime in the hope that the convention could be amended to ban all forms of radioactive waste disposal at sea ⁶⁰. Nauru, represented by an American anti-nuclear campaigner, biology professor Jackson Davis from the University of California, proposed an immediate global ban on radwaste disposal ⁶¹. Being heavily dependent on marine resources, fish being one of the two staple foods and an important economic resource, Kiribati and Nauru feared that radioactive waste endangered the marine environment and presented scientific evidence in support of their claim. Their report claimed that radioactivity had leaked from old drums into the marine environment and had entered into the oceanic food chain, that existing knowledge of behavior of radioactivity in the ocean was based on incorrect and uncertain theoretical models, and finally that experts disagreed on low-level radiation hazards ⁶².

The Nordic states – Denmark, Finland, Iceland, Norway and Sweden – proposed a ban on dumping to start 1990. They agreed in principle with the proposal of Kiribati and Nauru but wished to give dumper nations some time to develop land-based alternatives. In the intermediate period, dumping should be more strictly controlled and the amount of waste should not exceed the present level. Furthermore, only existing dump sites should be used, and no new dumpers should be allowed. The Marine Pollution Division of the Danish National Agency of Environmental Protection (NAEP) formulated the Danish policy but failed to win Nordic support for the Nauru and Kiribati proposal. Danish scientists, who like their international peers considered the risks of dumping low-level radioactive waste to be

⁶⁰ Jon Van Dyke *et.al.* 'Nuclear Activities and the Pacific Islanders', 743. Other Pacific Basin nations, like Fiji, have chosen not to do so because they have considered the Convention too lenient as demonstrated by Japan's claim that its proposed dumping was in accord with the convention. Kiribati – formerly the Gilbert islands, which gained independence from Britain in 1979 – became a member of the London Dumping Convention in June 11, 1982; Nauru – a former United Nations trust territory that became independent in 1968 – became a member in August 25, 1982.

⁶¹ For the meeting discussion, see LDC document 7/12 'Report of the Seventh Consultative Meeting', 9 March 1983, 19–30.

⁶² IMO document LDC7/INF.2 'Evaluation of Oceanic Radioactive Dumping Programmes. Submitted jointly by Kiribati and Nauru', 23 September 1982.

very low, were not conferred with⁶³. Two of the Danish government officials later joined Greenpeace⁶⁴.

The Spanish delegation told the consultative meeting that dumping in the North Atlantic Ocean was a cause of great domestic public concern. Spain considered that the effects on human health and long-term consequences of dumping were the subject of scientific controversy and proposed suspension of dumping operations until the necessary research and evaluation were completed.

The delegation from Ireland, one of the countries nearest the dump site then in use, was opposed, in principle, to the dumping of radioactive wastes at sea and supported the Nordic proposal. The Irish government was 'coming under increasing domestic pressure from a public opinion which was not convinced that dumping did not constitute a hazard'⁶⁵. Ireland maintained that governments wishing to dump had the responsibility to demonstrate that dumping was safe.

The British delegation replied that the documents submitted by Kiribati and Nauru did not provide the scientific and technical basis required for amendment of the convention. The convention should consequently not be amended. The delegation was of the opinion that the onus of proof that dumping was unsafe rested with those proposing to change the convention. Britain failed, however, to get support for this view⁶⁶. Switzerland fully supported the British position.

Also the United States supported the British position, stressing that a change of the convention to ban radwaste disposal should be based on sound scientific evidence of adverse health effects and damages to the marine environment. Dr. Charles D. Hollister from Woods Hole Oceanographic Institute, Massachusetts, one of America's most respected marine

⁶³ Interview with Asker Aarkrog, Head of Ecology Section, Environmental Science and Technology Department, Risø National Laboratorium, Denmark (March 20, 1992).

⁶⁴ Interview with Kirsten F. Hansen, The National Agency of Environmental Protection (NAEP), Hørsholm, Denmark (January 17, 1990).

⁶⁵ LDC document 7/12 'Report of the Seventh Consultative Meeting', 22-23.

⁶⁶ Rob Edwards 'Wasting the Ocean', *New Statesman*, 1 July 1983, 6.

research centers, concluded that 'the Davis paper is clearly not the balanced scientific evaluation claimed by the authors and thus it is my recommendation that no amendments to the London Dumping Convention be considered until such an evaluation is completed' ⁶⁷.

The Netherlands delegation explained to the meeting that it was looking for possibilities to avoid dumping from 1983 and intended to store waste on land. Due to difficulties in finding suitable disposal alternatives, dumping in 1983 could perhaps not be avoided. Japan believed that sea disposal of radioactive wastes would not adversely affect the marine environment when international regulations, which presently rested on firm scientific basis, were followed. The Japanese government therefore strongly opposed proposals for prohibiting sea disposal.

During informal negotiations among the various delegations it became clear that the proposal to amend the convention would not receive support by a sufficient number of governments. Agreement was reached, however, that the scientific basis of the proposal by Nauru and Kiribati should be reviewed by an expert group. The results of such a study should be discussed in 1985, at which time further action should be taken.

Spain then proposed a moratorium resolution – according to LDC, resolutions require a simple majority – which meant a suspension of all dumping at sea pending completion of such an expert group study of effects of dumping of low-level radioactive waste on the marine environment and human health ⁶⁸. In a subsequent roll call vote, which the United

⁶⁷ LDC document 8/5 *The Dumping of Radioactive Wastes at Sea: Activities Related to the Sea Disposal of Radioactive Wastes. Critical Studies and Comments to the Report 'Evaluation of Oceanic Radioactive Dumping Programmes. Submitted by France'*, 9 December 1983, Annex 1. Dr. Hollister claimed that his scientific work on the geological effects of deep sea currents was misinterpreted by Davis et al. Dr. Hollister is one of the chief U.S. spokespersons of sub-seabed disposal of high-level radioactive wastes. For one of Hollister's many publications, see K.R. Hinga, G. Ross Heath, D. Richard Anderson, and Charles D. Hollister 'Disposal of High-Level Radioactive Wastes by Burial in the Sea Floor', *Environmental Science Technology* 16 (1982), 28A-37A. For Hollister's involvement in this issue, see Edward L. Miles, Kai N. Lee and Elaine M. Carlin, *Nuclear Waste Disposal under the Seabed: Assessing the Policy Issues* (California: University of California, 1985).

⁶⁸ For this moratorium resolution, see Appendix C.

States and Britain failed to block ⁶⁹, 19 countries – Spain, Portugal, the Nordic countries, Ireland, Canada and almost all developing countries – voted in favor of the Spanish proposal ⁷⁰. The sponsors of the moratorium resolution easily persuaded developing countries – none of the few developing countries producing radioactive waste conduct ocean dumping – to support the moratorium ⁷¹. The group of countries considering or involved in dumping – Japan, the Netherlands, South Africa, Switzerland, Britain and the United States – voted against the resolution. Five countries – Brazil, France, Federal Republic of Germany, Greece and the Soviet Union – abstained. While the moratorium resolution was not legally binding on governments, several delegations indicated that it was morally binding. The nuclear industry, among others, thus expected that continued ocean dumping would 'result in a substantial political storm' ⁷².

Very significantly, Britain immediately indicated it would not be bound by the decision ⁷³. Britain planned to dump 3500 tonnes low-level radioactive waste, representing more than 1500 curies of alpha radiation and some 150,000 curies of beta and gamma radiation in the Atlantic Ocean ⁷⁴. The Swiss delegation also expressed the view that Switzerland did not feel bound by the resolution. Switzerland intended to dispose of relatively small amounts, but would stop dumping in 1984 ⁷⁵. Netherlands explained it had

⁶⁹ Clifton E. Curtis 'Ocean Dumping Nations Vote Radwaste Suspension', *Oceanus* 26 (1983), 76–77. See also Clifton E. Curtis 'Radwaste Dumping Delayed. An International Moratorium Keeps Nuclear Wastes at Bay', *Oceans* 16 (1983), 22–23. See also 'London Dumping Convention – 7th Consultative Meeting', *Environmental Policy and Law* 10 (1983), 83–85.

⁷⁰ Countries voting in favor of the Spanish resolution were Argentina, Canada, Chile, Denmark, Finland, Iceland, Ireland, Kiribati, Mexico, Morocco, Nauru, New Zealand, Nigeria, Norway, Papua New Guinea, Philippines, Portugal, Spain, and Sweden.

⁷¹ Interview with Jose Juste Ruiz, Spanish delegate to the LDC meetings, London, (November 29, 1991).

⁷² 'A Call for a Two-Year Halt on Ocean Disposal', *Nuclear News*, March 1983, 120.

⁷³ Pearce Wright 'Britain Defies Ban on Dumping Waste', *The Times*, February 18, 1983.

⁷⁴ Fred Pearce 'Seamen Pull the Plug on Radioactive Dumping', *New Scientist*, June 30, 1983.

⁷⁵ Rob Edwards 'Wasting the Ocean', *New Statesman* 1 July 1983, 6.

difficulties disposing of low-level radioactive waste on land and therefore might have to carry out dumping in the summer 1983. It became clear later that the French government intended to participate in the 1984 dumping operation ⁷⁶.

The United States explained that its vote reflected its concern that decisions whether to dump should be taken on the basis of scientific and technical evidence. Because of its attempt to keep the resolution from coming to a vote, however, many delegations and NGOs doubted whether that was the true reason ⁷⁷.

As often happens in international negotiations, the United States delegation did not reveal its real concerns. Importantly, the administration did not welcome the legislation on radwaste disposal passed by Congress in 1982. The U.S. Navy was still faced with the problem of disposing of its retired nuclear submarines and preferred to keep open the option of ocean disposal. Moreover, the U.S. marine scientific community generally did not support an unqualified ban on ocean dumping of waste, radioactive wastes included; U.S. legislators and the public, it was felt, misperceived the risks involved in ocean dumping. A report released in 1984 by the National Advisory Committee on Oceans and Atmosphere (NACOA), co-written with NOAA, recommended that Congress and the administration revise the policy of excluding the use of the ocean for low-level radioactive waste disposal. Ocean disposal should not, however, start before the needed research efforts and monitoring of the fate and effects of disposal were established ⁷⁸. In the view of the U.S. marine

⁷⁶ 'Ocean Disposal Operations to Continue', *Nuclear News*, July 1983, 50.

⁷⁷ For governments and NGOs' doubts about the U.S. reasoning, see Clifton Curtis 'Radwaste Dumping Delayed. An International Moratorium Keeps Nuclear Wastes at Bay', *Oceans* 16 (1983), 22-23.

⁷⁸ National Advisory Committee on Oceans and Atmosphere '*Nuclear Waste Management and the Use of the Sea: A Special Report to the President and the Congress*'. John A. Knauss - then professor of oceanography, University of Rhode Island; since August 1989, Under Secretary for Oceans and Atmosphere, U.S. Department of Commerce - chaired the NACOA Panel on Nuclear Waste Management. Knauss advocates the oceans as a disposal option and claims that they generally are not polluted: 'Pollution is not a problem in the open ocean. Pollution is a problem in confined harbors and bays'. See Andrea Corell 'Surprises from Ocean Conference' *Oceans* 19 (1986), 9. Knauss has recently addressed same theme in a speech titled '*The Health of the Ocean or Boston Harbor is not the Sargasso Sea*' (delivered at the MIT, October 25, 1990).

scientific community, an international ban on ocean dumping would instead be similar to 'doing the same mistake twice'⁷⁹. To the surprise of members of the international dumping regime, the United States' foreign policy on radwaste disposal, which is the domain of the executive branch of government, consequently was – and still is – not identical to domestic policy.

To prevent the scheduled dumping, Greenpeace at this point set out to broaden opposition against nuclear ocean dumping. Greenpeace took contact with the National Union of Seamen (NUS), the British seamen's organization, hoping that the union would boycott the dumping planned for summer 1983⁸⁰. The initiative was successful. In March 1983, the British seamen, concerned primarily about their safety when handling the waste, passed a resolution in favor of halting ocean dumping of radioactive materials⁸¹. One month later, the opposition was further strengthened when the Transport and General Workers' Union (TWGU), the train drivers' union (ASLEF), and the National Union of Railwaymen (NUR), at a meeting organized by Greenpeace, agreed on an attempt to halt ocean dumping of radioactive waste⁸². In June of the same year, the British seamen announced a ban on handling the waste. The seamen refused to crew a 'Greenpeace-proof' ship – the ship had been fitted with a hole in the hull through which drums of waste could be dropped without being interfered with by Greenpeace – which had been chartered by Britain, Belgium and Switzerland to carry out dumping⁸³. The TWGU and the ASLEF similarly called on their members not to handle or transport the waste. Transport union boycotts were also adopted

⁷⁹ Bryan C. Wood-Thomas, environmental scientist, Marine Policy Programs, Office of International Activities, U.S. EPA. Interviewed August 29, 1991, Washington, D.C., and London, November 27, 1991. Confirmed by U.S. source who has asked to remain anonymous.

⁸⁰ Fred Pearce, *Green Warriors*, 55. Herb Short 'Sea Burial of Radwaste: Still Drowned in Debate', *Chemical Engineering*, March 5, 1984, 14–18.

⁸¹ 'Four Unions Back Ban on A-Waste Dumping', *The Guardian*, April 7, 1983.

⁸² *Ibid.* and Tony Samstag 'Unions Act to Block Nuclear Dumping', *The Times*, April 7, 1983.

⁸³ Fred Pearce 'Seamen Pull The Plug on Radioactive Dumping', *New Scientist* 30 June 1983, 924. Many described the ship as 'Greenpeace-proof'. See, for example, Tony Samstag 'Unions Act to Block Nuclear Dumping', *The Times*, April 7, 1983.

in Switzerland and Belgium⁸⁴.

Furthermore, if the British government, as the unions expected, let the armed forces carry out the dumping, an armada of protest vessels was expected to sail from Spain to converge on the dumping site. 'We understand there are already plans for quite a lot of vessels to leave Spain', explained an executive officer of TGWU, 'and we would hopefully form part of that armada'⁸⁵. In February and July 1983, Spanish 'Friends of the Earth', ecologists and left-wing protestors demonstrated before the British Embassy in Madrid in protest against the plan to dump. In July, more than 150 British flags were burnt in several towns and cities in Galicia, and in one city Mrs. Thatcher was burnt in effigy⁸⁶.

In September, the British opposition was significantly strengthened when the seamen's union won backing from the Trade Unions Congress (TUC) for a motion condemning the use of the world's oceans as a dumping ground for nuclear waste and demanding that development of land-based disposal facilities be accelerated⁸⁷. The Union Congress furthermore urged the British government to comply with the decision made at the February meeting of the international dumping regime⁸⁸. At the end of August 1983, the British government announced that it had given up its dumping plans, together with the Belgian and the Swiss governments⁸⁹. On the eve of the 1985 meeting of the members of the international dumping regime, the general secretary of TUC and the British seamen reiterated

⁸⁴ C.E. Curtis 'Radwaste Disposal Risks Assessed at LDC Meeting', *Oceanus* 27 (1984), 68.

⁸⁵ John Ardill 'Unions to Block Dumping of Nuclear Waste in Atlantic', *The Guardian*, June 18, 1983.

⁸⁶ Pearce Wright 'Protesters Attack Nuclear Dumping', *The Times*, February 15, 1983. Harry Debelius 'Spaniards Pelt British Embassy', *The Times*, July 12, 1983.

⁸⁷ The position of the seamen was that 'radioactive waste should not be dumped irretrievably but should be stored in above-ground, engineered facilities in a location acceptable to the local communities involved'. Tony Samstag 'Talks on Radioactive Dumping', *The Times*, September 23, 1985.

⁸⁸ The decision was carried by 7,150,000 votes to 2,764,000. 'Boycott of Nuclear Dumping at Sea', *The Times*, September 10, 1983. 'Slater Fears Nuclear Waste May be Dumped on Seabed in Submarine', *The Guardian*, September 10, 1983.

⁸⁹ Andrew Blowers, David Lowry, and Barry D. Solomon, *The International Politics of Nuclear Waste*, 82. For the fate of the radioactive waste, see U.K. House of Lords 'Nineteenth report', 1987-88, 261-62.

their opposition to any British plans to resume dumping⁹⁰. The International Transport Unions Federation, in addition, was 'putting its full weight behind a ban and could force dumping nations to toe the line'⁹¹.

The eighth consultative meeting of the international dumping regime, taking place in February 1984, agreed on a more precise structuring of the review of effects of dumping of low-level radioactive waste on the marine environment and human health⁹². It was decided that a panel of twenty-two international experts nominated by the International Council of Scientific Unions (ICSU), an UN-based advisory scientific body, and the IAEA should prepare a basic document which later would be examined by an expanded panel including experts from governments, international organizations and NGOs. This decision was a compromise between a group led by Britain, wanting the IAEA and the ICSU to select the experts to review the evidence and make recommendations for consideration at the next consultative meeting, and another group of governments, led by Canada and Nauru, which felt that experts reflecting different interests and regions should review the evidence and make recommendations⁹³. The United States in particular insisted that the representatives from NGOs were indeed experts in the relevant fields⁹⁴. Experts should be knowledgeable in fields such as marine ecology, oceanography, radiological protection, marine geochemistry and marine mathematical modelling⁹⁵.

⁹⁰ A minor controversy between the four transport unions determined to stop the dumping and the TUC took place prior to the positions of the transport unions and the TUC were made public. Rob Edwards 'TUC Muffles Union Discord over Sea-Dumping of Nuclear Waste', *New Statesman*, September 6, 1985.

⁹¹ Jane Dibblin 'Britain is in the Dock'.

⁹² For the meeting discussion, see IMO document 8/10 '*Report of the Eight Consultative Meeting*', 8 March 1984, 17-33.

⁹³ Clifton E. Curtis 'Radwaste Disposal Risks Assessed at LDC Meeting'. See also Curtis '*Radioactive Wastes: Reflections on International Policy Developments Under the London Dumping Convention*', 5-6.

⁹⁴ For the discussion, see '*London Dumping Convention - 7th Consultative Meeting*', 83-84.

⁹⁵ Invited experts should cover the following disciplines: radiological protection, radiation biology, radioecology, radioactive waste management, modelling, marine biology, physical oceanography, marine geochemistry, marine ecology, and marine geology.

The experts did not recommend whether to amend the international dumping regime. Perhaps surprisingly, they judged that the question was not a wholly scientific-technical one⁹⁶. As the expert report said: 'The report does not endorse the dumping of radioactive waste at sea nor does it condemn it. In the view of the panel, such a decision could involve value judgements which go beyond consideration of the technical and scientific evidence'⁹⁷. However, as to the risks of dumping, the expert concluded that 'the calculations show that any risk to individuals from the use of the [Atlantic] dump site is very low, both in relation to other common radiation risks such as that from natural background radiation and to the risk that corresponds to any of the dose limits or upper bounds that would apply following current international radiation protection recommendations'⁹⁸.

Within the expanded group of experts, with representatives from governments and NGO Greenpeace, some proposed to make a clear statement which could be used by the consultative meeting in reaching a final decision⁹⁹. They suggested that 'no scientific or technical grounds could be found to prohibit the dumping at sea of all radioactive wastes,

⁹⁶ In a Weinbergsk sense, scientists noted that the issue really was a 'trans-scientific' one: trans-science, a term coined by American nuclear scientist Alvin Weinberg, is a set of issues and questions existing between science and policy 'which can be asked by science and yet which cannot be answered by science'. A. Weinberg 'Science and Trans-Science' *Minerva* 10 (1972), 209-22. For an insightful discussion of the concept, especially its political ramifications, see Shelia S. Jasanoff 'Contested Boundaries in Policy-Relevant Sciences', *Social Studies of Science* (May 1987), 1-51.

⁹⁷ IMO. Expanded Panel on the Review of Scientific and Technical Considerations Relevant to the Proposal for the Amendment of the Annexes to the London Dumping Convention Related to the Dumping of Radioactive Wastes. *Introduction of Report Prepared by the Panel of Experts. The Disposal of Low-Level Radioactive Waste at Sea. (Review of Scientific and Technical Considerations). Note by the Secretariat*. IMO Doc. LDC/PRAD.1/2/Add.2, 1 May 1985, 17.

⁹⁸ IMO. Expanded Panel on the Review of Scientific and Technical Considerations Relevant to the Proposal for the Amendment of the Annexes to the London Dumping Convention Related to the Dumping of Radioactive Wastes. *Introduction of Report Prepared by the Panel of Experts. Note by the Secretariat*. IMO Doc. LDC/PRAD.1/2, 12 April 1985, 136. On the question of deep sea fauna, 'the results so far indicate that there is no risk of significant damage to local populations ... at or near the North-East Atlantic dump site'. *Ibid*, 137. Upper bound signifies the maximum amount of total human irradiation permitted from a certain source.

⁹⁹ Since 1981 Greenpeace International has had status as observer at consultative meetings of the international dumping regime. The organization is allowed to make oral statements and submit written material. LDC document 6/12 *Report of the Sixth Consultative Meeting*, 3-4.

provided that dumping is carried out in accordance with internationally agreed procedures and controls' ¹⁰⁰. But a number of representatives opposed any such categorical statement. There was agreement on a compromise stating 'no scientific or technical grounds could be found to treat the option of sea dumping differently from other available options when applying internationally accepted principles of radioprotection to radioactive waste disposal' ¹⁰¹. The British press, however, reported that 'all the parties who attended seem to come away with a different version of the result' ¹⁰². The coming consultative meeting would consequently have to reconsider the moratorium without clear recommendations from its scientific advisers.

The report of the expanded panel was the focus of the ninth consultative meeting of the international dumping regime, held in September 1985 ¹⁰³. Governments reached very different conclusions from the findings of the report. Nauru, Spain, Denmark, Norway, Australia, New Zealand, Saint Lucia, Iceland, and Brazil found the report supported their fears about radioactive dumping. Several of them stressed that land disposal was safer, more controllable and reversible than ocean disposal. Governments which were in the process of developing land-based alternatives, i.e. Finland, Sweden, the Netherlands and the Federal Republic of Germany, also opposed ocean dumping. Spain and Ireland explained that factors other than scientific and technical ones, for example availability of land-based disposal alternatives, also should be taken into account. Several of the governments opposing dumping as well as international environmental organizations stressed that available knowledge was insufficient for it to be modelled adequately and with a sufficient margin of safety. A representative of the scientific panel, however, criticized that the scientific findings

¹⁰⁰ IMO 'Report of Intersessional Activities Relating to the Disposal of Radioactive Wastes at Sea, Including the Final Report of the Scientific Review'. IMO Doc. LDC 9/4, 24 June 1985, 25-27.

¹⁰¹ Ibid.

¹⁰² Paul Brown 'Britain Seeks Allies to Lift Nuclear Dumping Truce', *The Guardian*, September 21, 1985.

¹⁰³ For the meeting discussion, see IMO document 'Report of the Ninth Consultative Meeting', LDC 9/12, 18 October 1985, 16-41.

seemed to have been 'ignored, distorted or misinterpreted by some parties in unprofessional attempts to exaggerate the uncertainties' ¹⁰⁴.

Japan explained that although it presently did not intend to dump without the consent of the Pacific region it needed to dispose of radioactive waste and, as a small country, it had to consider ocean disposal. Provided that scientific and technical studies showed disposal would be safe, the option should remain open. France concluded that no scientific grounds for suspension of ocean dumping had been found and that the option should be reopened. Britain and the United States also argued that the available scientific evidence did not support a change of the convention. The United States suggested to end the suspension of dumping. Belgium and Switzerland supported the position of the United States. Thus, the panel report did not help to resolve the conflict. As a U.S. delegation member caustically remarked later, 'both those for and those against sea disposal have pointed to the panel's conclusion as vindication of their own positions' ¹⁰⁵. 'Scientifically', he noted, 'you seem to be able to argue either way' ¹⁰⁶.

Intense negotiations followed but did not result in agreement. Although Britain had hoped to avoid a vote altogether, a resolution co-sponsored by Spain and fifteen other states for an indefinite moratorium pending further considerations of the issues involved was then brought to a vote ¹⁰⁷. The group of governments supporting a moratorium had grown, mostly because several developing countries had joined, to 25 governments; 6 governments, almost the same that had been against the 1983 moratorium, opposed it; and 7 abstained ¹⁰⁸.

¹⁰⁴ IMO 'Report of Intersessional Activities Relating to the Disposal of Radioactive Wastes at Sea, Including the Final Report of the Scientific Review', 22.

¹⁰⁵ Alan B. Sielen 'Sea Changes? Ocean Dumping and International Regulation', 10.

¹⁰⁶ Interview with Alan B. Sielen, August 29, 1991, Washington, D.C.

¹⁰⁷ Paul Brown 'Open-Ended Nuclear Dumping Ban: Britain Loses Strong Rearguard as Vote Switches Burden of Proof', *The Guardian*, September 27, 1985.

¹⁰⁸ For the ban were Australia, Brazil, Chile, Cuba, Denmark, Dominican Republic, Finland, West Germany, Haiti, Honduras, Iceland, Ireland, Kiribati, Mexico, Nauru, Netherlands, New Zealand, Norway, Oman, Panama, Papua New Guinea, Philippines, St. Lucas, Spain, Sweden. Against the ban were Canada, France, South Africa, Switzerland, United Kingdom and the United States. Abstentions: Argentina, Belgium, Greece, Italy, Japan, Portugal and the Soviet Union. A few months later, Canada changed its

Governments opposing the moratorium resolution protested fiercely against the vote¹⁰⁹. The British press reported that 'UK threatens to withdraw from convention on nuclear dumping' and 'the big nuclear nations, including the United States, had pointed out that they would have to reconsider their position if dumping was banned'¹¹⁰. The United States cautioned governments that 'similar action in the future on other important issues will not only undermine the fabric and regulatory framework of the London Dumping Convention, but also tend toward its politicization'¹¹¹. The Canadian chairman of the consultative meeting again appealed for a compromise at a subsequent press conference saying that it was 'better for all countries to take one step forward than some to take five steps back and others none at all'¹¹².

The resolution called for suspension of all ocean dumping of radioactive wastes pending studies of wider legal, social, economic and political aspects of resuming radwaste disposal. The resolution was thus intended to broaden the dumping regime's decision-making principle to include considerations other than scientific and technical ones. While the exact nature of such considerations were not clearly spelled out, future proposals to dump should be examined in the light of what international law said about liability, duty to

negative vote to a yes.

¹⁰⁹ For this resolution, see Appendix D.

¹¹⁰ Paul Brown 'UK Threatens to Withdraw from Convention on Nuclear Dumping', *The Guardian*, September 25, 1985.

¹¹¹ According to the meeting report – members of the international dumping regime adopt the meeting report at the end of their meeting, and it might therefore not be an entirely accurate account of what was said – Britain told the meeting that 'such tactics had brought the Ninth Consultative Meeting very close to the point at which some Contracting Parties might have to reconsider the terms of their participation in the Convention'. For the British and American statements, see IMO Document 'Report of the Ninth Consultative Meeting', annex 5, 10–11.

¹¹² Paul Brown 'UK Threatens to Withdraw from Convention on Nuclear Dumping'. The chairman later circulated a letter to all members in which he pointed out that 'the integrity of the Convention could suffer if a sequence of amendments were adopted that were unacceptable to some Contracting Parties'. He also noted that decisions on the annexes should be based on scientific and technical considerations. See Edward L. Miles, *Science, Politics, and International Ocean Management: The Use of Scientific Knowledge in International Negotiations*, 49.

cooperate, the oceans status as 'common heritage of mankind', and so on ¹¹³. Economic considerations would, or could, include for example losses to the fishing industry. Dumping in the Atlantic Ocean, for example, has repeatedly resulted in reduced sales of fish in Spain ¹¹⁴. In 1980, the Japanese market for sablefish collapsed after a photograph of a sablefish swimming near drums dumped in the Pacific Ocean off San Francisco was published in newspapers around the world. All orders for sablefish, not just ones from the U.S. West Coast, were cancelled ¹¹⁵.

Risks and costs of land disposal also had to be examined. It would, in addition, be examined whether it could be proven that radwaste disposal would not harm human health or cause significant damage to the marine environment. Significantly, the resolution thus shifted the onus of proof to those interested in dumping who in the future would have to demonstrate that no harm would be inflicted on the marine environment or humans ¹¹⁶. This decision, in particular, was a significant victory for those opposing radwaste disposal and delegations considered that such a proof could not be made ¹¹⁷.

At the tenth consultative meeting of the international dumping regime, held in October 1986, a few governments restated their position on radioactive dumping ¹¹⁸. The debate from the previous year was not reopened. The supporters of the moratorium stressed

¹¹³ For the oceans' legal status as common heritage of mankind, see Stephen D. Krasner, *Structural Conflict*, 245 ff.

¹¹⁴ Judith Spiller and Cynthia Hayden 'Radwaste at Sea: A New Era of Polarization or a New Basis for Consensus', in *Ocean Development and International Law* 19 (1988), 352.

¹¹⁵ Katherine Bishop 'U.S. to Determine if Radioactive Waste in Pacific Presents Danger', *New York Times*, January 20, 1991.

¹¹⁶ Compare with Appendix A, article 1.

¹¹⁷ Paul Brown 'Open-ended Nuclear Dumping Ban: Britain Loses Strong Rearguard Action as Vote Switches Burden of Proof', *The Guardian*, September 27, 1985. For an environmental NGO's view on the importance of this decision, see Clifton Curtis 'Radioactive Wastes: Reflections on International Policy Developments under the London Dumping Convention', 14.

¹¹⁸ For the meeting discussion, see IMO document '*Report of the Tenth Consultative Meeting*', LDC 10/15, 5 November 1986. For statements made by contracting parties during the discussion on radwaste disposal, see Annex 10.

that especially economic and social factors of ocean dumping should be examined. No clear terms of reference for the coming studies were established, and governments could contribute studies on the various aspects on a voluntary basis. The studies are expected to be completed in 1992 or 1993.

In 1988, the British government formally announced that radwaste disposal would not resume ¹¹⁹. In 1989, a proposal to dump decommissioned nuclear submarines by the British Ministry of Defence was rejected by ministers ¹²⁰. While domestic regulation in the United States practically prohibits ocean dumping of low-level radioactive wastes, the administration has not definitively cancelled plans to dump low-level radiative wastes ¹²¹. However, resuming dumping would need the approval of Congress which is unlikely given public sentiment on this issue ¹²². Japan has presently no plans to dump although the option is not ruled out by domestic law ¹²³.

An attempt to amend the London Dumping Convention to finally prohibit dumping of low-level radioactive waste surfaced at the fourteenth consultative meeting of the

¹¹⁹ R.H. Flowers 'Radioactive Waste Management in the United Kingdom', *Proceedings of the 1989 Joint International Waste Management Conference*. Vol. 1. Law and Intermediate Level Radioactive Waste Management, 108.

¹²⁰ David Fairhall 'MoD Favours Scuttling Old Nuclear Subs', *The Guardian*, April 13, 1989. John Pienaar 'Nuclear Subs May Be Scuttled', *The Independent*, April 13, 1989.

¹²¹ In 1989, EPA considered regulations for ocean disposal of low-level radioactive wastes. See F.L. Galpin, W.F. Holcomb, J.M. Gruhlke and D.J. Egan, Jr. 'The U.S. Environmental Protection Agency's Radioactive Waste Disposal Regulatory Activities', in S.C. Slate, R. Kohout, and A. Suzuki, eds., *Proceedings of the 1989 Joint International Waste Management Conference. Vol. 2: High Level Radioactive Waste and Spent Fuel Management* (New York: The American Society of Mechanical Engineering, 1989), 177-80.

¹²² Interview with Robert S. Dyer (Office of Radiation Programs, Chief of Environmental Studies Branch, U.S. EPA.), September 27, 1991, Washington, D.C. For recent concern in Massachusetts, see Dianne Dumanoski and Jeff McLaughlin 'Probe of Ocean Waste Site Urged', *The Boston Globe*, September 17, 1991. For recent concern in California, see 'Atomic Waste Reported Leaking in Ocean Sanctuary Off California', *New York Times*, May 7, 1990; 'US Sees Threat in Nuclear Dump', *The Boston Globe*, May 6, 1990; 'Radioactive Waste Threatens Sanctuary', *The Washington Post*, May 6, 1990. See also Katherine Bishop 'U.S. to Determine if Radioactive Waste in Pacific Presents Danger', *New York Times*, January 20, 1991.

¹²³ Takao Kuramochi, first secretary, Embassy of Japan, Washington, D.C. Interviewed August 30, 91.

international dumping regime, held in November 1991 ¹²⁴. A group of countries, led by Nauru and the Scandinavian states, suggested the inclusion of a ban on ocean dumping of radioactive wastes in a so-called amendment conference planned to take place in 1992 or 1993 ¹²⁵. But the consultative meeting wished to postpone the decision on such a conference until after the so-called Rio Conference, officially the United Nations Conference on Environment and Development (UNCED), in June 1992. The proposal for an amendment conference will therefore be considered at the consultative meeting in fall 1992.

Summary

This chapter has described the establishment in 1983 of the global ban on radwaste disposal within the international dumping regime. Since then, for the first time since World War II, no radioactive materials have been ocean dumped. This ban has thus effectively terminated ocean dumping of low-level radioactive waste.

This significant policy development does not conform well to the models suggested by Realists, epistemic community theorists and complex interdependence theorists. Obviously, neither hegemonic leadership nor an international network of ecology-oriented marine scientists have caused the ban. Although the complex interdependence model stresses the importance of voting power, coalition-building and control over elite networks within international regimes, it cannot fully explain this policy development. As described in this chapter, the public, trade unions, international environmental interest groups and governments have effectively pressured large nuclear nations to cease ocean dumping. Chapter 8 will discuss the implications for our understanding of policy change within international environmental regimes and in particular emphasize the need to improve present

¹²⁴ The author attended the meeting as an observer.

¹²⁵ The proposal for an amendment conference of the London Dumping Convention was made by Denmark, Norway, Nauru and Sweden. Australia, Mexico, New Zealand, and the Solomon Islands appeared in brackets on the proposal distributed to the consultative meeting, i.e. these countries were not yet official sponsors of the proposal.

understanding of the influence of international public opinion.

CHAPTER 8

EXPLAINING REGIME CHANGE: LESSONS FROM GLOBAL TERMINATION OF RADWASTE DISPOSAL

This chapter examines the three models of international regimes presented in Chapter 2, especially their predictions about regime change, in the light of the policy development described in the previous chapter ¹. Not surprisingly, the conclusion will be that none of the models are able to fully explain this policy development within the international dumping regime. Instead, this chapter will emphasize that social pressure on a global scale has caused the ban on radwaste disposal. This case thus inspires hope in those who believe that social pressure might beneficially be applied to solve international environmental problems. It will further be emphasized that international public opinion's denunciation of radwaste disposal is an essential element of this global social pressure. Thus, the global ban cannot be separated from a development, or change, in international public opinion on radwaste

¹ In the international regimes literature, regime change refers to changes in principles and norms of regimes, while changes in rules and decision-making procedures are changes within regimes. Thus, regime change is a fundamental, more dramatic change, while changes within regimes are less dramatic, supposedly happening more gradually. The change of policy on ocean dumping of low-level radioactive waste could therefore be considered a change within the international dumping regime: the moratorium on ocean dumping changed the previous rules governing this activity and the existing decision-making principle based on scientific and technical knowledge was changed to include broader social, economic, political and legal aspects. Although in accord with Krasner's definitions, characterizing the global ban on radwaste disposal as a change within the international dumping regime underplays that a substantial change of policy took place in the period 1983–85. As described in the previous chapter, the change in the rules and decision-making principles was indeed so dramatic that some governments decided to ignore them and considered leaving the regime.

The conceptual problem whether this policy development should be considered a regime change or a change within the regime results from the rather imprecise definitions used by regime theorists. On the other hand, perhaps this case is unique in the sense that a change of the rules with respect to radwaste disposal was decided in direct opposition to the interests of powerful governments who therefore furiously resisted the change but then, because of domestic support, eventually had to accept the change. To improve on this conceptual problem, I will suggest that a regime change has taken place but that the regime has proved itself to be robust. For a brief definition of robustness, see Chap. 1, footnote 48. For the widely accepted definition of regime change and changes within regimes, see Stephan D. Krasner 'Structural Causes and Regime Consequences: Regimes as Intervening Variables', 2–5.

disposal. The consequences for international regime theory are finally discussed and an entrepreneurial politics model, stressing mobilization of public opinion, the use of slogans, and determined policy entrepreneurs, is suggested as an alternative model of regime change.

Realism, epistemic communities, and complex interdependence

The three models of international cooperation examined in Chapter 2 made very different predictions about how international regimes, once they are constructed, are maintained and how and why they change. Realists expect the international dumping regime would be highly dependent on continued hegemonic leadership. Declining American leadership would, in their view, lead to regime collapse because states would follow their own individual interests.

As described in Chapter 7, however, a momentous international policy change with respect to radwaste disposal occurred despite the lack of support by the United States. Realists might argue that the lack of American leadership explains why the international dumping regime did not resolutely adopt the new international policy on radwaste disposal. Clearly, it is possible that American support of a change to the annexes could have influenced the position taken by other pro-dumping governments, and that a change to the annexes perhaps would have been supported by a sufficient number of governments. Moreover, if the United States had determinedly supported the ban, it might, as it has done in similar international environmental conflicts, have used sanctions of various sorts to pressure pro-dumping governments to follow suit ².

In this case, however, that lack of American leadership did not lead to non-cooperation and regime collapse. From the point of view of this theory, the global termination of radwaste disposal is completely unexpected since nearly all the world's

² In the case of drift net fishing, for example, the United States has backed pressure with threats of banning import of Japanese marine products, perhaps including pearls, a major import product. Steven R. Weisman 'Japan Yields to U.S. on Drift Net Fishing: Government, Citing Pressure, Says It Will Halt Practice in North Pacific', *International Herald Tribune*, November 27, 1991.

economic and military superpowers opposed the ban. This case thus does not support the Realist claim that powerful states can always ignore international regimes and even restructure regimes if they should wish to do so. The reason why this did not happen is, as described in Chapter 7, that powerful states lacked the necessary domestic support to rule, or alternatively ignore, the international dumping regime on the issue of radwaste disposal. Because Realists ignore the domestic level they cannot tell which foreign environmental policies governments can pursue within international environmental regimes.

Rationalistic Realists suggest a more benign version of the hegemonic stability theory. They stress that declining hegemonic support would not necessarily result in immediate regime collapse. By facilitating international cooperation – providing information, lengthening 'the shadow of the future', and facilitating linkages among issues – international regimes might, this group of scholars claim, even persist beyond hegemonic support. But Rationalistic Realists would not expect policy development to happen as it did. Chapter 7 showed that small states used their control over the forum of an international regime to establish international rules which large pro-dumping states, due to development of domestic policies and protests against radwaste disposal, could not go against.

It follows from Realism's assumption of anarchy in the international system, meaning no central authority exists above states, that compliance with and monitoring of international agreements is left to the states themselves, i.e. reliance on self-enforcement. But this was clearly not the case. Greenpeace patrolled the oceans on the look-out for dumper ships and, in the case of Britain, successfully forged an alliance with domestic actors in order to pressure a recalcitrant government to comply with international rules. The British seamen, conversely, had 'regime interests' and urged the British government to comply with the rulings of the international dumping regime. Thus Greenpeace and other representatives of the international environmental community might under some circumstances compensate for the lack of an international authority to perform monitoring and enforce compliance with international environmental regimes ³.

³ According to several interviewees, it is relatively easy to detect ships violating the moratorium on radwaste disposal. The release of chlorofluorocarbons (CFCs), which deplete the ozone layer, from multiple sources in wide use into the atmosphere is for obvious reasons intrinsically more complex to

Furthermore, and very much in line with the thinking of United Nations experts involved in the regime-building process, the international dumping regime served as a global institution before which private citizen groups as well as governments could bring their protests concerning perceived hazardous dumping practices entailing transboundary risks ⁴. By providing a permanent international forum where the issue could be addressed, the regime served as the global focal point for environmental groups and governments protesting against radwaste disposal and in this way dramatically increased the international visibility of the issue. Furthermore, by transforming protests against radwaste disposal into a moratorium the regime had, as is further illustrated below, a significant political-normative impact which, in a dialectic way, further strengthened the opposition against radwaste disposal. Governments, especially the United States, recognized the importance of peer pressure and public opinion when they equipped the regime with a compliance mechanism in 1972. They agreed that an amendment of the annexes decided by two-thirds of those members present at a consultative meeting would apply to all members except those who made an official declaration rejecting it within 100 days after the decision had been taken ⁵. The reason for this was, in the words of one U.S. negotiator, that 'it was felt that the

monitor. Greenpeace has for example also served as 'unofficial monitor' in the case of the Convention on the Regulation of Antarctic Mineral Resources Activities. See David Laws 'The Antarctic Minerals Regime Negotiations', in Lawrence E. Susskind, Esther Siskind, and J. William Breslin, eds., *Nine Case Studies in International Environmental Negotiation* (Cambridge, Mass.: MIT-Harvard Public Disputes Program, 1990), 139.

⁴ Oscar Schachter and Daniel Serwer wrote in their UNITAR report concerned with marine pollution: 'Action in the area of marine dumping need not, however, come only through the initiative of international organizations and governments. In a number of countries, action on pollution problems of the 'dangerous practices' type has been stimulated largely through the initiatives of private citizens and concerned organizations who have taken pollution problems to court. The effectiveness of such private actions varies with the situation, but they must be considered an important mode of action where governments which are responsible for controlling pollution are participants in practices which may cause pollution. An international mechanism for handling complaints and grievances from private groups as well as governments might contribute to the control not only of marine dumping of wastes but to the control of other dangerous practices as well. Moreover, such a mechanism might be one form in which problems of international concern could be adequately discussed from both the technical and legal points of view'. *Marine Pollution Problems and Remedies*, 110. See also Chap. 5, footnote 12.

⁵ The United States delegation had suggested these rules for changes in the annexes. Archival material (j.no 82, B.89. December 6, 1972), 18. For the rules, see Appendix A, article 15 (2).

procedure adopted would be useful, in that it requires a positive act of refusal, theoretically made more difficult by publicity and peer pressure to accept the proposed amendment' ⁶. But publicity backfired in the radwaste disposal controversy. In summary, hegemonic leadership is eroded when lacking domestic support, when forcefully challenged by a transnational nongovernmental coalition, and when environmental regimes focus public attention on contested environmental policies.

Epistemic community theorists' view of international policy development differs markedly from the Realist view. They predict that the strength of the international dumping regime would vary with an ecological epistemic community's influence on domestic policy-making. Countries with strong representation of the ecological epistemic community would be the most active supporters of international commitments and the most successful in national compliance. Countries with weak representation of the ecological epistemic community would be less supportive of international commitments and would adopt weaker domestic ocean dumping controls.

The ban on radwaste disposal confirms that essential aspects of international environmental politics are ignored by the epistemic community model. Similar to the discussion in Chapter 6, a significant difference between the case of ocean dumping of low-level radioactive waste and the cases examined by epistemic community theorists – protection of the Mediterranean Sea against pollution, protection of the ozone layer, and protection of whales – concerns scientists' perception of the risk involved in radwaste disposal vis-à-vis the public's risk perception ⁷. In the case of radwaste disposal, modelling and studies convinced scientists that the risk involved was very low ⁸. As Chapter 7 quoted,

⁶ Terry L. Leitzell 'The Ocean Dumping Convention – A Hopeful Beginning', 513.

⁷ International regulation of CFCs has been analyzed from an epistemic community perspective in Peter M. Haas 'Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone', *International Organization* (Winter 1992), 187–224.

⁸ Divergence between the view of experts and that of the public and policy-makers is by no means restricted to the case of radwaste disposal. For examples, see several of the contributions in *Dædalus* 119 (Fall 1990) Special Issue *Risk*. See also Edith Efron, *The Apocalyptic*. For some of the problems of using science to legitimize environmental regulation, see Sheila S. Jasanoff 'Contested Boundaries in Policy-Relevant Sciences', *Social Studies of Science*, May 1987, 1–51.

the expert group advising the international dumping regime concluded that 'the calculations show that any risk to individuals from the use of the [Atlantic] dump site is very low'⁹. Thus the scientific community was, and still is, convinced that the risk from past dumping was 'exceedingly small'¹⁰. Therefore it is not simply the case that this international policy is based on rather limited scientific knowledge; instead it largely ignores expert opinion¹¹. Experts were therefore on the wrong side, so to speak, of the international environmental movement and public opinion in this case but were on the right side in those cases epistemic community theorists have examined. Although their model claims the opposite, policy development may therefore primarily, or to considerable extent, be attributed to public opinion and the international environmental movement and much less to expert opinion in those cases¹². It is therefore necessary that this model incorporates public opinion or, even

⁹ IMO. Expanded Panel on the Review of Scientific and Technical Considerations Relevant to the Proposal for the Amendment of the Annexes to the London Dumping Convention Related to the Dumping of Radioactive Wastes. *Introduction of Report Prepared by the Panel of Experts. Note by the Secretariat*, 136.

¹⁰ See Chap. 9, footnote 69.

¹¹ Relevant to the policy development of the radwaste disposal issue within the international dumping regime, a recent growing tendency in U.S courts has been noted to pass decision on questions concerning health impacts of substances, chemicals and various kinds of rays which scientists only can detect by using the most advanced measurement techniques but seldom can assure will cause no risk whatsoever. It is concluded, among other things, that 'the effect has been to downgrade the importance of professional standards, peer review – the industry norms, so to speak, of the scientific community. Authority has thus been taken away from scientific and professional communities, and given instead to individual scientists and professionals. Thus, science's traditional demands for replication, reinforcement, and consensus within the scientific community have gradually come to be ignored in court. Instead, litigation amplifies the poles and gives prominence to the eccentric. It downgrades science, medicine, engineering as professional disciplines. Their consensus standards count for less and less'. It is also stressed that too many resources are spent on such issues: 'Sooner or later courts, like other institutions, must find ways to move beyond the trivial or imaginary problems to more serious things'. Peter W. Huber 'Pathological Science in Court', *Daedalus* 119 (Fall 1990) *Risk* (Special issue), 103 and 115.

¹² Note the conclusion of an epistemic community-oriented case study in international regulation of commercial whaling: 'Yet the epistemic community of conservation-minded cetologists only briefly enjoyed predominant influence over policy. Most of the time, the influence of cetologists was outweighed by that of other groups, the industry managers until the mid-1960s and the environmentalists after the mid-1970s'. M.J. Peterson 'Whaling, Cetologists, Environmentalists, and the International Management of Whaling', *International Organization* 46 (1992), 182.

better, that epistemic community theorists develop a theory of domestic politics¹³. Judging from this case, the ecological epistemic community model tends to exaggerate the influence of experts on policy generally, while it minimizes the influence of public opinion and environmental NGOs¹⁴.

The epistemic community model's contribution to our understanding of international cooperation is its emphasis on the role of knowledge and ideas both when the content of a policy is defined and when it changes. Ironically, however, by stressing so-called theoretical knowledge, the model ignores the work of those social theorists who have inspired epistemic community theorists¹⁵. According to two social and cultural theorists: 'If the integration of an institutional order can be understood only in terms of the 'knowledge' that its members have of it, it follows that the analysis of such 'knowledge' will be essential for an analysis of the institutional order in question. It is important to stress that this does not exclusively or even primarily involve a preoccupation with complex theoretical systems serving as legitimations for the institutional order. Theories have also to be taken into account, of course. But theoretical knowledge is only a small and by no means the most important part of what passes for knowledge in a society. Theoretically sophisticated legitimations appear at particular moments of an institutional history. The primary knowledge about institutional order is knowledge on the pretheoretical level. It is the sum total of 'what everybody knows' about a social world, an assemblage of maxims, morals, proverbial nuggets of wisdom, values and beliefs, myths, and so forth'¹⁶. Therefore, the epistemic community model should broaden its view of knowledge when analyzing knowledge creation, communication and consensus formation. Presently, the model gives too much attention to policy-making

¹³ For similar criticism, see Helen Milner 'International Theories of Cooperation Among Nations', 489.

¹⁴ The influence of public opinion, also in the case of the Mediterranean, has been noted by others. See R.B. Clark 'The Mediterranean, the Media, and the Public Interest', 369-7. See also Baruch Boxer 'Mediterranean Pollution: Problem and Response' *Ocean Development and International Law* 10 (April 1982), 318-19.

¹⁵ See Peter Haas 'Introduction: Epistemic Communities and International Policy Coordination', 20-26.

¹⁶ Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality* (Garden City: Doubleday Anchor, 1967), 65.

within national and international bureaucracies¹⁷.

The complex interdependence model predicts that the international dumping regime largely would be dependent on continued legitimacy, while powerful states would have no means for forcing regime decisions upon other states. This model predicts that less powerful states through transnational coalition-formation and control of elite networks to some extent might use the international dumping regime to their advantage. However, in case the regime becomes too adverse to the interests of major powerful states, the model claims, they would destroy the regime.

The complex interdependence model best explains the development within the international dumping regime. Military force is inapplicable, small states have successfully used coalition-building to challenge big states. Issue-specific voting rules and decision-making principles also strengthen the influence of small states, and transnational actors are important players. But the model does not predict that a NGO, in this case an international pressure group, would forge a coalition with domestic interest groups and in this way effectively pressure a government to comply with international regulations. Similar to the Realist and the epistemic community model, the complex interdependence model ignores domestic politics.

Keohane and Nye suggest, as discussed in Chapter 2, that governments might choose not to destroy a regime in some cases since 'the costs of destroying a regime will be high when well-integrated elite networks exist on many levels among countries'¹⁸. This claim poses some difficulties since it is unclear what precisely should be understood by 'well-integrated elite networks on many levels among countries'. This case shows that governments which ignore international environmental protection rules might be 'pilloried'

¹⁷ Reflective scholar Ernst B. Haas might point out that this criticism is not relevant to the problem he analyses in his recent book: 'the change in the definition of the problem to be solved by a given [international] organization'. Haas, *When Knowledge is Power*, 3.

¹⁸ Keohane and Nye, *Power and Interdependence*, 57.

at home ¹⁹. While scholars have mostly paid attention to the costs non-cooperative governments suffer abroad, for example loss of reputation for cooperation, the domestic costs of non-cooperation, in the form of protests against and even boycotts of policy supported by government, are in this case significantly higher ²⁰.

It was mentioned in Chapter 1 that the annual meeting of the international dumping regime agreed in 1984, i.e. one year after the moratorium on radwaste disposal was introduced, that the international dumping regime was 'the appropriate forum' to examine the issue of seabed emplacement of high-level radioactive waste. In 1985, moreover, the expanded panel of experts concluded that 'present and any future dumping can only take place within the still-developing framework of international regulations'. As described in Chapter 7, however, the United Kingdom and the United States threatened in 1985 to abandon the regime despite the decisions to cooperate made earlier. It is not clear whether these threats were sincere. If they were, it throws doubt on the claim that governments will choose not to destroy regimes that are adverse to their interests 'when well-integrated elite networks exist on many levels among countries'. Instead, if the threats were only empty ones, nothing can be concluded. Large nuclear nations, however, would not be paying significant costs in case the international dumping regime was destroyed. Most probably, governments cooperating in nuclear waste management would simply continue to cooperate within the NEA/OECD and the IAEA, both forums being much more homogeneous in terms of membership and interests than the international dumping regime. But the domestic costs of destroying a regime might, as mentioned, outweigh the benefits.

¹⁹ Depending on the intensity of domestic pressure, the following generalization therefore seems valid. 'As green issues become international, it will become harder for any country to reconcile greenery and sovereignty. There will be international pressure for agreements to reduce the emission of 'greenhouse' gases, to stop polluting the sea, to transfer cash and technology to the third world and Eastern Europe to help them clean up. Governments that are reluctant to sign will be pilloried at home'. 'The Greening of British Politics', *The Economist*, March 3, 1990.

²⁰ Robert Keohane, for example, writes: 'As the Prisoners' Dilemma example suggests, social pressure, exercised through linkages among issues, provides the most compelling set of reasons for governments to comply with their commitments. That is, egoistic governments may comply with rules because if they fail to do so, other governments will observe their behavior, evaluate it negatively, and perhaps take retaliatory action'. *After Hegemony*, 103.

Judith Spiller and Cynthia Hayden have suggested that a declining trust in the ability of science to make predictions about the state of the environment and human health combined with an increase in member countries opposed to radwaste disposal caused the ban on radwaste disposal ²¹. While this explanation is somewhat satisfactory it overlooks that the London Dumping Convention determined the way the radwaste disposal conflict played out within the international dumping regime. Since a science-based decision-making principle was laid down in the London Dumping Convention, governments opposing radwaste disposal had no other choice than to stress scientific uncertainty and lack of knowledge when they wished to halt radwaste disposal. Also, most governments responded to public concerns about ocean dumping of radioactive waste and simply wanted to protect their fishing and environmental interests against the risk of radiation, however small. As a British regulator noted recently: 'I think everybody who objects to sea dumping accepts that the risks that are present look as if they are very low, and it is not really an argument on that basis at all. It is simply that, for example, people who get their living from the sea do not like anything put into the sea, they see it as a threat to their livelihood, and it becomes much more that kind of argument than anything at all to do with radiation' ²². Thus, although scientific uncertainty recently moved to the center of this international controversy, an international trend towards elimination of perceived threats to the health of the ocean rather than 'a new awareness of uncertainty's role in predictions about the environmental and human health' was the reason why this happened ²³. Neither do Spiller and Hayden explain why the pro-dumping governments apparently were unaware of such uncertainty.

Surprisingly enough, Spiller and Hayden ignore that public and governmental protests against ocean dumping of radioactive materials took place several years prior to the construction of the international dumping regime, the first regime to establish international

²¹ Judith Spiller and Cynthia Hayden 'Radwaste at Sea: A New Era of Polarization or a New Basis for Consensus', 345-66.

²² M.D. Hill, Head, Assessments Department, U.K. National Radiological Protection Board, witness quoted in U.K. House of Lords *Nineteenth Report*, 1987-88, 34.

²³ Judith Spiller and Cynthia Hayden 'Radwaste at Sea: A New Era of Polarization or a New Basis for Consensus', 349.

policy. As described in Chapters 1 and 4, protests had in 1960 obstructed French plans to dump radioactive waste in the Mediterranean Sea. The same year, after public uproar, the AEC stopped issuing licenses for sea disposal of radioactive wastes. International concerns persisted after the 1958 United Nations Law of the Sea Conference's failed attempt to agree on a common policy. 'Internationally', said a 1964 report sponsored by the AEC, 'there is considerable concern about utilizing the sea for the disposition of radioactive-waste materials' ²⁴.

However Spiller and Hayden correctly imply that the issue of scientific uncertainty did not loom large in the early 1970s. A belief that science could provide irrefutable, objective answers to questions about environmental damage prevailed at that time. The discovery of PCB, for example, raised expectations that measurement techniques existed that were able to accurately detect minute concentrations of pollutants ²⁵. United Nations officials involved in the regime-building phase and the preparations for the Stockholm Conference similarly hoped that: 'International environment protection on a wider scale may and should indeed be a highly technical matter once it has cleared some of its present political-emotional hurdles' ²⁶. Chapter 7 showed that reliance on science to provide unambiguous scientific evidence of environmental damage has turned out to be much more difficult than the public and advocates of regulation imagined ²⁷.

Since marine scientists in the early 1970s assumed that the oceans have a capacity to safely assimilate certain wastes, although the precise nature was not known, one of the

²⁴ Conrad P. Straub, *Low-Level Radioactive Wastes*, 99.

²⁵ See Sören Jensen 'The PCB Story,' *AMBIO* 1 (August 1972), 123-31.

²⁶ Paolo Contini and Peter H. Sand 'Methods to Expedite Environment Protection: International; Ecostandards', 56.

²⁷ Similar observation made in Harold K. Jacobson and David A. Kay 'Conclusions and Policy', in Kay and Jacobson, eds., *Environmental Protection: The International Dimension*, 310-11. More generally, see Giandomenico Majone 'Process and Outcome in Regulatory Decision-Making', *American Behavioral Scientist* 22 (1979), 561-83; see also Giandomenico Majone 'Science and Trans-Science in Standard Setting', *Science, Technology and Human Values* 9 (1984), 15-22. See also Sheila S. Jasanoff 'Contested Boundaries in Policy-Relevant Science'.

preambles of the London Dumping Convention refers to this capacity²⁸. But as Chapter 5 showed, this did not imply that scientific knowledge about this capacity should guide policy-making²⁹. If future cooperation should have a scientific foundation, it was just a matter of course that the convention assumed the existence of such an assimilative capacity³⁰. Other concerns also played a role. Governments that worried about the economic costs of pollution control and lack of sufficient disposal alternatives supported that the convention made a reference to the concept of assimilative capacity. The U.S. Department of Commerce, for example, strongly supported that the convention recognized the existence of the assimilative capacity of the ocean³¹. It should also be noted that since the developed countries, especially the United States, possessed most of the world's marine science expertise, science-based decision-making was in their interest³².

It is evident from the test of the Realist, the epistemic community, and the complex interdependence models of regime change that they do not explain the policy change with respect to radwaste disposal. Clearly, policy change was not caused by changes in relative power capabilities among states, or an international network of ecology-oriented marine scientists persuading or pressuring policy makers. Neither was it caused by small states' control of policy-making within an international organization. Instead, any explanation of the observed regime change should reflect that public concern for the health of the marine

²⁸ See Appendix A.

²⁹ Dolores Maria Wesson claims that the international dumping regime is 'unequivocally founded on the concept of assimilative capacity. It implicitly recognizes the value of this capacity as a natural resource in need of protection'. *Science and Policy in International Ocean Regimes: MARPOL 73/78, Annexes II and III, and the London Dumping Convention*, 63.

³⁰ Ole Vagn Olsen, Danish oceanographer and participant in the negotiations on the international dumping regime. Interviewed March 19, 1992, Charlottenlund, Denmark.

³¹ Robert J. McManus, U.S. delegate to the negotiations. Interviewed August 29, 1991, Washington, D.C.

³² Within GESAMP (the UN-appointed Joint Group of Experts on the Scientific Aspects of Marine Pollution), the United States supplied twenty-three percent of GESAMP members, and 30 percent of members of GESAMP working groups, while EEC states supplied thirty-three percent of GESAMP members, and thirty percent of the members of GESAMP working groups in the period 1969-1981. V. Pravić 'GESAMP: The First Dozen Years', 21-25.

environment has been increasing since the 1970s. This concern, which spread from the United States and parts of Western Europe to the rest of the world, is increasingly shared by developing countries, especially those dependent on the ocean for their livelihood ³³.

Regime change and international public opinion

International public opinion is one of the most effective political resources available to those seeking to shape and influence international environmental policy. Chapter 4 described how U.S. Senators used Congressional hearings to mobilize international public opinion and focus the attention of politicians on the need for international cooperation on protection of the oceans against pollution. Chapter 5 described how the Stockholm secretariat, in the secretariat's own words, through a 'promotion campaign' involving, among other things, world mass media and the Stockholm Conference, sought to 'sell the product' environmental protection policies to the citizenries and governments of the world ³⁴. Similarly,

³³ For development of public concern about the marine environment, see Michael Waldichuk 'An International Perspective on Global Marine Pollution' in Virginia K. Tippie and Dana R. Kester, eds., *Impact of Marine Pollution on Society* (New York: Praeger Publishers, 1982), 37-75.

³⁴ The first global modeling exercise titled 'The Limits to Growth' by Dennis L. Meadows and others – the book that introduced supposedly scientific, computer-based predictions of global ecological collapse to the public – offers another example of the role of the mass media in communicating new ideas. The highly respected journal *Science* wrote: 'Fully cognizant that, to borrow from a press release, an 'intellectual bombshell' had fallen into its lap, to say nothing of a potential best-seller, Potomac Associates [a Washington, D.C., think tank which acquired the rights to 'The Limits to Growth'] president William Watts passed a copy of it ['The Limits to Growth'] along to Benjamin H. Read, director of the Woodrow Wilson International Center for Scholars in Washington. Read quickly agreed to organize a symposium on the book ...Then came the publicity. To spread the word, Potomac Associates hired Calvin Kytle Associates, an energetic local public relations firm. Kytle churned out some zingy press releases and background material, embargoed it all for Sunday 27 February, and promptly struck a PR man's idea of gold. The *New York Times*, the *Washington Post*, the *Boston Globe*, and others picked up the story and splashed it in their Sunday editions. Most reported some criticism of the Meadows' work, but not all did. Later in the week for instance, syndicated columnist Claire Sterling wrote from Rome that the study, soon to be available to the eyes of Everyman, contained 'shattering insights' into catastrophe waiting in the wings, no question about it. A flood of phone calls Monday morning made it plain to the Woodrow Wilson people that their sedate invitation-only affair was now an Event of major proportions. After all, who could turn away ambassadors, industrialists, high government officials, congressmen, and a flock of distinguished scientists practically pounding on the door?'. *The Limits to Growth: Hard Sell for a*

mobilization of international public opinion is essential for international environmental pressure groups like Greenpeace, i.e. those with a more activist bent. 'We want to draw attention to something', explained a founder and chairman of Greenpeace in 1984. 'We use action and, once there's attention, we move into lobbying' ³⁵. Characteristically, movement opponents will often claim, maybe correctly, that the movement leaders act as mobilizers raising concerns. As mentioned in Chapter 7, the nuclear industry saw the Greenpeace campaign as an attempt to mobilize public opinion. Similarly, an advocate of storage of nuclear waste in the Pacific Basin charged that Jackson Davis, the American scientific advisor to Nauru and Kiribati, 'has been successful in raising [Pacific] regional concerns about the proposed operations' ³⁶.

The Greenpeace campaign against dumping in the North Atlantic Ocean focused public attention on an activity that previously had gone rather unnoticed. Though never conducted in secrecy, dumping had until then never attracted sustained attention. In 1959, after more than a decade of dumping of radioactive waste about twelve miles off Boston's coast and thirty miles northwest of Cape Cod's tip, 'neither the people of Boston nor of Cape Cod knew anything, officially, of this' ³⁷. From the outset of Greenpeace's campaign, dumping of radioactive waste in the Atlantic Ocean was seen as a dangerous activity. For example, although British officials in 1978 rejected Greenpeace's claim that high-level radioactive waste was dumped in the Atlantic Ocean, *The Guardian* headlined its article "Dangerous' waste dumped' ³⁸.

Similar to American Senators and the Stockholm secretariat, Greenpeace intended to

Computer View of Doomsday', *Science* 175 (10 Marts 1972), 1089-90.

³⁵ Jo Thomas 'Greenpeace Aims at Headlines First', *International Herald Tribune*, September 4, 1984, 2.

³⁶ Daniel P. Finn 'Nuclear Waste Management Activities in the Pacific Basin and Regional Cooperation on the Nuclear Fuel Cycle', 222.

³⁷ Grace DesChamps 'Hot Dumping Off Boston: Atomic-Waste Case No. II', *The Nation*, September 1959, 144. See also E.J. Kahn, Jr. 'Our Far-Flung Correspondents: The Government and the People', *The New Yorker*, October 15, 1960, 106.

³⁸ Michael Morris "Dangerous' Waste Dumped', *The Guardian*, July 25, 1978.

influence public opinion in several countries simultaneously. This strategy, in the words of one of its leading members, stems from 'a recognition that the traditional ways of changing things don't work. You won't end whaling just by education or by research or by lobbying or by direct action or by scientific proof. You have to think globally and combine all of them. That's what Greenpeace is about'³⁹. While the Greenpeace campaign initially attracted attention only in Britain, it soon attracted international attention. Intended or not, the emotional appeal of the campaign was significantly strengthened when waste drums hit Greenpeace dinghies and protestors were knocked overboard. In 1982, as quoted already, 'the issue of the annual dump was developed into an international scandal' by Greenpeace⁴⁰.

In this atmosphere of changing public opinion, governments increasingly felt pressured to cancel dumping, as it first happened in the Netherlands in 1982. As illustrated by a leading article appearing in *The Times* on the eve of that year's consultative meeting, public opinion in Britain clearly disapproved continuing radwaste disposal in 1983: 'In the long run, sea dumping is not a desirable practice. It is in principle a bad idea to put things that may be dangerous where you cannot keep an eye on them. Too little is known of the sea bed, underwater currents and the food-chains of marine life for the sea to be suitable for use as an oubliette on an indefinitely expanding scale'⁴¹. Radwaste disposal was by the public seen as a dangerous activity and scientific knowledge was perceived as being too uncertain to guide policy.

As described in Chapter 7, the Greenpeace campaign triggered Spanish protests against dumping. In 1982, Spanish trawlers with politicians on board joined the Greenpeace ship at the dumping site. The next year, the Spanish government responded to the protests against the dumping. While the Greenpeace campaign increased the public pressure on the

³⁹ Alan Rusbridger 'Where Greenpeace Draws up its Blueprint for Battle', *The Guardian*, September 25, 1985.

⁴⁰ Fred Pearce, *Green Warriors. The People and the Politics Behind the Environmental Revolution*, 54.

⁴¹ 'Deep-Sea Dumping', *The Times*, February 16, 1983.

British government to halt the dumping, it increased the public pressure on the Spanish government to protest against the dumping⁴². Although Spain has not yet developed permanent land-based disposal facilities, the Spanish government has ever since been leading the European opposition against radwaste disposal⁴³.

While British seamen were primarily concerned over the risks of handling nuclear waste – in 1984, a French cargo vessel carrying nuclear waste sank in the British Channel – their protests and policy advocacy should also be understood in the context of changing international public opinion⁴⁴. Supporters and opponents alike thus were in agreement that the 1980s' protests against dumping should properly be seen as manifestations of international public opinion. 'Public opinion can find expression in policy not only through appeals to government, but also through direct intervention', said a commentary in *Nuclear Engineering International*, 'The seamen can be condemned for taking the law into their own hands, but their action is only a symptom of an underlying public concern which is apparent world-wide and which stochastic assurances of safety have done little to assuage'⁴⁵. Similarly, the pro-environment journal *AMBIO*, in almost identical words, observed: 'Even though the moratorium was legally non-binding, trade unions in Britain and throughout the world heeded the message of international opinion'⁴⁶. According to the British press, the Spanish protests and demonstrations against the dumping planned for the summer 1983 had

⁴² As mentioned earlier, few scholars of international regimes have attributed any importance to the impact of public opinion on foreign policy. See, however, Eugene B. Skolnikoff, *The International Imperatives of Technology: Technological Development and the International System*, 176.

⁴³ Against this historical background, we can understand that the Spanish government protests against dumping at sea although it has not solved its disposal problem on land. For general discussion of such 'policy paradoxes', see Deborah A. Stone, *Policy Paradox and Political Reason* (Harper Collins, 1988). For the most recent proposals by Spain to ban radwaste disposal, see Chap. 9, footnote 85.

⁴⁴ Ursula Wassermann 'Uncontrolled Transport of Nuclear Materials', *Journal of World Trade Law* 19 (1985), 178–81.

⁴⁵ Andrew Cruickshank 'Dumping in Deep Water?', *Nuclear Engineering International* 28 (September 1983), 13–14.

⁴⁶ James B. Branch 'The Waste Bin: Nuclear Waste Dumping and Storage in the Pacific', 330.

'strong British and international support' ⁴⁷. And, as the Secretary General of the British seamen explained to the readers of *The Times*, the seamen had international, if not global, support on their side: 'The NUS has been inundated with messages of support from individuals and organizations around the world, including Jacques Cousteau, the mayors of towns and cities along the French and Spanish Atlantic seaboard, scientific groups, environmentalists and seafarers' unions. Given the attitude of our Government towards trade unionism, it is ironic that it has taken a successful act of defiance against Government policy by three unions to protect Britain's good name in the international maritime community' ⁴⁸. With the 1983 moratorium resolution signaling the turning point, international public opinion no longer accepted ocean dumping of radioactive materials. In the eyes of the public, the previous policy had lost its legitimacy.

Public policy's loss of legitimacy resulted in widespread protests when the British government intended to dump despite the moratorium. Previous policy was not changed simply because public opinion condemned it. British 'illegitimate' plans to dump were cancelled when boycotted by trade unions which Greenpeace had involved in the conflict. However, after the moratorium, as the Secretary General of the British seamen pointed out, it was now the British government who was the protestor.

Conclusion

The explanation of regime change suggested here can be summarized in the following way. First, public opinion matters. Second, policy advocates try to influence public opinion in order to shape the principles and values on which policy is based. Third, Greenpeace's campaign against dumping in the Atlantic Ocean significantly influenced international public opinion. Fourth, after initial resistance to regime change, the international dumping regime was adjusted in line with international public opinion. This explanation suggests that change

⁴⁷ 'Protest at Nuclear Waste Plan', *The Guardian*, July 13, 1983.

⁴⁸ Jim Slater 'Radioactive Waste Dumping at Sea', letter to *The Times*, August 4, 1983.

of international public opinion was the primary cause of policy change. While evidently a complex phenomenon, an explanation of why international public opinion changed is also given above. Not surprisingly, the implications for understanding regime change are far-reaching.

As discussed already, Realists claim that international cooperation necessarily is limited and depends on hegemonic leadership. But Chapter 7 showed that a strong, globally shared idea or public concern evidently makes international cooperation more likely also when the hegemon opposes cooperation. Landlocked states excluded, states share an interest in 'radiation-free' oceans⁴⁹. As discussed in Chapter 6, Realists ignore that new ideas may influence how states define their interests in ways that enhance cooperation. Realists would doubt that a change of international public opinion, which governments of powerful states ignored, can have an essential impact on an international regime and international policy development. Governments were clearly not motivated by concern for protecting themselves as sovereign political entities, or a need to maximize power or maintain economic growth when they adopted the moratorium on radwaste disposal. Realists therefore cannot explain the international policy development with respect to radwaste disposal in the 1980s.

This significant weakness of Realism was discussed earlier in Chapter 6. It is moreover evident that Rationalistic Realism leaves out a good part of what regimes and cooperation are about by focusing on self-interest and ignoring common interest. For Rationalistic Realists, regimes coordinate interactions among states pursuing their self-interest. Cooperation does not, in their understanding, imply that states may share a common goal although others stress that cooperation is directed towards a common goal⁵⁰. Oddly enough, Keohane's widely accepted definition of cooperation instead stresses voluntarism and

⁴⁹ I write 'radiation-free' oceans since several radionuclides (e.g. potassium-40 and uranium) naturally exist in the oceans. I thank Asker Aarkrog for pointing this out to me. See also Chap. 1, footnote 10.

⁵⁰ According to Robert A. Nisbet: 'Cooperation is joint or collaborative behavior that is directed toward some goal and in which there is common interest or hope of reward'. 'Cooperation' in David L. Sills, ed., *International Encyclopedia of the Social Sciences* (Library of Congress, 1968), vol. 3, 385.

gains: states cooperate because it provides them with individual gains or rewards⁵¹. In short, regimes define the rules of the game, but states individually define why they play the game.

The conflict in 1983–85 would have been avoided had pro-dumping governments responded to public protests and cancelled future radwaste dumping. This happened domestically in the United States, but American delegations did not advocate domestic policy at the meetings of the international dumping regime. The British and Japanese governments refused to change domestic policy in response to domestic and international protests. But had these governments instead responded to public protests, no international conflict would have occurred. Far from an act motivated by self-interest worldwide concern over radwaste disposal would have resulted in permanent termination of this practice. But because pro-dumping governments did not change their policy – and still refuse to do so – international conflict erupted on this issue. The weakness of Keohane's definition of cooperation becomes obvious in the light of this policy development. Since it emphasizes self-interest, it ignores that a policy widely supported by the public in many countries may become international policy and that governments may have to adjust their policy in accordance with international policy. Significantly, Rationalistic Realism has not demonstrated why the concept of cooperation should exclude the possibility that states might have common interest although self-interest plays the dominant role in theories of international politics, especially in Realism and Rationalistic Realism⁵².

Especially the policy development in 1983–85 shows that international regimes and

⁵¹ According to Keohane: *'intergovernmental cooperation takes place when the policies actually followed by one government are regarded by its partners as facilitating realization of their own objectives, as the result of a process of policy coordination'*. *After Hegemony*, 51–52. (Emphasis in the original). See also Chap.1, footnote 3. For a recent discussion of this definition, see Helen Milner 'International Theories of Cooperation Among Nations: Strengths and Weaknesses', 467–68.

⁵² Keohane, for example, gives only little attention to this question: 'Harmony is rare in world politics. Rousseau sought to account for this rarity when he declared that even two countries guided by the General Will [Rousseau's phrase for public opinion] in their internal affairs would come into conflict if they had extensive contact with one another, *since the General Will of each would not be general for both*. Each would have a partial, self-interested perspective on their mutual interactions'. *After Hegemony*, 52. (Emphasis added).

cooperation should not be confused. Although these two concepts often are used as synonyms, this policy development illustrates that an international regime can play an important role in pressuring governments to cooperate⁵³. Two such ways were pointed out earlier in this chapter: first, as an international forum, environmental regimes enhance the public visibility of contested environmental policies; second, by adopting resolutions, principles and similar, they build legal and regulatory machinery with *de facto* significance even when resolutions and principles are not agreed upon unanimously. And, third, environmental regimes establish internationally agreed upon norms and standards for behavior against which governments are evaluated by other governments and the public. But perhaps international regimes and cooperation will not be confused after all since the concept of international regimes, against the intentions of those using the concept, conveys the image of a rather permanent international arrangement imposing uniform rules and policies on governments, an image that conforms well with the general meaning and use of the term regime⁵⁴.

The epistemic community model's emphasis on the role of knowledge and perception when states identify their interests is a substantial contribution to our understanding of international cooperation. This body of literature stresses that knowledge and perception varies over time with consequence for perception of the 'goods' provided through international cooperation. But, as it has been noted: 'In fact, much of the politics of controversial policy issues is *about* the definition of the 'good'⁵⁵. James Q. Wilson similarly points out that 'much, if not most, of politics consists of efforts to change wants by arguments, persuasion, threats, bluffs, and education. *What* people want – or believe they

⁵³ Stephan Haggard and Beth A. Simmons make this distinction without discussing the possibility that regimes might pressure governments to adjust their policies to the preferences of other governments. See 'Theories of International Regimes,' 495.

⁵⁴ See Susan Strange 'Cave! hic dragones: A Critique of Regime Analysis', 344. See also James N. Rosenau 'Before Cooperation: Hegemons, Regimes, and Habit-Driven Actors in World Politics', 880.

⁵⁵ Hank C. Jenkins-Smith 'Alternative Theories of the Policy Process: Reflections on Research Strategy for the Study of Nuclear Waste Policy', *P.S. Political Science and Politics*, 14 (June 1991), 159.

want – is the essence of politics' ⁵⁶.

This study demonstrates that scientists do not necessarily influence the public's perception of the good, even in the case of science-intensive policies such as environmental protection. As a Greenpeace member has explained by pointing to whaling, another case where the organization has been successful, scientific arguments alone seldom have strong mobilizing effect ⁵⁷: 'The scientific debate about whether whales really are in danger of extinction is not one we want to get reduced to', says he. 'The general public is not going to understand the science of ecology, so to get them to save the whale you have to get them to believe that whales are good' ⁵⁸. Similarly it can be concluded from this study, as elaborated below, that the primary audience to be persuaded and mobilized is the public, in other words the voters. Discussing the refusal of the United States to sign a global treaty protecting biological diversity made ready for signature at the 1992 Rio Conference, Mostafa Tolba, director of the United Nations Environmental Program (UNEP), recently made the same point. Tolba had been contacted early on about creating such a global treaty, but was reluctant about the idea: 'My own reluctance came from experience in dealing with the ozone layer. Countries simply will not give up any of their sovereignty unless they are faced with catastrophe. The reason – the only reason – that an ozone treaty was signed was that scientists could point to catastrophe, and explain the consequences in words that every voter could understand. And still countries did nothing. Only after the predicted ozone depletion began, only after a hole started to open, did nations finally come to the table and began to eliminate some of the harmful chemicals responsible' ⁵⁹. The challenge for epistemic community theory is therefore to examine under what conditions epistemic communities can

⁵⁶ James Q. Wilson 'The Politics of Regulation', 363.

⁵⁷ See Bruce J. Stedman 'The International Whaling Commission and Negotiation for a Global Moratorium on Whaling', in Lawrence E. Susskind, Esther Siskind, and J. William Breslin, eds., *Nine Case Studies in International Environmental Negotiation*', 171.

⁵⁸ Fred Pearce, *Green Warriors*, 27.

⁵⁹ Mostafa K. Tolba 'The U.S. Flip-Flop Means a Grayer Planet', *International Herald Tribune*, June 12, 1992.

mobilize public support for policy.

The complex interdependence model correctly assumes that a variety of actors are involved in building and changing international regimes. It does, however, resemble Realism in essential aspects and would predict that the moving force or prime dynamic behind policy development would be found in intergovernmental meetings of officials or scientists, i.e. inside the regime. Chapter 7 showed, however, that the opposition against radwaste disposal was increasingly transnationally organized. Nordic governments, South Pacific nations, Spain and Greenpeace formed a transnational coalition. Key actors such as trade unions and Greenpeace in particular were transnational actors who made the separation of domestic and international politics largely irrelevant. Environmental NGOs linked together domestic and international policy arenas and U.S. independent experts opposed to radwaste disposal collaborated with South Pacific nations.

While this chapter has stressed the impact of ideas on international policy development, it should also be stressed that ideas must interact with actors in order to influence policy. This study shows that understanding international environmental regimes requires looking at the whole range of actors involved: governments, firms, international organizations, scientists, environmental interest groups, mass media, and the public. But future studies of international environmental regimes should especially examine the role of policy entrepreneurs and public opinion, national and international, when regimes are built as well as when they change. Since students of international regimes either disregard public opinion, or claim that it has no significant impact, this concept, as well as how public opinion influences policy development, should finally be defined more precisely.

In the case of the international dumping regime all key actors attributed crucial importance to public opinion. American Senators, for example, hoped to get 'the attention of the American public' and a marine scientist described 'the general public's mind' and 'the present era of aroused public interest in the environment' in 1971. Later, a Greenpeace member saw the beliefs of 'the general public' as crucial and, according to Irish officials, the Irish government was in 1983 'coming under increasing domestic pressure from a public opinion' to protest against radwaste disposal within the international dumping regime. Carefully examined and compared observations of public opinion by key actors thus are one

valuable source of information on public opinion. Newspapers and opinion polls are other primary sources. The importance which decision-makers, politicians, industries and others attribute to public opinion should therefore not be an issue for theoretical debate but instead an issue for empirical observation. Despite sceptics' doubts about the impact of public opinion, recent empirical evidence suggests that public opinion may be both stable and exert considerable influence on policy⁶⁰. The notion of public opinion is sometimes ill-defined, however, and should not be used as a catch-all notion or include all those perceptions and interests that are ignored by the models tested in this study⁶¹.

While public opinion in various ways can be measured, as just indicated, the concept of public opinion is closely associated with the concept of public interests, a concept denied by some while others claim that only private interests have significant influence on policy⁶². Public interests are interests shared by a large segment of society⁶³. Public interests are therefore not identical to interests of private interest groups or particular classes although private interest groups, such as the nuclear industry, fishing interests, and tourism often

⁶⁰ See Thomas Risse-Kappen 'Public Opinion, Domestic Structure, and Foreign Policy in Liberal Democracies', *World Politics* 43 (July 1991), 479-512; see also Lawrence R. Jacobs 'Institutions and Culture: Health Policy and Public Opinion in the U.S. and Britain', *World Politics* 44 (January 1991), 179-209. For how public opinion is appealed to and used in order to influence policy, see L. Marvin Overby and Sarah J. Ritchie 'Mobilized Masses and Strategic Opponents: A Resource Mobilization Analysis of the Clean Air and Nuclear Freeze Movements', *The Western Political Quarterly* 44 (June 1991), 329-51.

⁶¹ For a study of the historic origins and development of the concept, see Jürgen Habermas, *Strukturwandel der Öffentlichkeit. Untersuchungen zu einer Kategorie der bürgerlichen Gesellschaft* (Neuwied am Rhein-Berlin: Politica, 1965). See also Ferdinand Tönnies, *Community and Society*, trans. and ed. by Charles P. Loomis (New York: Harper and Row, 1957), 218-31.

⁶² The distinction between public and private interests cuts right to the core of perennial debates among social scientists and philosophers, as well as economic historians, about the respective meaning of private and public, class and society, methodological individualism, and other, sometimes contentious issues. For a brief discussion, see Steven Lukes 'Methodological Individualism Reconsidered', in Alan Ryan, ed., *The Philosophy of Social Explanation* (London: Oxford University Press, 1973), 119-29. Economic historian Karl Polanyi, for example, was struggling with the distinction between class and society in *The Great Transformation: The Political and Economic Origins of Our Time* (Boston: Beacon Press, 1957), 151-62.

⁶³ For a discussion of various definitions of the public interest, see Deborah A. Stone, *Policy Paradox and Political Reason* (Harper and Collins, 1988). See also Mark Sagoff, *The Economy of the Earth* (Cambridge, New York: Cambridge University Press, 1988), 10-11.

couch their interests as public interests and appeal to values shared by broader constituencies and society. Neither should the interests of environmental interest groups be considered public interests. Only interests that are shared by a large segment of society should rightly be seen as public interests. Similarly, only opinions shared by a large segment of society should rightly be seen as expressions of public opinion although public opinion may change considerably over a short period of time ⁶⁴. It further should be noted that public opinion may be divided on and even inattentive to particular issues ⁶⁵. As the campaign slogans 'the oceans are dying' and 'save the whale' illustrate, a distinction should also be drawn between broad issues, and more specific issues ⁶⁶.

As regards the international dumping regime, the process of regime change, and to some extent also the regime-building process, can best be understood as examples of entrepreneurial politics, a form of politics for which forceful mobilization of public opinion is essential. Entrepreneurial politics has previously been observed at the domestic level but, this study suggests, also occurs at the international level. According to James Q. Wilson's definition of entrepreneurial politics, which he developed in his analysis of regulation, forceful mobilization of public opinion is essential when the costs of a regulatory policy are concentrated narrowly on, for example, one industry, while the benefits are widely distributed ⁶⁷. Food and drug regulation and environmental regulation are typical examples of such policies.

It is widely assumed among political scientists that a small group will be able to

⁶⁴ For a discussion of the concept of public opinion, see W. Philipps Davidson 'Public Opinion', in David L. Sills, ed., *International Encyclopedia of the Social Sciences* (Library of Congress, 1968), vol. 13, 188-96.

⁶⁵ For examples and discussion, see William A. Gamson and Andre Modigliani 'Media Discourse and Public Opinion on Nuclear Power: A Constructionist Approach', *American Journal of Sociology* 95 (July 1989), 1-37.

⁶⁶ This distinction can be seen as being parallel to the one between policy-makers' specific beliefs and general beliefs. For a discussion of this distinction, see John S. Odell, *U.S. International Monetary Policy*, 62-64.

⁶⁷ For a discussion of this model, see Deborah A. Stone, *Policy Paradox and Political Reason* (Harper and Collins, 1988), 176-80.

avoid a substantial cost increase being imposed on it by such policies because incentives to organize are substantial, while a large group with diffuse interests is not motivated to organize since benefits are small. As discussed in Chapter 2, it is basically the same reasoning that makes scholars of international regimes who are inspired by collective action theory doubt that such policies will be established unless big members of groups choose to do so, or when small groups are able to discourage free-riding. But, according to Wilson, such policies may be established when a skilled entrepreneur 'can mobilize latent public sentiment (by revealing a scandal or capitalizing on a crisis), put the opponents of the plan publicly on the defensive (by accusing them of deforming babies or killing motorists), and associate the legislation with widely shared values (clean air, pure water, health, and safety)' ⁶⁸. An entrepreneur may be able to capitalize on a crisis but, according to Wilson, it is extremely important how third parties – 'the media, influential writers, congressional committee staff members, the heads of voluntary associations, and political activists' – respond to the entrepreneur's campaign ⁶⁹. As students of environmental politics, as well as others, have stressed, the first essential step in politics is issue creation: '*the transformation of a fact of life into a political issue*' ⁷⁰. It is by constructing a political issue where no issue previously existed and by mobilizing other stakeholders that entrepreneurs and policy advocates influence policy development.

The moratorium on radwaste disposal neatly fits the entrepreneurial politics model. Following Greenpeace's campaign, radwaste disposal was looked upon as an international scandal. Not surprisingly, the nuclear industry and pro-dumping governments rejected the charges made by the campaign organizer but were defeated internationally at the meetings of the international dumping regime and domestically by Greenpeace and British trade unions backed by sympathetic public opinion. The fact that Greenpeace and the seamen played an important role after the moratorium on radwaste disposal was declared only shows that

⁶⁸ James Q. Wilson 'The Politics of Regulation', 370.

⁶⁹ *Ibid.*, 371.

⁷⁰ Cynthia H. Enloe, *The Politics of Pollution in a Comparative Perspective: Ecology and Power in Four Nations* (New York, London: Longman, 1975), 11. (Emphasis in the original).

private interest groups pursue their interests vigorously when they are backed by public opinion. Moreover, public opinion in many countries at the same time responded in a similar way to radwaste dumping then being conducted or planned for the future. Thus public opinion formation may be a system level phenomenon, not exclusively a domestic level phenomenon. It is likely that we in the future will increasingly witness other examples of international public opinion with significant effect on international policy, particularly on issues seen as threats to environmental protection and collective human welfare.

While some regime theorists think differently, this study has demonstrated that international environmental regimes – because of the essential role of public opinion, international organizations, and NGOs – should be distinguished from other kinds of international regimes ⁷¹. It may become evident that public opinion and the channels expressing as well as molding public opinion should play a bigger role in the regime analysis than has been the case until now. At the very least, this study cautions one to be sceptical about approaches to regime analysis emphasizing self-interest, power, rationality, state sovereignty, and knowledge at the expense of everything else.

⁷¹ According to Oran R. Young: 'regimes for natural resources and the environment presumably do not differ from other international regimes in any fundamental way'. *The Politics of International Regime Formation: Managing Natural Resources and the Environment*, 349.

CHAPTER 9

CONCLUSIONS AND POLICY

This final chapter provides a model of global environmental regime-building based on the above findings on the construction of the international dumping regime. These findings show a need for a different, and hopefully better, model than one exclusively focusing on either states or networks of scientists ¹.

This case study shows that the United States and the Stockholm secretariat both performed very important, but also very different, functions when the ocean dumping regime was built. A model of global environmental regime-building should accordingly take that into account. It is in addition clear that the Stockholm Conference, i.e. a highly publicized international environmental conference, also played an essential role. That should therefore also be part of a model of global environmental regime-building.

The model proposed here is, as was mentioned in Chapter 1, termed a transnational coalition model and it stipulates that three conditions, at a minimum, must be satisfied before global environmental regime-building will take place: first, the United States must provide international leadership; second, an international secretariat must play a catalytic and facilitating role; and third, an international convention obliging countries to cooperate must

¹ For the ecological epistemic community model of regime formation, see Peter M. Haas 'Obtaining International Environmental Protection through Epistemic Consensus'. For a brief overview of existing explanations of regime formation and their relevance for environmental issues, see Oran R. Young 'Global Environmental Change and International Governance', in *Millennium* 19 (Winter 1990), 337-46. For a more comprehensive discussion, see Oran R. Young, *International Cooperation: Building Regimes for Natural Resources and the Environment*. See also Oran Young 'The Politics of International Regime Formation: Managing Natural Resources and the Environment'. International regimes for environmental protection as well as other issues are discussed in Oran R. Young 'Political Leadership and Regime Formation: On the Development of Institutions in International Society'. For international environmental negotiations in a more narrow sense, see The International Environmental Negotiation Network 'Long Term Capacity Building for Global Environmental Negotiations' (Cambridge, Mass.: MIT-Harvard Public Disputes Program, 1991). See also Winfred Lang 'Negotiations on the Environment', in Victor A. Kremenjuk, ed., *International Negotiation. Analysis, Approaches, Issues* (San Francisco: Jossey-Bass, 1991), 343-56.

be signed by high-level government officials or government leaders meeting in an international environmental conference. While these three conditions only are necessary conditions in themselves, together they may constitute a sufficient condition for global environmental regime-building. Furthermore, global regime-building will not take place in cases where public opinion, national and international, disapproves or ignores the environmental problem to be solved. The ocean dumping case supports such a strong claim.

To test the transnational coalition model, two recent examples of global regime-building – the regime controlling chlorofluorocarbons depleting the ozone layer and the regime for stabilizing greenhouse gases, especially CO₂ emissions – are briefly analyzed. The interplay of a hegemon, an international secretariat and an international environmental conference are also discussed, and some observations on future international environmental leaders are made.

The chapter also discusses the future policy development with regard to ocean dumping of low-level radioactive waste. Finally, suggestions are given for how to deal with similar issues.

Building global regimes for environmental protection

The United States is best able and willing to participate actively in the construction of a global environmental regime when an environmental problem exists in the United States. In case no environmental problem clearly exists, it will be exceedingly difficult to attract and sustain public and political support necessary for international action. The strongest candidates for international cooperation are American environmental problems which have obvious international consequences and environmental problems which are seen as threatening U.S. environmental interests. Environmental problems in the oceans and the atmosphere, in relation to migratory species, or caused by international trade and transport clearly cannot be solved by any one state. Such cases, in which an environmental problem clearly exists in the United States and U.S. environmental policy obviously has a significant impact on other states and vice versa, offers the necessary opportunity to illustrate the

benefits of international policy coordination to the American public and policy-makers.

Simple, powerful slogans and symbols of the environmental problem will be an essential part of any successful attempt to mobilize the American public and policy-makers. 'The oceans are dying' and 'Spaceship Earth' are examples of slogans and symbols of environmental damage or environmental interconnectedness or both ². Distinguished scientists, respected ecologists and environmentalists, as well as eminent public speakers may be used to focus the attention of the public and policy-makers on particular environmental problems.

Economic aspects are also important. U.S. industries are at a comparative disadvantage when environmental regulation is introduced in the United States but not in other countries. Harmonization of costs of environmental protection across countries, especially industrialized countries, offers in such cases a significant incentive for the United States to build or join a global regime. Those building U.S. support will, therefore, attempt to capitalize on potential economic benefits to the United States that global regulations will bring.

To build international support for a global regime for environmental protection, the United States will demonstrate to other states the benefits of environmental protection.

² Note the following insightful observation from a review of Dr James Lovelock *Gaia: a New Look at Life on Earth* from 1979, a recent contribution to ecological thinking and philosophy: 'When the *Apollo* programme took men far enough from the earth for it to be revealed as an oasis in space, white clouds wrapped around blue, green and brown, the visions those men saw and brought back had an enormous effect. The fact that the earth somehow looks alive proves absolutely nothing. *But ideas do not live by proof alone.* The earth adrift in the lifeless void is an image that quickly become a cliché, but only because it strung such a strong chord in so many people. It played some role in shaping Dr Lovelock's ideas. It probably played a bigger one in preparing the ground for their acceptance, at least among the lay audience'. 'GAIA: The Veiled Goddess', *The Economist*, December 22, 1990. (Emphasis added). The metaphor of the earth as a spaceship on which humanity travels, dependent on its vulnerable supplies of air and soil appeared for the first time in a speech drafted by Barbara Ward which was given by the United States ambassador to the United Nations before the U.N. Economic and Social Council in 1965. *Spaceship Earth* was the title of Barbara Ward's book from 1966 describing how rapid changes, as a result of science and technology in a world of 'unbalanced power, disproportionate wealth and ideological abyss' increasingly necessitated international cooperation through the United Nations in charge of 'rules for survival'. *Spaceship Earth* (New York: Columbia University Press, 1966), 22. While the notion Spaceship Earth today brings environmental associations to mind, this book is not concerned with the environment. In the book Ward further developed some of the themes from an earlier book of hers, namely *The Rich Nations and the Poor Nations* (New York: W.W.Norton and Company, 1962).

United States–sponsored international scientific conferences will attempt to identify and reach agreement on the environmental problem to be corrected and thus demonstrate the need for global cooperation. United States–sponsored international policy conferences attended by foreign politicians and high–level government officials will attempt to demonstrate the need for and benefits of environmental protection. Mass media coverage of both international scientific conferences and international policy conferences will be an essential element of the United States' strategy to build international public and governmental support. Successful conferences will convince foreign scientists and government representatives that a global regime will benefit not just the United States but all countries.

The secretariat of an international organization – most likely UNEP or other specialized agencies of the United Nations – will be essential in solving technical and scientific issues as well as issues more related to inter–governmental tensions in the regime–building process. Lack of trust among governments, especially between the developed and the developing countries, is a severe obstacle to all attempts to build global regimes for environmental protection. Developing countries are often mistrustful of the intentions of developed countries, the United States in particular. Developed countries, on the other hand, are equally mistrustful when developing countries point to the fact that in order to participate successfully, developing countries are dependent on some measure of scientific and perhaps financial assistance, as well as transfer of technology, from developed countries.

It is important that the international secretariat involved in global regime–building is autonomous, and perceived so. In order to establish trust between the developed and the developing countries, too close ties to either part will be detrimental. Developing countries might otherwise see pollution control as simply an attempt by developed countries to control developing countries' economies and impose their environmental policies. On the other hand, an international secretariat which is too responsive to developing countries' demands will alienate the developed countries to which it instead might look like another attempt by the developing countries to squeeze money out of the developed countries.

In order to overcome mistrust among governments, the international secretariat will try to convince governments and scientists from governments, industry, and international agencies that a need for global cooperation exists. The international secretariat will follow

a careful planned strategy to produce a consensus on the nature of the problem ³. The secretariat will bring together scientists from various countries in scientific conferences intended to reach agreement on the environmental problem to be corrected. Scientists will need to examine and validate the evidence of environmental damage and the pollutant or pollutants causing damage as well as other relevant scientific data and theoretical models used to estimate and predict environmental damage. While concerned with scientific and technical issues, successful conferences might also facilitate international trust-building. International scientific conferences might also support regulations and policies, which will further increase pressure on governments to establish new policies.

An international secretariat with a reputation for scientific, technical and legal expertise and experience might participate in drafting the accord that will induce governments to cooperate. Governments might welcome this especially when their treaty proposals, due to lack of resources or knowledge of constraints on other governments, do not suit all governments and thus need improvement. An international secretariat will propose regulatory techniques which both can accommodate the inevitable scientific uncertainties and ambiguities of estimations of environmental impact of pollutants and can be revised as new knowledge develops. Black and grey lists annexed to a formal agreement text exemplify an international secretariat's attempt to create a flexible regulatory technique. An international secretariat will also suggest flexible or multiple standards and regulations that permit developed countries to start tackling the environmental problem but do not impose unreasonable or unacceptable burdens on developed countries. Within such an arrangement, developed countries will be able to demonstrate their commitment to environmental protection to developing countries which will strengthen the global regime. At the same time, concern for the special needs of developing countries will not slow down developing countries.

An international secretariat will, finally, start a carefully planned public education

³ In their review of a number of international environmental issues, David A. Kay and Harold K. Jacobson found several examples of international organizations contributing significantly in the problem identification and the problem recognition phases. See Jacobson and Kay 'Conclusions and Policy', in Kay and Jacobson, eds., *Environmental Protection: The International Dimension*, 321-22.

campaign aimed at both governments and citizenries. This effort will stimulate public interest and thus increase the pressure on governments. World mass media, particularly television and press, will be the essential elements of such a strategy to educate the public and governments.

The third essential component of a successful global regime-building process is an international environmental conference at which high-level government representatives or government leaders sign an international agreement obliging countries to cooperate. An international environmental conference will offer an important opportunity to educate governments and citizenries about the reasons for instigating new policies and regulations. The need for environmental protection might not at all be straightforward but instead a result of complex interactions between natural systems and human systems. Successful implementation of new policies and regulations, furthermore, may ultimately depend more on individuals complying out of insight than out of fear of punishment.

An international environmental conference will significantly increase the pressure on governments opposing international cooperation. While solutions to the environmental problem seldom will be available at the point when international agreement is reached and international cooperation also may impose some, maybe considerable costs on countries, the need to respond to an international high-level environmental conference may cause even reluctant governments to take the first steps to control pollution. At the same time, governments will score a significant foreign policy and environmental success when they respond to what is widely seen as a significant environmental problem. Mass media, environmental NGOs and parts of the private sector supporting environmental protection will be essential in raising expectations and pressure at domestic levels for concrete action. To illustrate the transnational coalition model, two recent examples of global regime-building – namely the Montreal Protocol, formally known as the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, and the regime for stabilizing greenhouse gases – are briefly analyzed.

Essentially, chlorofluorocarbons (CFCs) are synthetic chemicals that have become important in the production of refrigerators, electronics cleaning products and plastic foams. They are released into the atmosphere during manufacturing processes, or during use, or later

disposal. Chlorine, which is released when CFCs interact with sunlight in the atmosphere, is under the right meteorological conditions a potent catalyst for the decomposition of ozone. The ozone layer screens out much of the sun's harmful ultraviolet radiation. High doses of ultraviolet radiation causes cataracts and skin cancer. Two American scientists discovered chlorine's destructive effect on ozone in 1973. In 1974, two other American scientists discovered that CFCs were exceptionally stable gases able to migrate slowly up to the stratosphere and remain intact in the atmosphere for decades or even centuries.

It was in the United States that concern over depletion of the ozone layer first became a public issue. Already in 1977 was ozone protection legislation passed by Congress. However, scientific uncertainty together with the antiregulatory Reagan administration soon diminished the sense of urgency for new regulatory action. While the issue did more or less stay prominent in the mind of the American public, it became an international issue only in the mid-1980s ⁴.

UNEP gave ozone depletion top priority in 1976, and was since then actively involved in the issue ⁵. According to the chief U.S. negotiator to the negotiations on the Montreal Protocol, as well as many others, this organization acted as a catalyst in the process leading to international agreement in Montreal: 'UNEP was indispensable in mobilizing data and informing world public opinion, as well as during the negotiating and implementing phases. It was UNEP – inviting, cajoling, and pressuring governments to the bargaining table – that broadened the protocol to a global dimension' ⁶. UNEP also introduced the idea of an 'interim protocol' into governments' deliberations on the design of the future international regulatory regime. This protocol, modelled in part on the London Dumping Convention, formed a framework that could define the problem as well as the overall goal of cooperation, while specific undertakings could be covered in separate protocols requiring

⁴ Peter M. Morrisette 'The Evolution of Policy Responses to Stratospheric Ozone Depletion', *Natural Resources Journal* 29 (Summer 1989), 819.

⁵ Thomas B. Stohl, Jr. 'Fluorocarbons: Mobilizing Concern and Action', in David A. Kay and Harold K. Jacobson, eds., *Environmental Protection: The International Dimension*, 45–74.

⁶ Richard Elliot Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet*, 6.

periodical scientific reassessments⁷. According to the chief U.S. negotiator in Montreal, as well as others: 'This idea facilitated future negotiations and proved to be a critical element of the eventual agreement'⁸.

After initial policy meetings of governments and international organizations in 1977 and 1978 organized by UNEP, and the decision by its Governing Council in 1981 to support and finally approve that it began work toward an international agreement on protecting the ozone layer, UNEP invited in 1982 representatives of 24 governments to consider a global framework convention. In 1985, the Vienna convention was signed by 20 countries, plus the EC Commission. While a considerable accomplishment, the convention provided only for monitoring and research, but did not do anything to limit production of CFCs. The so-called Toronto Group, composed of governments supporting reduction of CFCs, namely Canada, Finland, Norway, Sweden, Switzerland and the United States, had been unable to reach an agreement with western European governments protecting their chemical industries, in particular Britain and France, and the EC Commission. Negotiations on a protocol, however, soon resumed in Montreal.

The discovery of a seasonally depleted ozone layer over the Antarctica – the so-called ozone hole – was disclosed in May 1985, only two months after the Vienna Convention had been signed, and refocused public attention on the ozone depletion issue. The Antarctic ozone hole greatly reduced lingering uncertainties about CFCs' effect on

⁷ For UNEP's contribution to the Montreal Protocol, and the similarities between the London Dumping Convention and the Montreal Protocol, see Peter S. Thacher 'Alternative Legal and Institutional Approaches to Global Change', *Colorado Journal of International Environmental Law and Policy* 1 (Summer 1990), 103–5. Article 6 of the Montreal Protocol specifies as follows: 'Beginning in 1990, and at least every four years thereafter, the Parties shall assess the control measures...on the basis of available scientific, environmental, technical and economic information. At least one year before each assessment, the Parties shall convene appropriate panels of experts qualified in the fields mentioned and determine the composition and terms of reference of any such panels. Within one year of being convened, the panels will report their conclusions, through the secretariat, to the Parties'. Richard Elliot Benedick, *Ozone Diplomacy*, 236.

⁸ Richard Elliot Benedick, *Ozone Diplomacy*, 50. Also the leader of the British delegation has praised the Montreal Protocol's creation of a 'review process designed to enable stronger measures to be taken later'. See Fiona McConnell 'Review of Richard E. Benedick 'Ozone Diplomacy: New Directions in Safeguarding of the Planet'', *International Environmental Affairs* 3 (Fall 1991), 319.

stratospheric ozone and served in addition as a simple, powerful symbol of environmental damage increasing pressure on governments as well as industry to correct the problem. To quote again Mostafa Tolba, director of UNEP: 'Only after the predicted ozone depletion began, only after a hole started to open, did nations finally come to the table and began to eliminate some of the harmful chemicals responsible' ⁹.

The United States employed intense mass media coverage of the scientific theories and warnings over use of CFCs in order to build public and governmental support for the Montreal Protocol. According to the chief U.S. negotiator in Montreal, the U.S. strategy to reach an international agreement was as follows: 'The Department of State now designed and managed a multifaceted strategy to gain acceptance of the U.S. position by as many countries as possible. Over the next months about 60 U.S. embassies were regularly provided with talking points explaining the rationale behind the U.S. proposals, as well as with scientific and policy updates. Embassies were instructed to engage their host governments in continuous dialogue to inform, influence, and demonstrate flexibility...The U.S. negotiators coordinated these diplomatic initiatives closely with like-minded governments...The chief U.S. negotiator led several missions to Western European capitals for consultations on both policy and science... The State Department's interim objective was to move the international political community gradually toward a consensus on the science and the risks...The media were an integral element of the diplomatic strategy. The U.S. government undertook major efforts to reach out to foreign public opinion, especially in Europe and Japan, to counteract the previously unopposed influence of commercial interests. Senior U.S. officials and scientists gave speeches, press conferences, and radio and television interviews in numerous foreign capitals' ¹⁰. The U.S. State Department also encouraged U.S. environmental

⁹ Mostafa K. Tolba 'The U.S. Flip-Flop Means a Grayer Planet', *International Herald Tribune*, June 12, 1992. Peter M. Morrisette writes: 'As a powerful symbol of the potential impacts from stratospheric ozone depletion, the ozone hole galvanized world opinion, and thus influenced the outcome in Montreal'. 'The Evolution of Policy Responses to Stratospheric Ozone Depletion', 815. The crucial role an ozone hole over the Antarctic played in reaching an agreement is also stressed in Chris Granda 'The Montreal Protocol on Substances that Deplete the Ozone Layer', in Lawrence E. Susskind, Esther Siskind, and J. William Breslin, eds., *Nine Case Studies in International Environmental Negotiation*, 44.

¹⁰ Richard Elliot Benedick, *Ozone Diplomacy*, 56.

organizations to motivate European environmental organizations to challenge publicly the European chemical industry's claim that ozone depletion was an insignificant problem and available substitutes were too expensive ¹¹.

In December 1986, international negotiations under the Vienna Convention were resumed and in September 1987 the Montreal Protocol was signed by 24 countries, most of the major producers and consumers of CFCs included. The United States, the world's biggest market for CFCs, had finally pressured the EC to accept a 50 percent reduction on consumption and production of CFCs by 1998 ¹². For the first time since concern over the impact of CFCs on stratospheric ozone evolved in the mid-1970s, international agreement was reached on specific measures and timetables for reducing production and consumption of CFCs and halons. Negotiations later resumed as new scientific evidence showed that the targets of the Montreal Protocol were inadequate. In a 'landmark agreement' reached in London in June 1990, governments agreed to a total phaseout of CFCs by the year 2000 ¹³. Importantly, governments also agreed to establish a Funding Mechanism for assistance to developing countries and, as it was anticipated that developing countries would increasingly play an crucial role in global protection of the ozone layer, strived toward including especially India and China as parties to the Montreal Protocol ¹⁴.

Chemical companies which at first were fiercely opposed to international regulation later halted production of at least some ozone-depleting chemicals. In October 1988, almost two years before governments agreed to do so, DuPont and ICI – CFCs are manufactured primarily by DuPont in the United States and Britain's Imperial Chemical Industries –

¹¹ *Ibid.*, 23.

¹² Markus Jachtenfuchs 'The European Community and the Protection of the Ozone Layer' *Journal of Common Market Studies* 28 (March 1990), 267.

¹³ Malcolm W. Browne '93 Nations Agree to Ban Chemicals That Harm Ozone', *New York Times*, June 30, 1990. For this meeting, see Dale S. Bryk 'The Montreal Protocol and Recent Development to Protect the Ozone Layer', *Harvard Environmental Law Review*, 15 (1991), 275-98.

¹⁴ China signed the revised protocol, agreed to at the London meeting, in 1991, and India now expects to follow suit. Philip Elmer-Dewitt 'How Do You Patch a Hole in the Sky That Could Be as Big as Alaska?' *Time*, February 17, 1992.

announced that they supported a ban on CFCs by the year 2000. The reason for that was twofold: a global ban would prevent competitors from continuing to produce and sell CFCs and, at the same time, would open the door to introducing the more expensive CFC substitutes, an area in which DuPont was leading ¹⁵. In July 1992, ICI announced that it, as part of its intention 'of getting out of potentially ozone-harming chemicals', would close the last of its plants producing the ozone-destroying chemical halon by the end of 1993 ¹⁶. Importantly, some economical and environmentally safe alternatives to CFCs have been developed rather quickly despite earlier doubts voiced by the chemical industry ¹⁷.

Responding to new evidence of damage to the ozone layer President Bush announced in February 1992 that United States would halt production of CFCs by the end of 1995 ¹⁸. In March 1992, EC Environmental Ministers responded to the U.S. initiative and public concerns in Europe by adopting proposals to halt production and consumption of ozone-depleting chemicals by 1995 and to reduce their countries' use by 85 percent by the end of 1993 ¹⁹. In April 1992, Japan announced that it planned to end all production of chemicals that threaten the ozone layer at the end of 1995, five years earlier than mandated by the

¹⁵ 'Green Diplomacy', *The Economist*, June 16, 1990, 18. International regulation of CFCs has been analyzed from an epistemic community perspective in Peter M. Haas 'Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone'. However, the epistemic community model is unable to explain this turn-around by major players within the industry with crucial consequences for international cooperation. This is also noted by James K. Sebenius 'Challenging Conventional Explanations of International Cooperation: Negotiation Analysis and the Case of Epistemic Communities', *International Organization* 46 (Winter 1992), 257-59.

¹⁶ 'ICI Will Stop Making Ozone-Depleting Halon', *International Herald Tribune*, June 20 1992. Halons are used primarily in fire extinguishers. Although they are very potent ozone-depleting chemicals, they are not in much use and are therefore of less concern than CFCs.

¹⁷ Andrew Pollack 'Moving Fast to Protect Ozone Layer', *New York Times*, May 15, 1991.

¹⁸ Michael Weisskopf 'Bush Speeds Ban on Chemicals To Help Protect Ozone Layer', *International Herald Tribune*, February 13, 1992. In early February 1992, results from tests done over New England and eastern Canada showed the highest level of ozone-threatening chlorine compounds ever measured anywhere in the world.

¹⁹ 'EC Speeds Its efforts on Ozone', *International Herald Tribune*, February 24, 1992; Marlise Simons 'Ozone Peril is Shocking Europeans into Action: Amid Mounting Protests EC Moves to Advance Chemical Ban to 1995', *International Herald Tribune*, March 4, 1992; Per Stig Møller 'Forstærket Kamp mod Ozonhullet', *Politiken*, April 30, 1992.

Montreal Protocol ²⁰.

Clearly, the process which produced agreement on the Montreal Protocol confirms the propositions about global regime-building for the environment set out above. First, the United States provided international leadership. Second, United Nations Environmental Program played a catalytic role in the process. Third, the case of atmospheric ozone depletion clearly illustrates that international public opinion and public pressure are essential elements of successful global environmental regime-building. As the public was well-informed about this problem, especially after the discovery of the ozone hole, an international environmental conference did not in this case significantly galvanize international attention on and expectations for establishment of a global regime.

An international treaty to control global warming was signed by 154 nations attending the Rio Conference in June 1992, officially the United Nations Conference on Environment and Development (UNCED), marking the twentieth anniversary of the Stockholm Conference ²¹. Scientists have long been concerned that accumulation of various gases in the atmosphere is causing a global temperature rise. The theory behind the so-called greenhouse effect says that various gases and water vapor present in the atmosphere trap heat from the sun which would otherwise escape back into space and that the trapped solar radiation heats up the earth's atmosphere. An accumulation of greenhouse gases, it is assumed, will produce a global temperature rise. The chief greenhouse gas is carbon dioxide (CO₂), a gas produced by the burning of fossil fuels like coal, oil and gas, as well as by deforestation. Climate changes and sea-level rises, due to portions of the polar ice caps melting, are some of the expected effects of a global temperature rise.

There is general agreement that the amount of carbon dioxide in the atmosphere has

²⁰ 'Ozon-stop i Japan', *Politiken*, May 1, 1992.

²¹ For discussion of various aspects of a global regime to control global warming, see Michael Grubb 'The Greenhouse Effect: Negotiating Targets' *International Affairs* 66 (1990), 67-89; Matthew Paterson and Michael Grubb 'The International Politics of Global Warming' *International Affairs* 68 (1992), 293-310; Karen Schmidt 'How Industrial Countries Are Responding to Global Climate Change' *International Environmental Affairs* 3 (Fall 1991), 292-315; James K. Sebenius 'Designing Negotiations Toward a New Regime: The Case of Global Warming' *International Security* 15 (Spring 1991), 110-48; Eugene B. Skolnikoff 'The Policy Gridlock on Global Warming', *Foreign Policy* 79 (Summer 1990), 77-93.

increased by about 25 percent in the past century²². There is also agreement that the world has already warmed by about one degree C since the industrial age began. It is debated among scientists, however, whether the accumulation of carbon dioxide has caused the observed global temperature rise and whether a continuous accumulation, or buildup, of carbon dioxide in the future will result in a temperature rise and the speed at which it will happen. Some scientists claim that there is a cause-and-effect relationship between the global temperature rise and the buildup of carbon dioxide and other heat-trapping atmospheric gases²³. Other scientists claim that no such cause-and-effect relationship exists. Further complicating policy-making, scientists are warning that a significant global temperature rise may cause non-linear responses as, for example, sudden jumps in global temperature rather than gradual increases. Based on model results, the scientists advising the international negotiations on the global warming treaty predicted the global mean temperature would increase by approximately 3 degrees C by the end of the next century if nothing was done to limit emissions of greenhouse gases²⁴.

Importantly, however, unlike the ozone layer case, the global warming issue had not moved from a growing scientific consensus that a problem existed to clear evidence of environmental damage. Mainly because of U.S. resistance, this lack of evidence significantly slowed down the pace of international negotiations on the global warming treaty and led a negotiator to say: 'Pray for another hot summer in America'²⁵. Thus, global warming emerged as a political issue in the United States when American scientist Jim Hansen in the unusually hot summer of 1988 testified that the world was getting hotter probably as a result

²² Several layman introductions to the facts of global warming exist. See for example Karen Wright 'Heating the Global Warming Debate', *The New York Times Magazine*, February 3, 1991. See also William K. Stevens 'Skeptics are Challenging Dire 'Greenhouse' Views', *New York Times*, December 13, 1989.

²³ Other important heat-trapping gases are chlorofluorocarbons, methane and nitrous oxide.

²⁴ Intergovernmental Panel on Climate Change 'First Assessment Report. Overview' *International Environmental Affairs* 3 (Winter 1991), 64-84.

²⁵ 'Green Diplomacy', *The Economist*, 18.

of increasing atmospheric levels of carbon dioxide and other greenhouse gases²⁶. The high uncertainties characterizing the global warming phenomenon did not, however, severely reduce its political significance. As it was noted on the eve of the Rio Conference: 'Seldom, in fact, has an issue risen to the top of the international political agenda while the facts of the matter remained so uncertain'²⁷.

Due to its truly global scope, numerous specialized agencies of the United Nations had been involved in the issue. A number of countries, especially the United States, had also been involved in the scientific aspects of atmospheric carbon dioxide and climate change²⁸. UNEP and the World Meteorological Organization (WMO), another United Nations organization, created the Intergovernmental Panel on Climate Change (IPCC) in 1988. This advisory group, consisting of 1000 of the world's leading climate experts, examined the scientific knowledge about global warming and suggested policy action. That group produced a report in 1990 that was the scientific basis for the global climate treaty.

The EC had hoped to play a leading role in the negotiations on the global warming treaty. In October 1990, the EC agreed to stabilize emissions of carbon dioxide to the 1990 level by year 2000. But less than one month before the Rio Conference EC environment ministers from Denmark, Germany, Italy, Luxembourg, and the Netherlands rejected an EC Commission plan for a carbon dioxide tax within the EC Community. They rejected the EC environment commissioner's decision, which was influenced by hectic lobbying by European industry, to make the plan conditional on similar steps being taken by the United States and

²⁶ Karen Wright 'Heating the Global Warming Debate', *The New York Times Magazine*, February 3, 1991, 24 ff.

²⁷ Boyse Rensberger 'Warming: On Summit Eve, Uncertain Predictions', *International Herald Tribune*, June 1, 1992. 'A recent Gallup Poll of scientists involved with global climate research shows that 53 percent do not believe that warming has occurred, and 30 percent are uncertain'. George F. Will 'Al Gore Grabs at the Green Straw', *International Herald Tribune*, September 3, 1992.

²⁸ Melinda L. Cain 'Carbon Dioxide and the Climate: Monitoring and a Search for Understanding', in David A. Kay and Harold K. Jacobson, eds., *Environmental Protection. The International Dimension*, 75-100.

Japan²⁹. On the other hand, poor EC countries, Spain being the most vocal protestor, opposed the EC Commission's plan which they feared would burden their economies³⁰. The decision left Denmark, Germany, and the Netherlands as the only EC member countries with plans for how to reduce carbon dioxide emissions and the EC Community without a common policy on the issue which could be presented to the Rio Conference³¹. The EC environment commissioner refused to go Rio in protest³². 'There is a feeling that it is each country for itself out there', said an EC official later in Rio, referring to the lack of a coordinated EC policy on controlling carbon dioxide emissions³³.

The Bush administration persistently sought a 'no regrets' policy approach – 'a balanced policy of adopting those environmental measures that reduce greenhouse gas emissions while providing concrete environmental benefits' – in the negotiations on the global warming treaty³⁴. Apart from protests from the environmental community, some scientists and members of Congress, this policy had domestic support³⁵. Quoting high scientific uncertainties and massive economic costs of regulation, the Bush administration persistently opposed any attempt during the negotiations to set targets and deadlines for

²⁹ 'EC Seeks to Tie Energy Tax to U.S. and Japan', *International Herald Tribune*, May 14, 1992. 'EC Drops the Ecological Ball', *International Herald Tribune*, May 28 1992. Henrik Lisberg 'Splittelse for miljø-møde', *Politiken*, May 27, 1992. 'Europe's Industries Play Dirty', *The Economist*, May 9, 1992, 89–90.

³⁰ Victor Smart and Rory Watson 'A Climate of Doom', *The European*, 21–24 May, 1992; Rory Watson 'Fiddling While the Earth Burns...', *The European*, 28–31 May, 1992.

³¹ Henrik Lisberg 'Alene med CO₂-afgift', *Politiken*, May 15, 1992. Henrik Lisberg 'Splittelse for miljø-møde', *Politiken*, May 27, 1992.

³² 'Rio Snub Reflects Earth Summit Chaos', *The European*, 28–31 May, 1992.

³³ Richard Sadler 'Chaos as 'last chance' summit opens in Rio', *The European*, June 4–7, 1992.

³⁴ C. Boyden Gray and David B. Rivkin, Jr. 'A 'No Regrets' Environmental Policy', *Foreign Policy* 83 (Summer 1991), 52.

³⁵ 'Greenhouse Tactics', *International Herald Tribune*, May 25, 1992. 'Time for a Carbon Tax', *International Herald Tribune*, May 26, 1992. See, for example, Jessica T. Mathews 'Global Climate Change: Toward a Greenhouse Policy', *Issues in Science and Technology* 3 (Spring 1987), 57–67.

control of carbon dioxide ³⁶. A U.S. National Academy of Sciences report recommending the United States should take modest steps to mitigate global warming did not cause the administration to change its policy ³⁷. It seemed certain that the U.S. policy was being formulated by the White House chief of staff, the Director of the Office of Management and Budget, and the head of the Council of Economic Advisers, all known to fear that limits would damage the U.S. economy ³⁸. Administration officials doubted whether the EC was able and willing to live up to its intentions of controlling global warming ³⁹.

Despite early indications to the contrary, Japan did not play a leadership role in the negotiations on the global warming treaty, nor later at Rio ⁴⁰. Japan's position changed, however, over the negotiations. While Japan at first supported the United States position, it later sided with the EC and other industrialized countries.

As at the 1972 Stockholm Conference, the interests of the rich, developed countries from the North and the poor, developing countries from the South clashed in the negotiations on the global warming treaty. Developing countries saw in the preparations for the Rio Conference an opportunity to attract money, technology, know-how and other forms of

³⁶ A February 1991 study by the Congressional Office of Technology Assessment estimated that substantial reduction of carbon dioxide emissions could cost the U.S. economy as much as \$150 billion a year. 'Technology is Found to Exist to Cut Global Warming Gases', *New York Times*, February 8, 1991. A U.S. Department of Energy study from December 1991 concluded that reductions in carbon dioxide emissions similar to those adopted by several European countries would cost the United States \$95 billion a year, double the price of gasoline and increase the cost of natural gas by 400 percent. 'U.S. Cites Emission Curbs as Costly', *International Herald Tribune*, December 7-8, 1991.

³⁷ For the Bush Administration's view on this report, see William K. Stevens 'Quick Steps Urged on Warming Threat', *New York Times*, April 11, 1991.

³⁸ Dianne Dumanoski 'Negotiators Stall at First Step Toward Global Warming Treaty', *The Boston Globe*, February 17, 1991.

³⁹ Leslie H. Gelb 'The Hot Air Over Gases That Warm', *International Herald Tribune*, February 11, 1992. Eugene Robinson and Michael Weisskopf 'Washington May Try to Scuttle Declaration on the Environment', *International Herald Tribune*, June 11, 1992. Eugene Linden 'Rio's Legacy', *Time*, June 22, 1992, 47.

⁴⁰ T.R. Reid 'Japan Hasn't Found Act It Needs to Star in Rio', *International Herald Tribune*, June 3 1992. Ellen Andersen 'Japan parat til øget miljøindsats. Bebuder forstærkning af ulandsbistanden', *Politiken*, June 7, 1992.

assistance from developed countries. According to an official from a Caribbean nation: 'For the first time in more than a decade the developing countries have an issue where they have some real leverage. They had none during the debt negotiations. But they are part of the environment, so they have leverage now. And they are using it. It's their negotiating strategy' ⁴¹. Objecting to 'environmental colonialism', developing countries stressed that the global warming problem should be solved by those countries which had created it, namely the developed countries ⁴². OPEC countries led by Saudi Arabia, fearing the effects on oil export, were vehemently opposed to taxes on fossil fuels ⁴³. But the developing countries played a rather insignificant role in the negotiations which mostly were dominated by disagreements between the EC and the United States.

The United States organized international policy conferences bringing together foreign delegates ⁴⁴. President Bush and the administration told delegations and scientists meeting in the April 1990 White House conference that more scientific studies were needed and that the uncertainties involved warranted a cautious approach towards control of greenhouse gases. Especially northern European countries strongly disagreed, however, and favored instead strong action to curb global warming ⁴⁵.

Japan and the United States refused to endorse commitments to control carbon dioxide emissions to an agreed level by the year 2000 as supported by most Scandinavian and western European governments at an international meeting of environmental ministers in the Netherlands in November 1989. The United States wanted more studies before binding control should be considered. The United States acknowledged for the first time,

⁴¹ Marlise Simons 'Environmental War Heats Up', *International Herald Tribune*, March 18, 1992.

⁴² Anil Agarwal and Sunita Narain '*Global Warming in an Unequal World: A Case of Environmental Colonialism*' (New Delhi, India: Centre for Science and Environment, 1991).

⁴³ Niels Nørsgaard 'OPEC frygter CO₂-afgifter', *Politiken*, May 28, 1992.

⁴⁴ Allan R. Gold 'Bush Proposing Talks in U.S. on Global Warming', *New York Times*, December 5, 1989.

⁴⁵ Dianne Dumanoski 'Bush Stance on Global Warming Hit', *The Boston Globe*, April 19, 1990. 'Talk of 'Global Change'', *The Boston Globe*, April 23, 1990.

however, that stabilizing carbon dioxide emissions in industrialized countries would have to be enforced at some point. The Soviet Union and Poland also opposed specific targets, fearing that they would be too costly to their economies ⁴⁶.

The report of the IPCC was presented to the Second World Climate Conference in Geneva in November 1990, jointly sponsored by UNEP and WMO ⁴⁷. The director of UNEP, Mostafa Tolba, concluded that 'what we know now is more than enough to act, and to act fast' ⁴⁸. However, the IPCC report's conclusion – 'countries are urged to take immediate actions to control the risks of climate change with initial emphasis on action that would be economically and socially beneficial for other reasons as well' – seemed to suggest that the scientific evidence in itself did not warrant implementing major policy changes ⁴⁹. The United States, at that point the only industrialized country not committed to a national carbon dioxide control policy, still resisted concrete goals for cutting emissions ⁵⁰. Similar to the EC, Japan had in October 1990 committed itself to stabilizing its emissions at 1990 levels by the year 2000.

The first United Nations–sponsored negotiations on a global warming treaty in Chantilly, Virginia in February 1991, did not result in agreement among the delegates from 130 countries. Although admitting that global warming was a problem, the United States resisted specific targets and deadlines as suggested by the EC, Brazil and a number of small low-lying island nations. The EC found a convention that did not require detailed

⁴⁶ Paul L. Montgomery 'U.S. and Japan Refuse Curbs on Carbon Dioxide', *New York Times*, November 7, 1989. Paul Montgomery 'U.S., Japan and Soviets Prevent Accord to Limit Carbon Dioxide', *New York Times*, November 8, 1989. Allan R. Gold 'U.S. Ready to Speed Negotiations For Accord on Global Warming', *New York Times*, November 22, 1989.

⁴⁷ The first World Climate Conference was held in Geneva in 1979. See, eventually, footnote 28 in this chapter.

⁴⁸ 'UN Aide presses for steps to fight global warming', *The Boston Globe*, October 30, 1990.

⁴⁹ 'Scientists urge quick steps on global warming', *The Boston Globe*, November 5, 1990.

⁵⁰ James L. Franklin 'US Deflects Effort to Cap Carbon Dioxide Emissions', *The Boston Globe*, November 6, 1990.

commitments unacceptably weak⁵¹. The United States also wished to include greenhouse gases other than carbon dioxide and believed that measures already taken would reduce its amount of greenhouse gases⁵². The United States stuck to its decision to refuse mandatory cuts in emissions of carbon dioxide at a meeting session in Nairobi, Kenya, in September 1991, while the EC and Japan supported reducing carbon dioxide emissions to 1990 levels by the year 2000⁵³.

The United States again refused to accept a treaty setting a strict timetable for curbing emissions of carbon dioxide that bound governments at the final negotiations in New York, in May 1992. The fact that the United States necessarily had to be part of any global solution to global warming, as it accounts for almost one-quarter of total global emissions, provided the United States with powerful bargaining leverage: 'Faced with the U.S. refusal, the other delegates gave in, knowing that a treaty would be worthless unless the United States signed it'⁵⁴. It seemed clear, furthermore, that President Bush would not participate in the Rio Conference, where it was planned government leaders would sign the global warming treaty, unless other industrialized countries accepted a treaty without specific targets and deadlines. In fact President Bush announced that he would attend the conference only after agreement on the draft treaty had been reached⁵⁵. European governments and others thus feared that the Rio Conference would have little political impact in case President Bush stayed away.

⁵¹ Paul Lewis 'U.S. Accused of Endangering Environment Talk', *International Herald Tribune*, March 25, 1992.

⁵² Keith Schneider 'U.S. Accepts Greenhouse Targets', *New York Times*, February 5, 1991. Dianne Dumanoski '2 UN Panels To Work On Global Warming', *The Boston Globe*, February 15, 1991. For U.S. steps already taken - including amendment of the Clean Air Act, reforestation, energy-saving measures, as well as phasing out CFCs - see William K. Stevens 'Hopeful E.P.A. Report Fans a Debate as Talks on Global Warming Nears', *New York Times*, January 13, 1991.

⁵³ 'U.S. Continues to Resist Mandatory Emissions Cut', *New York Times*, September 22, 1991.

⁵⁴ 'Global Warming Pact Without Targets Gets U.S. Approval', *International Herald Tribune*, May 11, 1992.

⁵⁵ Michael Wines 'Bush Likely to Go To 'Earth Summit'', *International Herald Tribune*, May 8, 1992. 'Bush Plans to Attend 'Earth Summit'', *International Herald Tribune*, May 13, 1992.

Governments' reactions to the draft treaty illustrated how widely attitudes toward uncertain scientific proof of environmental damage differed between the United States and the EC. The administrator of the EPA, William K. Reilly, characterized it as a 'historical achievement. The measured approach taken in the treaty is a reasonable response to the current state of scientific knowledge' ⁵⁶. However, the German environment minister conceded: 'Naturally we would like to have achieved a better climate agreement than the United States and those who are hiding behind the United States' ⁵⁷. Thus, western European governments felt that Washington exaggerated the amount of uncertainty in existent knowledge about global warming in order to protect the U.S. economy. In Rio, President Bush urged other countries to present specific plans to put into effect the global warming treaty at a meeting to be held before the end of 1992 ⁵⁸. U.S. officials pointed out that only the United States and a small number of other countries had specific plans, and repeated doubt about the scientific consensus on global warming ⁵⁹. After some initial confusion, however, the EC adopted a declaration setting targets and timetables for reducing carbon dioxide emissions to 1990 levels by the year 2000 ⁶⁰.

Clearly, the case of the global warming regime differs from both the ocean dumping case and the atmospheric ozone depletion case. Most conspicuously, the United States did not attempt to build international support for a global regime. Quite the opposite, by splitting ranks with the EC and other industrialized countries the United States in fact

⁵⁶ 'Global-Warming Pact Without Targets Gets U.S. Approval', *International Herald Tribune*, May 11, 1992.

⁵⁷ Stephen Kinzer 'Kohl Urges Tighter U.S. Policy on Pollution', *International Herald Tribune*, May 21, 1992.

⁵⁸ 'Bush Takes the Offensive at Rio Summit', *International Herald Tribune*, June 13-14, 1992.

⁵⁹ Leslie H. Gelb 'The Hot Air Over Gases That Warm', *International Herald Tribune*, February 11, 1992.

⁶⁰ 'U.K. to Sign Rio Pact, Leaving U.S. Out', *International Herald Tribune*, June 10, 1992. Richard Sadler 'Chaos as 'last chance' summit opens in Rio', *The European*, June 4-7, 1992. Richard Sadler 'Rio saved from 'empty talk' by late cash offer', *The European*, June 11-14, 1992. Paul Lewis 'Allies' Independent Ways in Rio: A Diplomatic Challenge to a Beleaguered U.S.', *International Herald Tribune*, June 11, 1992.

delayed the regime-building process. But UNEP did also in this case play a catalytic role by organizing scientific meetings and marshalling scientific knowledge as well as by increasing the visibility of the issue and advocating international action. The Rio Conference, furthermore, the largest meeting ever of state leaders, dramatically raised international expectations for environmental protection. Rio significantly increased the pressure on governments to demonstrate that they were environmentally responsible.

While still in its initial phase, the case of the global warming treaty does confirm the above propositions about the conditions under which the United States plays a leadership role in the construction of global environmental regimes. With no evidence of environmental damage and environmentalists, scientists and others being unable to significantly mobilize public opinion, global warming was not a significant environmental issue in the United States. Compared to the cases of atmospheric ozone depletion and ocean dumping, that is a significant difference. While other explanations could be suggested, the lack of international leadership by the United States can therefore quite simply be explained by pointing to insufficient U.S. domestic pressure for national and international steps to tackle global warming. In a case where no domestic environmental problem clearly existed, as the above model predicts, the United States did not provide international leadership. Furthermore, U.S. environmental regulation either preceded or was introduced parallel to global regulation in the cases of atmospheric ozone depletion and ocean dumping which created pressure in the United States for global regulation harmonizing economic costs across countries ⁶¹. But in the case of carbon dioxide emissions control U.S. regulation comparable to a European 'carbon tax' neither existed nor was expected. Nor was there such pressure for moving the United States to constructively undertake such global regime-building.

⁶¹ With respect to the atmospheric ozone depletion case, James K. Sebenius writes: 'As public concern intensified following the news of the Antarctic ozone hole, the prospects for U.S. legislation that would have unilaterally restricted CFC production and use grew substantially and apparently were carefully cultivated by international negotiators...from DuPont's point of view, while no regulation would have been the preferred alternative, international rules that constrained the entire global industry were far preferable to a U.S. law that singled out domestic companies'. 'Challenging Conventional Explanations of International Cooperation: Negotiation Analysis and the Case of Epistemic Communities', 258.

The case of the global warming treaty also confirms that several actors interact when global environmental regimes are built. Despite its resistance, the United States did join an international process which will mean increasing attention to the issue in the future. There is no doubt that the negotiations on the global warming treaty as well as the Rio Conference increased the pressure on the Bush administration to join multilateral efforts to deal with the problem. It should also be noted that, despite huge dissimilarities, international cooperation to control global warming presently resembles the Vienna Convention and the London Dumping Convention; it establishes a framework for global action and provides for more research.

Some observations on the interplay of a hegemon, an international secretariat and an international environmental conference can also be made. Undoubtedly, United States' support of the Stockholm Conference contributed greatly to its success⁶². To support and strengthen the conference, the United States proposed and contributed significantly to a new U.N. Environment Fund⁶³. Conversely, there is every reason to believe that the lack of support by the Bush administration of the Rio conference made it less successful than if the

⁶² A member of the Stockholm secretariat has noted that 'the Stockholm Conference was aided by the fact that a major donor state [the United States] had already proposed that a \$100 million fund be established over five years with the promise of significant contributions'. Peter S. Thacher 'Background to Institutional Options for Management of the Global Environment and Commons'. A Preliminary Paper for the World Federation of United Nations Associations Project on 'Global Security and Risk Management', 1991, 23. Elsewhere, Thacher has pointed out that 'many international programs related to global change were proposed by the United States during a period when it saw its national interests being advanced by cooperative, international programs. These included, among many others, the World Weather Watch, the Global Atmospheric Research Program, the International Decade of Ocean Exploration, and the International Geosphere-Biosphere Programme, as well as UNEP and its voluntary fund'. 'Alternative Legal and Institutional Approaches to Global Change', 121. The United States contributed 37 percent to the U.N. Environment Fund during its first five years. Harold K. Jacobson and David A. Kay 'Conclusions and Policy', 326.

⁶³ Discussing the U.S. contribution to this U.N.fund, Russell Train pointed out before a Congressional hearing in 1972: 'I think it is a voluntary contribution and it is designed to evidence in strong and positive fashion the very definite commitment of the U.S. Government to the success of this Conference and of the success of the ongoing U.N. effort in the environmental field'. *U.N. Conference on Human Environment: Preparations and Prospects*. Hearings before the Committee on Foreign Relations. United States Senate. 92nd Congress. May 3, 4, and 5, 1972, 17.

United States had been an eager supporter⁶⁴. By withholding financial support and making little personnel available to an international secretariat, as the Stockholm secretariat was fully aware, a hegemon can severely reduce an international secretariat's ability to catalyze international action⁶⁵. But a hegemon's 'power' or ability to exert influence over an international secretariat is largely of a defensive kind as it might succeed to slow down but apparently cannot stop an international secretariat's efforts to catalyze action and global environmental regime-building. The single most important explanation for this anomaly, as compared to other international issues, is that environmental protection so far has been driven by public opinion and domestic pressure which even hegemons must respect and respond to. And again, an examination of U.S. domestic politics tells us why United States' foreign environmental policy in 1992 has differed markedly from that pursued twenty years earlier.

The global warming case also demonstrates that other nations than the United States might in the future act as international environmental leaders. The model proposed here assumes that the existing international system with the United States being the prominent leading nation will not undergo major changes in the foreseeable future. But in case that happens, it is conceivable that the European Communities or Japan, perhaps jointly, will provide leadership. As shown above, several developments in the global warming case pointed to that fact. But it is also evident that in cases where the United States does not play its proper leadership role it can, due to its economic as well as its technical-scientific capabilities, significantly hamper other attempts at leadership.

It is evident, however, that international environmental leadership involves more than a willingness to contribute financially to international environmental funds and the like. As environmental protection has increasingly become lucrative business, governments might be

⁶⁴ After the Rio conference, the administrator of the U.S. EPA, William K. Reilly, 'conceded that the administration [had] assigned a 'low priority' to negotiations on protection of forest species, delayed the signature of a treaty on global warming, postponed announcing President Bush's plan to attend and 'committed few resources'. Michael Weisskopf 'U.S. Environment Chief Says Bush Fumbled Rio', *International Herald Tribune*, August 3, 1992.

⁶⁵ See Appendix B, point 4.

advocates and even eager financiers of international environmental policies preparing the way for the export of pollution control equipment and environmentally friendly products. But such attempts at influencing international environmental policy will hardly be successful. In order to be credible, international environmental leadership must be based on a firm commitment to solving environmental problems at home before solving them abroad ⁶⁶.

In summary, the case of the Montreal Protocol confirms the propositions of the transnational coalition model and the case of the global warming regime, although it has not yet moved beyond the initial phase, also supports the model. Again, at least three conditions must be met for global environmental regime-building to happen: international leadership provided by the United States, an international secretariat to play a catalytic role, and an international environmental conference to focus public opinion and public pressure on governments. Furthermore, the global warming case supports the strong claim about public opinion as the United States did not provide international leadership in a situation where no significant U.S. domestic pressure and support for international leadership existed.

The future of international regulation of radwaste disposal

It is uncertain whether or not ocean dumping of low-level radioactive waste will be resumed in the future. Perhaps ironically, while U.S. delegates to the recent consultative meetings within the international dumping regime do not expect so, Spanish, Danish and Greenpeace delegates are less certain ⁶⁷. Various forces seem to be pulling in almost opposite directions. The opinion of ocean scientists, the development of international regulatory machinery, the strength of the transnational opposition against radwaste disposal, and international public opinion will all play a role.

⁶⁶ The case of Japan seems to illustrate this point well. See Andrew Pollack 'Ecological Savior Abroad, Japan Lags at Home', *International Herald Tribune*, August 1-2, 1992.

⁶⁷ Based on author's interviews with delegation members attending the 1991 Consultative Meeting in November 1991, in London.

Ocean scientists have in professional journals criticized the policy development within the international dumping regime. In a commentary entitled 'Science – A Time of Change?', one British scientist has criticized the 1985 decision that 'in the final analysis, social and related factors may outweigh those of a purely scientific and technical nature'. However the terms of reference of the convention were to decide issues on the basis of science; the scientists have done a commendable job, but the unscientific demand of the resolution cannot be answered by scientists. There is no scientific evidence to indicate that the discharge of low level radioactive wastes to the sea, land or air is harmful to man'. While undermining his own rejection of non-scientific factors, he concludes that 'these social matters are more destructive to the nuclear power programme than any of a scientific nature. The resolution is not binding and matters should be clarified when the UK government identifies what is the best practical option for disposal' ⁶⁸. As far as the risks concerned, a recent peer-reviewed study concluded that the risks from past radioactive ocean dumping in the north-east Atlantic 'are very low indeed', and that 'even if dumping rates over the next few years were ten times those in the recent past, the effects on humans and marine fauna would still be extremely small'. Thus, as the study also concluded, making a barely concealed reference to the moratorium on radwaste disposal, 'it is clear that there are no scientific or technical grounds for excluding sea dumping from consideration alongside other viable disposal options for radioactive wastes' ⁶⁹. Although present knowledge admittedly is imperfect and

⁶⁸ E.I. Hamilton 'Science – A Time of Change', in *Marine Pollution Bulletin* 17 (1986), 296–97. See also E.I. Hamilton 'Radiation Dose – The Marine Environment, A Cause for Concern?', *Marine Pollution Bulletin* 16 (1985), 305–09.

⁶⁹ The conclusion of the study, in which a leading international expert in the field participated, says: 'Over the last five years, our understanding of modelling biological, oceanographic and geochemical processes in the oceans has increased significantly. New models and data bases, which have been subjected to peer review by experts in dumping and non-dumping countries alike, have been used to show that the effects on man and marine animals from past radioactive waste dumping in the north-east Atlantic are very low indeed. It has also been shown that, even if dumping rates over the next few years were ten times those in the recent past, the effects on humans and marine fauna would still be extremely small. On the basis of these results, and other evidence presented to them, the experts involved in the NEA review concluded that the north-east Atlantic site could continue to be used for the dumping of packaged wastes during the next five years. It is recognized that before any country issues a permit for further dumping, other aspects of this disposal method will need to be considered. Nevertheless, it is clear that there are no scientific or technical grounds for excluding sea dumping from consideration alongside other

uncertain, the marine scientific community is in agreement that the risk from past dumping is 'exceedingly small' ⁷⁰.

In the 1980s and early 1990s, a few marine scientists opposed to the trend towards all-out protection of the oceans have occasionally tried, as Jacques Cousteau, Thor Heyerdahl and others did in the 1970s, to reach out to public opinion through the *New York Times* and other publications with a wide circulation ⁷¹. One scientist advocating the concept of assimilative capacity has pointed out that regulation presently, by forcing wastes to go on land, overprotects the oceans at the cost of a concentration of wastes, and thereby risks, on land: 'The reasons for change in philosophy are compelling. The ocean is a large part of the planet. Land makes up only 30 percent of the earth's surface and we are land animals. On this small bit of land we must find sustenance, and, nature has decreed, generate wastes. Not all of the land is readily available to us. We must subtract the polar regions, deserts and huge mountain ranges. What is left is both the domain of man and, unfortunately, the repository of nearly all of his more toxic wastes. With this being the case, does it make sense to keep the vast ocean, with 97 percent of the world's water in its basins, inviolate? Is it right to protect all of this salt water while endangering the piddling fresh water resources we absolutely must have for drinking and agriculture?' ⁷². Making the

viable disposal options for radioactive wastes'. W.C. Camplin and M.D. Hill 'Sea Dumping of Solid Radioactive Waste: A New Assessment', *Radioactive Waste Management and the Nuclear Fuel Cycle 7* (August 1986), 250-51.

⁷⁰ On the question of the scientific accuracy of existing oceanographic and radiological models, two marine scientists have recently pointed out: 'The consensus of the scientific community (as represented by the LDC Expert Panel) is that, while there are uncertainties and inaccuracies, these are not so great as to invalidate the conclusion that the individual risk from past dumping is exceedingly small and that the collective dose commitment cannot have been underestimated by more than an order of magnitude or so [i.e. a factor of ten]'. J. Mike Bowers and Chris J.R. Garrett 'Analysis of the Issues Related to Sea Dumping of Radioactive Wastes', 118.

⁷¹ For another populist advocacy of radwaste disposal by an American marine biologist and former member of the AEC, see Dixy Lee Ray with Lou Guzzo, *Trashing the Planet. How Science Can Help Us Deal with Acid Rain, Depletion of the Ozone, and Nuclear Waste (Among Other Things)*, 153 ff.

⁷² Charles Osterberg, a former American director of the International Laboratory of Marine Radioactivity in Monaco, 'Seas: To Waste or Not', *New York Times*, August 9, 1981. Osterberg has also presented his view in 'The Ocean - Nature's Trash Basket', in Roy G. Post, ed., *Waste Management '82*.

same point, another American scientist has challenged 'Planet Earth', one of the key symbols of the late 1960s' environmental movement: 'Several leading U.S. scientists have voiced the opinion that 'Planet Water' is a better name than 'Planet Earth', since 71 percent of the earth's surface is covered with seawater. Over 99 percent of all liquid water on earth is polluted with salt, leaving less than 1 percent fresh or drinkable. This small amount of fresh water and land supports some 5 billion people. The laws protecting the oceans are forcing the most toxic wastes to go on land, placing humans in jeopardy by contaminating the limited volume of drinkable water. Also, the land produces some 99 percent of the food consumed by mankind. The key question then becomes 'What is more critical to mankind – the 99.4 percent of the water contaminated with salt which provides so few of our needs, or the tiny 0.6 percent of the fresh liquid water that contributes to nearly all of our food, fiber, and shelter?'⁷³.

Those attempts to influence public thinking have not had any effect so far. Supporters of the concept of assimilative capacity find that they are being seen as advocates of unrestricted pollution by parts of the marine scientific community as well as the public⁷⁴. Given the public sentiment on the issue of ocean protection it thus seems most unlikely that the public in the foreseeable future will accept a reversal of the trend towards all-out protection of the oceans.

United States EPA officials have recently suggested that the assimilative capacity concept or some variation thereof should complement, or perhaps replace, the international

Proceedings of the Symposium on Waste Management at Tucson, Arizona, March 8–11, 1982. For another scientist advocating opening up the oceans to more waste disposal, see Edward D. Goldberg 'The Oceans as Waste Space: The Argument', *Oceanus* 24 (1981), 4–9. By same author, see also 'The Oceans as Waste Space', in Virginia K. Tippie and Dana R. Kester, eds., *Impact of Marine Pollution on Society*, 26–33.

⁷³ Michael A. Champ 'The Ocean and Waste Disposal', in *The World and I* 5 (April 1990), 328.

⁷⁴ J.E. Portmann 'ACMP's Approach to Environmental Management and Protection'. International Council for the Exploration of the Sea, 1991. J.E. Portmann, U.K. Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, is member of the International Council for the Exploration of the Sea's (ICES) Advisory Committee on Marine Pollution (ACMP). ICES is an international organization providing scientific advice on marine affairs. J.E. Portmann is also member of the GESAMP. For GESAMP and ACMP, see also footnote 96 below.

dumping regime's black and grey lists regulatory system. While there are several ways in which the black and grey lists system could incorporate the notion of assimilative capacity, the oceans would as a result be opened up to greater use as a waste disposal medium as long as unreasonable degradation would not occur ⁷⁵. Also, although an unpopular proposal among environmental groups, marine scientists from Woods Hole Oceanographic Institution plan to study use of the deep-sea floor for dumping sewage sludge, the end product of the sewage treatment process ⁷⁶. On the other hand, U.S. federal law passed by Congress in 1988 prohibits ocean dumping of sewage sludge and industrial wastes after 1991 ⁷⁷. After New Jersey stopped dumping sewage sludge in March 1991 the only dumpers left in the United States were three authorities in the New York City who were to stop dumping July 1992 ⁷⁸.

European states are increasingly phasing out ocean dumping and are adopting the so-called precautionary approach, an approach to environmental regulation that at the international level can be traced back to the Stockholm secretariat in the early 1970s ⁷⁹.

⁷⁵ Alan B. Sielen 'Sea Changes? Ocean Dumping and International Regulation', 1-32. The author is Director of Multilateral Staff in the Office of International Activities, U.S. EPA. The article is written in his private capacity.

⁷⁶ Charles D. Hollister explains: 'The idea isn't to make it easier for industries or cities to be sloppy with their wastes. But at the same time, no matter how much we recycle and conserve and reduce waste, we're still going to have some. Does it make sense to close off 70 percent of the earth's surface without at least studying the idea of using it for waste disposal?'. Keith Schneider 'U.S. Scientists Plumb Depths For Dump Sites', *International Herald Tribune*, December 3, 1991. For Charles D. Hollister, see Chap. 7 footnote 67.

⁷⁷ For the law, which amends the 1972 Marine Protection, Research, and Sanctuaries Act, see 'End of Ocean Dumping' *Marine Pollution Bulletin* (April 1989), 156-57. The law thus brought an end to the more permissive attitude towards ocean dumping which, as mentioned in Chapter 7, had developed since 1977. For the U.S. policy development up to 1988, see R.H. Burroughs 'Ocean Dumping: Information and Policy Development in the USA', *Marine Policy* (April 1988), 96-104.

⁷⁸ Allan R. Gold 'Millions in Bills are Coming Due for Region's Ocean Dumping', *New York Times*, December 24, 1990; Allan R. Gold 'New Jersey Ends Practice of Dumping Sludge in Sea', *New York Times*, March 18, 1991.

⁷⁹ Maurice Strong spoke at the first meeting of the IWGMP. He said, among other things, that: 'It is not only the lawyers amongst us who will be aware that the law cannot always wait until science can provide all the answers. Time is often against us: even if we were able tomorrow totally to prohibit the production or use of the most damaging pollutants it would be some time before the effects of our actions

The Second North Sea Conference in November 1987 – attended by Belgium, Denmark, France, the then Federal Republic of Germany, the Netherlands, Norway, Sweden and Britain – agreed 'that, in order to protect the North Sea from possible damaging effects of the most dangerous substances, a precautionary approach is necessary which may require action to control inputs of such substances even before a causal link has been established by absolutely clear scientific evidence'⁸⁰. The Nordic states, in particular, are arguing that disposal of wastes at sea is an unacceptable way of getting rid of wastes, that waste generation must be limited at source, and that safe methods of land disposal must be used for the remaining waste⁸¹. In September 1992, Nordic environmental ministers agreed to propose a permanent ban on dumping of medium-level and low-level radioactive waste to

would be felt in the oceans. We need urgently to clarify the law with respect to marine pollution....We would need to weigh the price of doing nothing as opposed to doing something...but such [economic] figures would represent only the tip of the iceberg of ultimate costs. Just as the law must anticipate science to a certain extent, I think that we will agree that the law cannot wait either on a fully detailed cost-benefit balance sheet'. *Report of the First Session of the Inter-Governmental Working Group on Marine Pollution, London. 14-18 June 1971*. UN doc. A/CONF.48/TWGMP.I/5, 21 June, 1971, Annex 4, 4-6. Strong also stressed this approach at the opening session in Stockholm: 'There is much difference of opinion in the scientific community over the severity of the environmental problem and whether doom is imminent or, indeed, inevitable. But one does not have to accept the inevitability of catastrophe. We need subscribe to no doomsday threat to be convinced that we cannot – we dare not – wait for all the evidence to be in. Time is no ally here unless we make it one'. Walter Sullivan 'World Conference: Struggling Against the Doomsday Timetable', *New York Times*, June 11, 1972. For a discussion of this regulatory principle, see Daniel Bodansky 'Scientific Uncertainty and the Precautionary Principle' *Environment* 33 (September 1991), 4 ff. See also discussion in *Environment* 34 (April 1992), 2-4.

⁸⁰ Ministerial Declaration 'Second International Conference on the Protection of the North Sea' (London: 24-25 November 1987), 7.

⁸¹ An official of the Norwegian Ministry of Environment suggests five main arguments for this policy: First, all dumping of wastes at sea may result in harm to marine life, and should therefore be avoided. Little is yet known about possible long-term effects on marine ecology. Second, dumping of wastes at sea may, directly or indirectly, harm the interests of third countries and their legitimate uses of the sea. In this respect, ocean disposal does not share the costs and benefits equally between states. Third, acceptable land-based options do exist. The use of such options, including the use of recycling and new industrial processes, will be encouraged and further improved if dumping is no longer allowed. Fourth, the problems of effective control over dumping activities, and over their effects on the marine environment. Fifth, the problem of 'no return', once the materials have been dumped. Atle Fretheim 'Dumping at Sea' *Marine Policy* (May 1990), 247-50.

the consultative meeting of the international dumping regime in November, 1992⁸². Britain, once called 'the dirty man of Europe', thus is increasingly 'greening' in response to international pressure canalized through specialized fora such as the international dumping regime and, more importantly, the EC⁸³. On the EC's influence on British environmental policy, a member of Britain's House of Lords recently noted: 'I cannot help feeling it is impossible to avoid the Community as a forum and as a pressure group working on us, and working on our public'⁸⁴.

In summary, a strong international trend presently exists towards stopping dumping at sea within the international dumping regime. In the early 1990s, the United States is isolated internationally on this issue. In addition to the rulings of the international dumping convention, a regional agreement to ban radwaste disposal has recently been reached in the Pacific. An African agreement from 1990 prohibits dumping of radioactive waste at sea, as well as disposal into the seabed, and a ban on radwaste disposal is presently being considered within two European marine pollution control arrangements⁸⁵.

The strength of the nongovernmental opposition against radwaste disposal is not

⁸² 'Vil stoppe for dumping', *Berlingske Tidende*, September 4, 1992. Ellen Andersen 'Globalt stop for havsvineri. Dansk forslag mod dumping af affald', *Politiken*, August 1, 1992.

⁸³ There is agreement that Britain's environmental policy increasingly has been shaped by the EC. See Timothy O'Riordan 'The Politics of Environmental Regulation in Great Britain' *Environment* 30 (October 1988), 5ff. See also 'The Greening of British Politics' *The Economist*, March 3, 1990, 49-50.

⁸⁴ E. Cranbrook quoted in U.K. House of Lords *Nineteenth Report*, 1987-88, 34.

⁸⁵ The official title of this convention from 1990 is the African Convention on the Ban of Import of All Forms of Hazardous Wastes into Africa and the Control of Transboundary Movements of such Wastes Generated in Africa. For its relation to the so-called Basel Convention (The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal), see Winfred Lang 'The International Waste Regime', in W. Lang, H. Neuhold and K. Zemanek, ed., *Environmental Protection and International Law* (London: Graham and Trotman, 1991), 159-60.

The Helsinki Convention of 1973 prohibits all dumping in the Baltic Sea; the Barcelona Protocol of 1976 prohibits the dumping of all forms of radioactive waste. Spain suggested recently that the Oslo Convention and the Paris Convention - a North Sea arrangement regulating land-based marine pollution sources - be revised to ban radwaste disposal. Information taken from 'Proposal for an Express Prohibition on the Dumping of Radioactive Waste to be Included in the New OSPAR Convention' submitted by Spain to the Third Joint Meeting of the Ad Hoc Working Group on the Review of the Oslo Convention and the Ad Hoc Working Group on the Review of the Paris Convention meeting in Lisbon, 9-13 September 1991.

entirely clear. Greenpeace has grown considerably since its protests against radwaste disposal started around 1978. By 1990, Greenpeace had over 4 million supporting members worldwide, employed approximately a thousand people in 23 offices located on four continents, including Asia and Latin America, and owned seven vessels ⁸⁶. Although Greenpeace recognizes that radwaste disposal perhaps is not so prominent in the public mind at this point in time it expects that a resumption of radwaste disposal would be met with considerable public opposition ⁸⁷. The trade unions which effectively brought radwaste disposal to a halt in 1983 have reiterated their position in the late 1980s. Most recently, in August 1990, the Congress of the International Transport Federation (ITF) – with worldwide affiliate–members – adopted a resolution on toxic wastes which 'calls on developed nations and others involved in the dumping of toxic waste to cease their nefarious activities forthwith and to find alternative safe means of disposing of such wastes...Transport workers throughout the world should be mobilized to take action against any person or persons continuing to engage in the reckless dumping of toxic and radioactive waste in any part of the world' ⁸⁸. Pacific islands have also repeated their call for a stop for 'all ocean dumping of any kind of radioactive waste' at the 1991 consultative meeting of the international dumping regime ⁸⁹. Importantly, recently disclosed Soviet dumping of radioactive waste over the last three decades in the Arctic has caused considerable concern in Norway and has once again focused

⁸⁶ Information on Greenpeace is taken from *'Political and Social Impact of a Resumption of Radioactive Waste Dumping at Sea'*. Statement submitted by Greenpeace International to the Third Meeting of the Intergovernmental Panel of Experts on Radioactive Wastes (IGPRAD) of the London Dumping Convention (LDC). October 1990.

⁸⁷ See *'Political and Social Impact of a Resumption of Radioactive Waste Dumping at Sea'*. Statement submitted by Greenpeace International to the Third Meeting of the Intergovernmental Panel of Experts on Radioactive Wastes (IGPRAD) of the London Dumping Convention (LDC). October 1990.

⁸⁸ Quoted from *ibid*.

⁸⁹ Matthias Y. Kuor, Yap State Legislature, Federated States of Micronesia, at the 1991 consultative meeting of the LDC.

international attention on this issue ⁹⁰.

In summary, the interplay of several factors will influence the future of radwaste disposal. The opinion of marine scientists, the strength of the transnational coalition against radwaste disposal, the development of international regulatory machinery, and international public opinion will all play a role. But the international dumping regime is steadily moving towards phasing out dumping activities which are perceived as hazardous – for example, the 1990 consultative meeting decided to phase out industrial dumpings by the end of 1995 ⁹¹. Significant policy changes in the future will be contingent upon a change in public opinion.

Looking back – looking ahead

The international dumping regime marks a significant step forward in nations' efforts to protect the oceans of the world. Twenty years ago some parts of the oceans were seriously damaged. It was increasingly realized that they cannot absorb unlimited amounts of wastes. Competent national agencies, monitoring, keeping records, and licensing dumping permits, should together formulate policy needed for protection of the marine environment against dumping.

The ban on radwaste disposal has been a stumbling block within the international dumping regime. While some countries claimed victory, others reconsidered their membership. But it has also been a revelation. To all, this experience has illustrated that

⁹⁰ 'Masser Af A-Affald I Havet', *Politiken*, February 26, 1992; see also Einar Hagvaag 'Norsk Frygt for Atomkirkegård', *Politiken*, May 3, 1992; see also Patrick E. Tyler 'Soviets Dumped Nuclear Waste in Arctic Waters', *International Herald Tribune*, May 5, 1992; Alfred Friendly, Jr. 'We Ignore Chernobyl's Cousins at the World's Risk', *International Herald Tribune*, May 15, 1992. The Soviet Union has always maintained that it did not dump. Furthermore, Soviet scientists have been criticizing Western scientists for being too permissive in their attitude towards regulation of radwaste disposal. Typical of the Soviet position is the following statement: 'The Soviet Union always has been and will be a supporter of the strictest measures for the prevention of radioactive contamination of the ocean'. Quoted in F.L. Parker 'Disposal of Low-Level Radioactive Wastes into the Oceans', *Nuclear Safety* 8 (Summer 1967), 377.

⁹¹ 'Overraskende Globalt Stop for Industriadumpninger'. Press release from the Danish Ministry of the Environment, November 2, 1990.

the world of science and technology is not one of safety, absolutes and hard facts, but rather one of risks, probabilities, and uncertainty⁹². Despite initial protests, the resolution calling for studies of scientific and technical issues, as well as wider legal, social, economic and political aspects, may lead to an improvement of the existing way of making decisions. While the process seems rather unstructured at the present, this may change in the future.

The international dumping regime's scientific advisory group GESAMP – the Joint Group of Experts on the Scientific Aspects of Marine Pollution, established under the United Nations in 1969 – is concerned over the ban on radwaste disposal⁹³. The most recent GESAMP report, the policy manifesto *Global Strategies for Marine Environmental Protection*, sees the ban as an expression of 'lack of confidence in the regulatory process' and as a forerunner of the recent trend within international environmental forums, for example the North Sea Conference, to adopt the precautionary principle⁹⁴. A former editor of *Marine Pollution Bulletin* has written that this principle, in the worst case, means 'that marine science no longer has an effective contribution to make to decision-making about waste disposal options'⁹⁵. But GESAMP, and ACMP, which is another international

⁹² Mary Douglas writes with respect to the cultural meaning of risk today: 'However, the risk that is a central concept for our policy debates has not got much to do with probability calculations. The original connection is only indicated by arm waving in the direction of possible science: the word *risk* now means danger; *high risk* means a lot of danger'. Mary Douglas 'Risk as a Forensic Resource', *Dædalus* 119 (Fall 1990) *Risk* (Special issue), 3.

⁹³ For GESAMP, see Michael Waldichuk 'An International Perspective on Global Marine Pollution' in Virginia K. Tippic and Dana R. Kester, eds., *Impact of Marine Pollution on Society*, 37–73.

⁹⁴ GESAMP report no. 45 '*Global Strategies for Marine Environmental Protection*' (London: IMO, 1991), 10. This report has been heavily criticized by Greenpeace. See IMO document LDC14/Inf.29 '*Critical Review of GESAMP Report No. 45 on 'Global Strategies for Marine Environmental Protection' (1991)*'. Submitted by Greenpeace International to the Fourteenth Consultative Meeting of the London Dumping Convention (LDC). IMO, London, 25–29 November 1991.

⁹⁵ Dr. R.B. Clark, also quoted in Chap. 3, writes: 'In Europe there is a strong trend towards the elimination of disposing of wastes to the sea. It is perhaps best exemplified in the German *Versorgeprinzip*, or 'precautionary principle'. In other words a decision has already been taken that the sea must be exempt, so far as possible, from receiving waste discharges. In that case, marine science no longer has an effective contribution to make to decision-making about waste disposal options'. R.B. Clark 'Ocean Dumping', *Marine Pollution Bulletin* 20 (June 1989), 295. When the goal is to reduce waste discharges as much as possible, regulatory decisions will then be concerned with choosing technologies that best meet this goal. Marine science, however, cannot contribute to the realization of such a goal.

marine science advisory group, are proposing new ways to make decisions for all kinds of wastes, low-level radioactive waste included ⁹⁶. Some recent proposals are encouraging ⁹⁷.

Comprehensiveness was one of the key concepts of the strategy to protect the global environment laid out by the Stockholm secretariat in 1972. The secretariat was aware that decisions and institutions may be shifting problems into other sectors of the environment rather than coming to grips with them. As an international management arrangement for a single waste management activity, the international dumping regime could be shifting problems around rather than 'solving' them. Wastes that are not disposed of at sea must ultimately be disposed of on land, or in the air (incineration). In order to avoid transferring harm to other environmental sectors, the decision whether or not to dispose of at sea should, therefore, include a comparison with harm from using other disposal options.

The London Dumping Convention says, in its Annex 3, that the competent national agency should compare the risks from ocean disposal with the risks from land-based methods of disposal before issuing a dumping permit. But such comparative risk assessments have never been carried out in a systematic fashion. As Chapter 7 showed, the risks from land-based methods of disposal of low-level radioactive waste were not systematically taken into account when the decision to ban radwaste disposal was made. The ban was based only on the risks to humans and the marine environment from dumping. The London Dumping Convention's Annex 3 should therefore be strengthened. But without comprehensive knowledge of the behavior of contaminants in the marine environment and effects on humans it obviously will be impossible to make comparative risk assessments.

⁹⁶ The Advisory Committee on Marine Pollution (ACMP) is set up by the International Council for the Exploration of the Sea (ICES), a Copenhagen-based scientific advisory organization founded at the beginning of the century. While ACMP does not give scientific advice to the international dumping regime, some of ACMP's members are also members of GESAMP and the two advisory groups have the same view on what is the best approach to management of marine pollution. For a brief description of ICES, see Gunnar Alexandersson, *The Baltic Straits* (Hague: Martinus Nijhoff Publishers, 1982), 95-96.

⁹⁷ For ACMP's approach to environmental management and protection, see Report of the ICES Advisory Committee on Marine Pollution 'Cooperative Research Report No. 167' (ICES: Copenhagen, August 1989), 124-45.

Marine scientists agree that the ocean in principle has an assimilative capacity. But a consensus definition – 'the amount of material that could be contained within a body of seawater without producing an unacceptable biological impact' – was reached only in 1979 at a workshop held in the United States⁹⁸. It follows from this definition that pollution is an unacceptable change to the environment and that change in itself does not constitute pollution⁹⁹. It presently seems evident that much research is needed before marine scientists will know which contaminants can be assimilated, and in which quantities. Marine scientific research should consequently be supported¹⁰⁰. There will otherwise be no foundation for a more informed ocean dumping policy and improvement of the black and grey lists system. More knowledge will also have important implications for public legitimacy of policy. Since the debate on the concept of assimilative capacity presently is still evolving within the marine scientific community the scientific basis of ocean protection policies is vulnerable to criticism¹⁰¹. A more permissive ocean dumping policy that

⁹⁸ A brief account of the history and conceptual development of the assimilative capacity concept and associated concepts is given by A.R.D. Stebbing 'The Environmental Capacity Concept and the Precautionary Principle' (*ICES. C. M. 1991/E.24*).

⁹⁹ See M. Tomczak, Jr 'Defining Marine Pollution: A Comparison of Definitions Used by International Conventions', *Marine Policy*, October 1984, 311–22. For brief discussion of GESAMP's definition, see also Virginia K. Tippie and Dana R. Kester, eds., *Impact of Marine Pollution on Society*, 76. More generally, see Allen L. Springer 'Towards A Meaningful Concept of Pollution in International Law,' *International and Comparative Law Quarterly* 26 (July 1977), 531–57.

¹⁰⁰ Although made in the context of land-based sources of marine pollution, for a proposal for policy relevant marine science research which includes acquisition of a baseline data base, identification of key pollutants, agreement on the acceptable levels of the identified key pollutants, and monitoring, see Robert J. McManus 'Legal Aspects of Land-Based Sources of Marine Pollution' in Jonathan I. Charney, ed., *The New Nationalism and the Use of Common Spaces*, 90–111.

¹⁰¹ For an argument stressing that knowledge of the marine environment is too limited for opening up the oceans to more waste disposal, see biologist Kenneth S. Kamlet 'The Oceans as Waste Space: The Rebuttal', in *Oceanus* 24 (1981), 10–17. Greenpeace's view is more radical. It is not clear whether or not the organization accepts the concept of assimilative capacity ['imprecise']. And with respect to the definition of pollution: '...for many substances, there can, in our view, be no clear distinction between 'contamination' and 'pollution'. IMO document LDC14/Inf.29 'Critical Review of GESAMP Report No. 45 on 'Global Strategies for Marine Environmental Protection' (1991), 4. Greenpeace has elsewhere provided a definition of pollution which, similar to GESAMP's definition, ultimately hinges on the notion of acceptability. Criticizing another recent GESAMP report, Greenpeace concludes: 'This inherent flaw in the GESAMP report arises from a persistence with the now outdated notion that 'pollution' is distinct

lacked a firm scientific foundation obviously would be difficult to legitimize.

GESAMP and ACMP criticize the regulatory approach taken by most international marine pollution arrangements because 'the occurrence or risk of pollution becomes the major criterion for regulatory action'¹⁰². In their view, this is a conceptually flawed approach and leads to haphazardous regulation. Instead, they stress the need to distinguish between contamination and pollution and the importance of agreeing on a definition of 'acceptability' with respect to environmental change. They also stress that overall regulatory priorities are in need of improvement and, on the administrative and regulatory level, the aim must be to spend financial resources available for marine environmental protection in the most rational and cost-effective way. They suggest the principle of justification, which is applied by ICRP¹⁰³. While this principle really concerns decision-making at an earlier, more general stage, regulatory decisions concerning for example ocean dumping should attempt to maximize net benefit to society: 'A justified practice will be one for which the combined benefits to the whole of society are considered to outweigh the combined deficits

from 'contamination'. There is an implicit assumption that pollution, defined as 'harm' in the marine environment, can be readily identified whenever it occurs. However, as we shall argue, 'harm' has to be defined as some anthropogenic change in (usually) marine biota or risk to man as measured against the natural background and its fluctuations, together with a subjective judgement on the degree of change that is acceptable'. IMO document LDC/Inf. 30 '*Critical Review of GESAMP's 'State of the Marine Environment' Report No. 39 (1990)*'. Submitted by Greenpeace International to the Fourteenth Consultative Meeting of the London Dumping Convention (LDC), IMO, London, 25-29 November 1991, 5. Although referring only to toxic wastes, the scientific advisor to Nauru apparently rejects the concept of assimilative capacity: 'The oceans have always been used as a waste repository by human societies. In pre-industrial times, total toxic waste generation was small in comparison with global limits, and wastes were managed under the permissive 'dilute and disperse' philosophy. Corollary concepts included the idea that the oceans have an 'assimilative capacity' for toxic wastes'. W. Jackson Davis '*Global Aspects of Marine Pollution Policy: The Need for a New International Convention*', 193.

¹⁰² GESAMP report no. 45 '*Global Strategies for Marine Environmental Protection*', 25.

¹⁰³ ICRP expresses the principle of justification in the following form: 'No practice shall be adopted unless its introduction produces a positive new benefit'. Report of the ICES Advisory Committee on Marine Pollution '*Cooperative Research Report No. 167*', 129. The concept of justification has, together with the concept of optimization ['all exposures shall be kept as low as reasonably achievable, economic and social factors being taken into account'] and compliance with dose limits ['the dose equivalent to individuals shall not exceed the limits recommended for the appropriate circumstances...'] has also been advocated as an approach to regulation of radwaste disposal. See, for example, IAEA Safety Series No. 65 '*Environmental Assessment Methodologies for Sea Dumping of Radioactive Wastes*' (Vienna: IAEA, 1984).

or detriment, environmental effects being only part of the latter' ¹⁰⁴. When selecting the best option, therefore, many broad issues need to be addressed, including economic, social, political, and scientific considerations as well as the nature and extent of damage.

GESAMP and ACMP endorse the concept of assimilative capacity and distinguish between acceptable and unacceptable change to the marine environment. In accordance with the Stockholm strategy, they stress that so-called holistic considerations should be made in all cases, radwaste disposal included ¹⁰⁵. This, furthermore, will also minimize the total harm inflicted on the environment. The GESAMP and ACMP proposal could form the basis of how decisions with respect to marine environmental protection, and especially the role of science herein, could be made in the future. A need for developing ways to include aspects other than scientific and technical ones in decision-making with significant economic, employment, social, and energy consequences for society clearly exists. The present process of making decisions encourages manipulation of scientific and technical issues. But lack of information on various 'practices' potential for environmental damage and effects on humans, difficulties involved in setting a price on environmental quality, and other issues, will make use of the proposal difficult. However, the proposal addresses several of the shortcomings of the existing approach within the international dumping regime.

The black and grey lists system, in essence the international dumping regime's regulatory approach, illustrates such shortcomings. It relies heavily on the categorization of harmful substances as either safe or unsafe. But marine scientists do not categorize substances in that way. Put simply, their view is instead that 'it all depends on the dose' ¹⁰⁶. The black and grey lists system does not take into consideration the aggregate amount or concentration of wastes, the assimilative capacity of the receiving body of ocean water, various uses of the oceans (e.g. recreation, fishing, or exploitation of mineral resources), or

¹⁰⁴ Ibid., 124.

¹⁰⁵ J. Mike Bowers and Chris J.R. Garrett 'Analysis of the Issues Related to Sea Dumping of Radioactive Waste', 119.

¹⁰⁶ A.R.D. Stebbing 'The Environmental Capacity Concept and the Precautionary Principle' (*ICES. C. M. 1991/E.24*), 5.

dumping periods ¹⁰⁷. Furthermore, the convention, as one participant of early scientific working groups has noted, 'give[s] no specific criteria for the inclusion of materials in each Annex [i.e. the black and grey lists] and there can be little doubt that some of the substances were included on the basis of very little scientific evidence' ¹⁰⁸. This regulatory approach, categorizing substances as either safe or unsafe for regulatory purposes, is widespread and must necessarily be changed if the international dumping regime is to become a more efficient and rational regulatory regime in the future ¹⁰⁹.

Finally, it is essential to consider the power of public opinion when examining the possibility that the international dumping regime will become a more efficient, rational and holistic regime in the future. It should be recalled that the ban on radwaste disposal reflected international public opinion on this issue. International public opinion thus will set the boundaries within which policy will develop in the future. But international public opinion might gradually change. It should be recalled that dumping of low-level radioactive waste was being carried out for almost four decades before this practice was banned. But environmentalism is a fact today.

A more rational and holistic strategy towards protection of the marine environment will be very difficult to develop. The crucial point will be education of the public, politicians and other decision-makers about the health of the marine environment and risks to the marine environment and humans ¹¹⁰. Mass media should be used to educate the

¹⁰⁷ Annex 3 of the London Dumping Convention does list such considerations. But, as a former EPA official has noted: 'Annex 3, however, is totally lacking in prescriptive content'. Robert J. McManus 'Ocean Dumping: Standards in Action' in David A. Kay and Harold K. Jacobson, eds., *Environmental Protection. The International Dimension*, 124. For Annex 3, see Appendix A.

¹⁰⁸ M.G. Norton 'The Oslo and London Dumping Conventions', 147.

¹⁰⁹ For another example of this regulatory approach and a presentation of the decision process approach as an alternative way to make complex decisions, see Oliver E. Williamson 'Saccharin: An Economist's View' in Robert W. Crandall and Lester B. Lave, eds., *The Scientific Basis of Health and Safety Regulation* (Washington, D.C.: The Brookings Institution, 1981), 131-51.

¹¹⁰ On the domestic level, changing public opinion through education is often seen as essential to resolving waste facility siting disputes. For a pessimistic account of such attempts, see Herbert Inhaber 'Of LULUs, NIMBYs, and NIMTOOs,' *The Public Interest* no. 107 (Spring 1992), 52-64. For a different approach, developed by a group of American siting experts, see Lawrence E. Susskind 'A Negotiation

public and politicians when substances are not as hazardous as we previously thought ¹¹¹. A major step in this direction could be taken by environmental NGOs educating the public, politicians and the private sector about the choices that must be made between environmental protection and social and economic development, about the ultimate goal of minimizing the total harm inflicted on the environment, and about the need for research. This would necessitate that environmental groups and ultimately the green public reexamined their view of the balance between environmental protection and social and economic development. As part of such a process, NGOs from the environmental community – which the public trust more than they trust industry, government, and scientists – and the private sector should be able to fully participate in the work of expert groups ¹¹². Such groups might provide a context within which the participants can get acquainted with the environmental and health sciences' advances as well as difficulties in detecting the impact of minute concentrations of substances and the economic and social concerns that regulation must and should take into

Credo for Controversial Siting Disputes,' *Negotiation Journal*, October 1990, 309–14.

¹¹¹ Although ecological disaster and human health threats make good copy, new knowledge giving a more complete picture has been reported on in the mass media. See, for example, Keith Schneider 'U.S. Officials Say Dangers of Dioxin Were Exaggerated', *New York Times*, August 15, 1991; Gina Kolata 'Scientists Question Methods Used in Animal Cancer Tests', *New York Times*, August 31, 1991; Jane E. Brody 'Some Scientists Say Concern Over Radon Is Overblown by E.P.A.', *New York Times*, January 8, 1991; Philip Shabecoff 'Acid Rain Report Confirms Concern: But Study Group's Final Draft Concludes Problem Is Not of Crisis Proportions', *New York Times*, September 6, 1990; Gina Kolata 'Researchers Now See a Danger In Very Low Levels of Cholesterol', *International Herald Tribune*, August 12, 1992.

¹¹² A survey from the mid-1980s asking the British public who they would trust to supervise nuclear waste found that 'MPs of any party, managers from the nuclear industry, and anyone in the government, police, or armed forces were 'the last people' that interviewees would trust. Public trust was limited to groups like Greenpeace, 'independent scientists', 'women', and 'investigative journalists'. There was 'deep public scepticism about the feasibility of properly monitoring (any radioactive waste disposal) system. Most people felt that bribery, corruption or hit squads might be employed to shut up dissenters". Duncan Campbell and Patrick Forbes '£100 Million To Be Made As Nuclear Waste Dumpers Scramble To Get Rich,' *New Statesman*, 18 October, 1985, 5. For recent studies of public risk perception, see Paul Slovic, Mark Layman, and James H. Flynn 'Risk Perception, Trust, and Nuclear Waste: Lessons from Yucca Mountain' *Environment* 33 (April 1991), 6 ff. More generally, see Spencer R. Weart, *Nuclear Fear: A History of Images*. Public fear is not confined to nuclear waste; bio-technology, chemicals, and pesticides cause similar reactions. This phenomenon which often is, somewhat imprecisely, referred to as a decline in public trust in science and technology first became visible in Western democracies in the early 1960s. For a brief, perceptive discussion, see National Science Foundation 'Assessment of Future National and International Problem Areas. Vol. 1' (Washington, D.C.: National Science Foundation, 1977), 51–61.

account. Also, since the nuclear industry can hardly be said to have an impressive record of public trust, environmental NGOs can play an important role as nuclear watchdogs ¹¹³. This is certainly in the interest of the public and might also be in the self-interest of the industry. Holistic alternatives to present regulation might also be developed more easily in a context that is less dominated by the traditions and protocol of international diplomacy. After several years' debate it thus is encouraging that the 1991 consultative meeting, partly because of their sometimes comprehensive knowledge of scientific and technical issues as well as practices of regulatory agencies and private industries and partly because of their 'right' to participate, unanimously agreed that NGOs such as Greenpeace International in the future can participate in the work of the inter-governmental scientific working groups established under the international dumping regime ¹¹⁴.

¹¹³ By bringing in nongovernment scientists environmental NGOs might counterbalance the special interests of government scientists. It has thus been argued that 'to be most effective, peer review of these government-sponsored studies should include nongovernment scientists. To argue to cancel or cut back a study is a difficult task for any scientist, governmental or nongovernmental. Nevertheless, nongovernmental scientists are less concerned about agency 'turf,' role, and budget and probably find it easier to say that a study, no matter how well done, cannot answer the important questions'. Michael Gough 'Environmental Epidemiology: Separating Politics and Science' *Issues in Science and Technology* 3 (Summer 1987), 30.

¹¹⁴ Most importantly, the Scientific Group on Dumping and the Intergovernmental Panel of Experts on Radioactive Wastes (IGPRAD).

Appendix A
**The Convention on the Prevention of Marine Pollution by
Dumping of Wastes and other Matter**

Preamble

The Contracting Parties to this Convention

Recognizing that the marine environment and the living organisms which it supports are of vital importance to humanity, and all people have an interest in assuring that it is so managed that its quality and resources are not impaired;

Recognizing that the capacity of the sea to assimilate wastes and render them harmless, and its ability to regenerate natural resources, is not unlimited;

Recognizing that States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction;

Recalling Resolution 2749 (XXV) of the General Assembly of the United Nations on the principles governing the sea bed and the ocean floor and the subsoil thereof, beyond the limits of national jurisdiction;

Noting that marine pollution originates in many sources, such as dumping and discharges through the atmosphere, rivers, estuaries, outfalls and pipelines, and that it is important that States use the best practicable means to prevent such pollution and develop products and processes which will reduce the amount of harmful wastes to be disposed of;

Being convinced that international action to control the pollution of the sea by dumping can and must be taken without delay but that this action should not preclude discussion of measures to control other sources of marine pollution as soon as possible and;

Wishing to improve protection of the marine environment by encouraging States with a common interest in particular geographical areas to enter into appropriate agreements supplementary to this Convention:

Have agreed as follows:

Article 1

Contracting Parties shall individually and collectively promote the effective control of all sources of pollution of the marine environment, and pledge themselves especially to take all practicable steps to prevent the pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

Article 2

Contracting Parties shall, as provided for in the following Articles, take effective measures individually, according to their scientific, technical and economic capabilities, and collectively, to prevent marine pollution

caused by dumping and shall harmonize their policies in this regard.

Article 3

For the purpose of this Convention:

- 1 (a) "Dumping" means:
 - (i) any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea;
 - (ii) any deliberate disposal at sea of vessels, aircraft, platforms or other man-made structures at sea;
 - (b) "Dumping" does not include:
 - (i) the disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels, aircraft, platforms or other man-made structures at sea and their equipment, other than wastes or other matter transported by or to vessels, aircraft, platforms or other man-made structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, aircraft platforms or structures
 - (ii) placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this Convention.
 - (c) The disposal of wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of seabed mineral resources will not be covered by the provisions of this Convention.
2. "Vessels and aircraft" means waterborne or airborne craft of any type whatsoever. This expression includes air cushioned craft and floating craft, whether self-propelled or not.
 3. "Sea" means all marine waters other than the internal waters of States.
 4. "Wastes or other matter" means material and substances of any kind, form or description.
 5. "Special permit" means permission granted specifically on application in advance and in accordance with Annex II and Annex III.
 6. "General permit" means permission granted in advance and in accordance with Annex III.
 7. "The Organisation" means the organization designated by the Contracting Parties in accordance with Article 14(2).

Article 4

1. In accordance with the provisions of this Convention Contracting Parties shall prohibit the dumping of any wastes or other matter in whatever form or condition except as otherwise specified below:-
 - a. The dumping of wastes or other matter listed in Annex I is prohibited;
 - b. The dumping of wastes or other matter listed in Annex II requires a prior special permit;
 - c. The dumping of all other wastes or matter requires a prior general permit.
2. Any permit shall be issued after careful consideration of all the factors set forth in Annex III, including prior studies of the characteristics of the dumping site, as set forth in Sections B and C of that Annex.
3. No provision of this Convention is to be interpreted as preventing a Contracting Party from prohibiting, insofar as that Party is concerned, the dumping of wastes or other matter not mentioned in Annex I. That Party shall notify such measures to the Organisation.

Article 5

1. The Provisions of Article 4 shall not apply when it is necessary to secure the safety of human life or of vessels, aircraft, platforms or other man-made structures at sea in cases of force majeure caused by stress of weather, or in any case which constitutes a danger to human life or a real threat to vessels, aircraft, platforms or other man-made structures at sea, if dumping appears to be the only way of averting the threat and if there

is every probability that the damage consequent upon such dumping will be less than would otherwise occur. Such dumping shall be so conducted as to minimize the likelihood of damage to human or marine life and shall be reported forthwith to the Organisation.

2. A Contracting Party may issue a special permit as an exception to Article 4(1a), in emergencies, posing unacceptable risk relating to human health and admitting no other feasible solution. Before doing so the Party shall consult any other country or countries that are likely to be affected and the Organisation which, after consulting other Parties, and international organisations as appropriate, shall, in accordance with Article 14 promptly recommend to the Party the most appropriate procedures to adopt. The Party shall follow these recommendations to the maximum extent feasible consistent with the time within which action must be taken and with the general obligation to avoid damage to the marine environment and shall inform the Organisation of the action it takes. The Parties pledge themselves to assist one another in such situations.

3. Any Contracting Party may waive its rights under paragraph 2 at the time of, or subsequent to ratification of, or accession to this Convention.

Article 6

1. Each Contracting Party shall designate an appropriate authority or authorities to:

- a. issue special permits which shall be required prior to, and for, the dumping of matter listed in Annex II and in the circumstances provided for in Article 5(2);
- b. issue general permits which shall be required prior to and for the dumping of all other matter;
- c. keep records of the nature and quantities of all matter permitted to be dumped and the location, time and method of dumping;
- d. monitor individually, or in collaboration with other Parties and competent international organisations, the condition of the seas for the purposes of this Convention;

2. The appropriate authority or authorities of a Contracting Party shall issue prior special or general permits in accordance with paragraph 1 in respect of matter intended for dumping:

- a. loaded in its territory;
- b. loaded by a vessel or aircraft registered in its territory or flying its flag, when loading occurs in the territory of a State not party to this Convention

3. In issuing permits under sub-paragraph 1a and b above, the appropriate authority or authorities shall comply with Annex III, together with such additional criteria, measures and requirements as they may consider relevant.

4. Each Contracting Party, directly or through a Secretariat established under a regional agreement, shall report to the Organisation, and where appropriate to other Parties, the information specified in sub-paragraphs c and d of paragraph 1 above, and the criteria, measures and requirements it adopts in accordance with paragraph 3 above. The procedure to be followed and the nature of such reports shall be agreed by the Parties in consultation.

Article 7

1. Each Contracting Party shall apply the measures required to implement the present Convention to all:

- a. vessels and aircraft registered in its territory or flying its flag;
- b. vessels and aircraft loading in its territory or territorial seas matter which is to be dumped;
- c. vessels and aircraft and fixed or floating platforms under its jurisdiction believed to be engaged in dumping.

2. Each party shall take in its territory appropriate measures to prevent and punish conduct in contravention of the provisions of this Convention.

3. The Parties agree to co-operate in the development of procedures for the effective application of this Convention particularly on the high seas, including procedures for the reporting of vessels and aircraft observed dumping in contravention of the Convention.

4. This Convention shall not apply to those vessels and aircraft entitled to sovereign immunity under international law. However each Party shall ensure by the adoption of appropriate measures that such vessels and aircraft owned or operated by it act in a manner consistent with the object and purpose of this Convention,

and shall inform the Organisation accordingly.

5. Nothing in this Convention shall affect the right of each Party to adopt other measures, in accordance with the principles of international law, to prevent dumping at sea.

Article 8

In order to further the objectives of this Convention, the Contracting Parties with common interests to protect in the marine environment in a given geographical area shall endeavour, taking into account characteristic regional features, to enter into regional agreements, consistent with this Convention for the prevention of pollution, especially by dumping. The Contracting Parties to the present Convention shall endeavour to act consistently with the objectives and provisions of such regional agreements, which shall be notified to them by the Organisation. Contracting Parties shall seek to co-operate with the Parties to regional agreements in order to develop harmonized procedures to be followed by Contracting Parties to the different conventions concerned. Special attention shall be given to co-operation in the field of monitoring and scientific research.

Article 9

The Contracting Parties shall promote, through collaboration within the Organisation and other international bodies, support for those Parties which request it for:

- a. the training of scientific and technical personnel;
- b. the supply of necessary equipment and facilities for research and monitoring;
- c. the disposal and treatment of waste and other measures to prevent or mitigate pollution caused by dumping;

preferably within the countries concerned, so furthering the aims and purposes of this Convention.

Article 10

In accordance with the principles of international law regarding state responsibility for damage to the environment of other States or to any other area of the environment, caused by dumping of wastes and other matter of all kinds, the Contracting Parties undertake to develop procedures for the assessment of liability and the settlement of disputes regarding dumping.

Article 11

The Contracting Parties shall at their first consultative meeting consider procedures for the settlement of disputes concerning the interpretation and application of this Convention.

Article 12

The Contracting Parties pledge themselves to promote, within the competent specialized agencies and other international bodies, measures to protect the marine environment against pollution caused by:-

- (a) hydrocarbons, including oil, and their wastes;
- (b) other noxious or hazardous matter transported by vessels for purposes other than dumping;
- (c) wastes generated in the course of operation of vessels, aircraft, platforms and other man-made structures at sea;
- (d) radioactive pollutants from all sources, including vessels;
- (e) agents of chemical and biological warfare;
- (f) wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of seabed mineral resources.

The Parties will also promote, within the appropriate international organisation, the codification of signals to be used by vessels engaged in dumping.

Article 13

Nothing in this Convention shall prejudice the codification and development of the law of the sea by the United Nations conference on the Law of the Sea convened pursuant to Resolution 2750C (25) of the General Assembly of the United Nations nor the present or future claims and legal views of any State concerning the

law of the sea and the nature and extent of coastal and flag state jurisdiction. The Contracting Parties agree to consult at a meeting to be convened by the Organisation after the Law of the Sea Conference, and in any case not later than 1976, with a view to defining the nature and extent of the right and the responsibility of a coastal state to apply the Convention in a zone adjacent to its coast.

Article 14

1. The Government of the United Kingdom of Great Britain and Northern Ireland as a depository shall call a meeting of the Contracting Parties not later than three months after the entry into force of this Convention to decide on organisational matters.

2. The Contracting Parties shall designate a competent Organisation existing at the time of that meeting to be responsible for secretariat duties in relation to this Convention. Any Party to this Convention not being a member of this Organisation shall make an appropriate contribution to the expenses incurred by the Organisation in performing these duties.

3. The Secretariat duties of the Organisation shall include:-

- a. the convening of consultative meetings of the Contracting Parties not less frequently than once every two years and of special meetings of the Parties at any time on the request of two-thirds of the Parties;
- b. preparing and assisting, in consultation with the Contracting Parties and appropriate International Organisations, in the development and implementation of procedures referred to in sub-paragraph 4e of this Article;
- c. considering inquiries by, and information from the Contracting Parties, consulting with them and with the appropriate International Organisations, and providing recommendations to the Parties on questions related to, but not specifically covered by the Convention.
- d. conveying to the Parties concerned all notifications received by the Organisations in accordance with Articles 4(3), 5(1) and (2), 6(4), 13, 20 and 21.

Prior to the designation of the Organisation these functions shall, as necessary, be performed by the depository, who for this purpose shall be the Government of the United Kingdom of Great Britain and Northern Ireland.

4. Consultative or special meetings of the Contracting Parties shall keep under continuing review the implementation of this Convention and may, inter alia:

- a. review and adopt amendments to this Convention and its Annexes in accordance with Article 15;
- b. invite the appropriate body or bodies to collaborate with and advise the Parties or the Organisation on any scientific or technical aspect relevant to this Convention, including particularly the content of the Annexes;
- c. receive and consider reports made pursuant to Article 6(4);
- d. promote co-operation with and between regional organisations concerned with the prevention of marine pollution;
- e. develop or adopt, in consultation with appropriate International Organisations, procedures referred to in Article 5(2), including basic criteria for determining exceptional and emergency situations, and procedures for consultative advice and the safe disposal of matter in such circumstances, including the designation of appropriate dumping areas, and recommend accordingly;
- f. consider any additional action that may be required;

5. The Contracting Parties at their first consultative meeting shall establish rules of procedure as necessary.

Article 15

1.a. At meetings of the Contracting Parties called in accordance with Article 14 amendments to this convention may be adopted by a two-thirds majority of those present. An amendment shall enter into force for the Parties which have accepted it on the sixtieth day after two-thirds of the Parties shall have deposited an instrument of acceptance of the amendment with the Organisation. Thereafter the amendment shall enter into force for any other Party 30 days after that Party deposits its instrument of acceptance of the amendment.

1.b. The Organisation shall inform all Contracting Parties of any requests made for a special meeting under

Article 14 and of any amendments adopted at meetings of the Parties and of the date on which each such amendment enters into force for each Party.

2. Amendments to the Annexes will be based on scientific and technical considerations. Amendments to the Annexes approved by a two-thirds majority of those present at a meeting called in accordance with Article 14 shall enter into force for each Contracting Party immediately on notification of its acceptance to the Organisation and 100 days after approval by the meeting for all other Parties except for those which before the end of the 100 days make a declaration that they are not able to accept the amendment at that time. Parties should endeavour to signify their acceptance of an amendment to the Organisation as soon as possible after approval at a meeting. A Party may at any time substitute an acceptance for a previous declaration of objection and the amendment previously objected to shall thereupon enter into force for that Party.

3. An acceptance or declaration of objection under this Article shall be made by the deposit of an instrument with the Organisation. The Organisation shall notify all Contracting Parties of the receipt of such instrument.

4. Prior to the designation of the Organisation, the Secretarial functions herein attributed to it, shall be performed temporarily by the Government of the United Kingdom and Northern Ireland, as one of the depositaries of this Convention.

Article 16

This Convention shall be open for signature by any State at London, Mexico City, Moscow and Washington from 29 December 1972 until 31 December 1973.

Article 17

This Convention shall be subject to ratification. The instruments of ratification shall be deposited with the Governments of Mexico, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, and the United States of America.

Article 18

After 31 December 1973, this Convention shall be open for accession by any State. The instruments of accession shall be deposited with the Governments of Mexico, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, and the United States of America.

Article 19

1. This Convention shall enter into force on the thirtieth day following the date of deposit of the fifteenth instrument of ratification or accession.

2. For each Contracting Party ratifying or acceding to the Convention after the deposit of the fifteenth instrument of ratification or accession, the Convention shall enter into force on the thirtieth day after deposit by such Party of its instrument of ratification or accession.

Article 20

The depositaries shall inform Contracting Parties:

- a. of signatures to this Convention and of the deposit of instruments of ratification, accession or withdrawal, in accordance with Articles 16, 17, 18 and 21 and
- b. of the date on which this Convention will enter into force, in accordance with Article 19.

Article 21

Any Contracting Party may withdraw from this Convention by giving six months' notice in writing to a depositary, which shall promptly inform all Parties of such notice.

Article 22

The original of this Convention of which the English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Governments of Mexico, the Union of Soviet Socialist Republics, the United

Kingdom and Northern Ireland and the United States of America who shall send certified copies thereof to all States.

Annex I

1. Organohalogen compounds.
2. Mercury and mercury compounds.
3. Cadmium and cadmium compounds.
4. Persistent plastics and other persistent synthetic materials, for example, netting and ropes, which may float or may remain in suspension in the sea in such a manner as to interfere materially with fishing, navigation or other legitimate uses of the sea.
5. Crude oil, fuel oil, heavy diesel oil, and lubricating oils, hydraulic fluids, and any mixtures containing any of these, taken on board for the purpose of dumping.
6. High-level radioactive wastes or other high-level radioactive matter, defined on public health, biological or other grounds, by the competent international body in this field, at present the International Atomic Energy Agency, as unsuitable for dumping at sea.
7. Materials in whatever form (e.g. solids, liquids, semi-liquids, gases or in a living state) produced for biological and chemical warfare.
8. The preceding paragraphs of this Annex do not apply to substances which are rapidly rendered harmless by physical, chemical or biological processes in the sea provided they do not:
 - (i) make edible marine organisms unpalatable, or
 - (ii) endanger human health or that of domestic animals.

The consultative procedure provided for under Article 14 should be followed by a Party if there is doubt about the harmlessness of the substance.

9. This Annex does not apply to wastes or other materials (e.g. sewage sludges and dredged spoils) containing the matters referred to in paragraphs 1-5 above as trace contaminants. Such wastes shall be subject to the provisions of Annexes II and III as appropriate.

Annex II

The following substances and materials requiring special care are listed for the purposes of Article 6(1a). A. Wastes containing significant amounts of the matters listed below:

arsenic)
 lead) and their compounds
 copper)
 zinc)

organosilicon compounds

cyanides

fluorides

pesticides and their by-products not covered in Annex I.

B. In the issue of permits for the dumping of large quantities of acids and alkalis, consideration shall be given to the possible presence in such wastes of the substances listed in paragraph A and to the following additional substances:

beryllium)
 chromium) and their compounds

nickel)
vanadium)

C. Containers, scrap metal and other bulky wastes liable to sink to the sea bottom which may present a serious obstacle to fishing or navigation.

D. Radioactive wastes or other radioactive matter not included in Annex I. In the issue of permits for the dumping of this matter, the Contracting Parties should take full account of the recommendations of the competent international body in this field, at present the International Atomic Energy Agency.

Annex III

Provisions to be considered in establishing criteria governing the issue of permits for the dumping of matter at sea, taking into account Article 4(2) include:-

A. CHARACTERISTICS AND COMPOSITION OF THE MATTER

1. Total amount and average composition of matter dumped (e.g. per year).
2. Form, e.g. solid, sludge, liquid, or gaseous.
3. Properties: physical (e.g. solubility and density), chemical and biochemical (e.g. oxygen demand, nutrients) and biological (e.g. presence of viruses, bacteria, yeasts, parasites).
4. Toxicity.
5. Persistence: physical, chemical and biological.
6. Accumulation and biotransformation in biological materials or sediments.
7. Susceptibility to physical, chemical and biochemical changes and interaction in the aquatic environment with other dissolved organic and inorganic materials.
8. Probability of production of taints or other changes reducing marketability of resources (fish, shellfish, etc).

B. CHARACTERISTICS OF DUMPING SITE AND METHOD OF DEPOSIT

1. Location (e.g. co-ordinates of the dumping area, depth and distance from the coast), location in relation to other areas (e.g. amenity areas, spawning, nursery and fishing areas and exploitable resources).
2. Rate of disposal per specific period (e.g. quantity per day, per week, per month).
3. Methods of packaging and containment, if any.
4. Initial dilution achieved by proposed method of release.
5. Dispersal characteristics (e.g. effects of currents, tides and wind on horizontal transport and vertical mixing).
6. Water characteristics (e.g. temperature, pH, salinity, stratification, oxygen indices of pollution - dissolved oxygen (DO), chemical oxygen demand (COD), biochemical oxygen demand (BOD) - nitrogen present in organic and mineral form including ammonia, suspended matter, other nutrients and productivity).
7. Bottom characteristics (e.g. topography, geochemical and geological characteristics and biological productivity).
8. Existence and effects of other dumpings which have been made in the dumping area (e.g. heavy metal background reading and organic carbon content).
9. In issuing a permit for dumping, Contracting Parties should consider whether an adequate scientific basis exists for assessing the consequences of such dumping, as outlined in this Annex, taking into account seasonal variations.

C. GENERAL CONSIDERATIONS AND CONDITIONS

1. Possible effects on amenities (e.g. presence of floating or stranded material, turbidity, objectionable odour, discoloration and foaming).
2. Possible effects on marine life, fish and shellfish culture, fish stocks and fisheries, seaweed harvesting and culture.

3. Possible effects on other uses of the sea (e.g. impairment of water quality for industrial use, underwater corrosion of structures, interference with ship operations from floating materials, interference with fishing or navigation through deposit of waste or solid objects on the sea floor and protection of areas of special importance for scientific or conservation purposes).
4. The practical availability or alternative land based methods of treatment, disposal or elimination, or of treatment to render the matter less harmful for dumping at sea.

Done at London on the 13th day of November 1972.

Appendix B
Stockholm Secretariat Memo

Secretariat memo from Peter Thacher to Maurice Strong, dated 20 December, 1971.:

1. The primary task between now and June is to refine and sell the product; get negotiations started leading to favourable action by Governments at Stockholm. The Prepcom session in March should be used to start a planned promotion campaign.

2. By the time you return to Geneva in late January all but a few of the action proposals will be in final form but not yet ready for presentation to Governments in February. The analytical process which underlies all subsequent promotion activities should be completed.

This will allow the secretariat to display information showing how proposals respond to areas of concern as well as the authentication of both needs and actions i.e. the source of the concerns (mostly in the basic inputs) and the sources of the proposals (in the basic inputs plus the preparatory process, IWG's etc. [international working groups] and relating both of these to particular countries and regions.

3. By the end of February information should be in hand as to the financial and organizational steps needed to get the post-Stockholm process started. Pre-Prepcom promotion work will be needed with a few governments.

4. In order to plan the campaign that is it to get underway at the Prepcom we need to identify major target governments, i.e. those from whom support is critical, and draw up a plan for each government identifying the points of influence, both official and private (including mass media) which should be approached, as well as all assets, "friends", available to assist. This should be completed in February.

Chief among constraints will be availability of personnel and funds to support travel and reproduction of promotional material.

5. The plan should also take into account various international meetings at which the promotional material can usefully be presented.

With regard to specific subjects such as marine pollution, there may be regional and other meetings of importance at which our participation will be useful. We need to consider whether further work along the lines of our proposals can be advanced before Stockholm. The same may be true of other areas such as soils.

6. The Prepcom in March will attract considerable attention from a large number of states (many more than the 27 members of the Committee) and will be the first real occasion to present the actions proposed and the promotion material to world governments and press.

7. Immediately after a final review of experience gained at the Prepcom the planned promotional activity by staff, consultants, and "friends" should be launched.

8. Essential to the above promotion campaign is the dynamic quality of the actions proposed; they are not being presented on a take-it-or-leave-it basis, they are subject to modification both before and, if necessary, at Stockholm.

9. In summary:

- January: 1. Completion of analysis relating the recommended actions to inputs.
 2. Work on costing and organizational proposals.
 3. Developing a general plan for promotion based on available resources.
- February: 1. Completing of costing and organizational proposals.
 2. Refinement of promotion plan including identification of specific targets and assets.
 3. Refinement of analysis in relation to targets.
 4. Pre-Prepcom work with key governments.
- March: 1. Kick-off promotion campaign at Prepcom
 2. Review of this experience and alteration of plans as necessary.
- April-
June'. 1. Carry out plan.

Kindly made available by Peter S. Thacher, presently Senior Counselor at World Resources Institute, Washington, D.C.

Appendix C

Resolution LDC.14(7)

Disposal of Radio-active Wastes and
other Radio-active Matter at Sea*The Seventh Consultative Meeting,*

Recognizing that the marine environment and the living resources of the sea are of vital importance to all nations,

Recognizing that the London Dumping Convention plays a decisive role as a means of protecting the marine environment,

Considering that the Convention should continue to be an effective global forum for the Contracting Parties in which to pool the advances of science and technology in their efforts to combat marine pollution,

Observing the increasing concern of a growing body of public opinion with regard to the dumping of radio-active substances,

Recognizing that the practice of dumping radio-active substances at sea is limited to a small number of countries and that some of them have suspended such dumping,

Noting that, given the present state of research on the matter within international bodies, is considered necessary to carry out programmes to extend current knowledge of dumping zones,

Considering that the Seventh Consultative Meeting had decided to refer proposals for the amendment of Annexes I and II of the London Dumping Convention regarding the dumping of radio-active wastes and other radio-active matter at sea to an expert meeting on radio-active matters related to the London Dumping Convention,

Calls for the suspension of all dumping at sea of radio-active materials pending the presentation to the Contracting Parties of the final report of the expert meeting on radio-active matters related to the London Dumping Convention.

Appendix D

Resolution LDC.21(9)

Dumping of Radioactive Wastes at Sea

The Ninth Consultative Meeting,

Recognizing that the marine environment and the living resources of the sea are of vital importance to all nations and that the objective of the London Dumping Convention is to prevent the pollution of the seas by dumping,

Considering that the Convention should continue to be an effective global forum for the Contracting Parties in which to pool the advances of science and technology in their efforts to combat marine pollution,

Taking note of the increasing concern of a growing body of public opinion, and in particular among the populations living near present or potential dumping sites, with regard to the dumping of radioactive wastes at sea,

Recognizing that dumping of radioactive wastes at sea may adversely affect the environment of other nations and of regions beyond the limits of national jurisdiction in contravention with Principle 21 of the UN Declaration on the Human Environment adopted in Stockholm in June 1972,

Recognizing that, under Article 1 of the Convention, Contracting Parties have pledged themselves specially to take all practicable steps to prevent the pollution of the sea by the dumping of wastes and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea,

Recalling that the Seventh Consultative Meeting in February 1983 adopted resolution LDC.14(7) which called for the suspension of all dumping at sea of radioactive materials pending the presentation to the Contracting Parties of the final report of an expert meeting in radioactive matters related to the London Dumping Convention,

Noting that, given the present state of research on the matter within international bodies, is considered necessary to carry out programmes to extend current knowledge of dumping zones,

Recognizing that the practice of dumping radioactive wastes at sea has been limited to a few States which have halted such dumping since the adoption of resolution LDC.14(7) of February 1983,

Noting the findings of the Expert Panel on the Disposal at Sea of Radioactive Wastes contained in document LDC 9/4, Annex 2, and expressing its appreciation to the experts involved in the preparation of this report,

Noting that the Expanded Panel of Experts recognizes deficiencies in scientific information that need to be resolved for a rigorous and precise assessment of the consequences of sea dumping of radioactive wastes,

Accepting that, as noted by the Expert Panel, in the comparison between options, social, economic, scientific and technological factors are difficult to quantify on a common basis, especially where the social factors have international dimensions; and that, as also noted by the Expert Panel, in the final analysis social and related factors may outweigh those of a purely scientific and technical nature.

Noting also the absence of comparison between land-based and sea dumping options,

1. *Agrees* to a suspension of all dumping at sea of radioactive wastes and other radioactive matter to permit time for the further consideration of issues which would provide a broader basis for an informed judgement on proposals for the amendment of the Annexes of the Convention. This suspension will continue pending the completion of the studies and assessments referred to in paragraph 2 to 5 hereunder;
2. *Requests* that additional studies and assessments of the wider political, legal, economic and social aspects of radioactive waste dumping at sea be undertaken by a panel of experts to complement the existing Expanded Panel Report;
3. *Request* that further assessments examine the issue of comparative land-based options and the costs and risks associated with these options;
4. *Requests* that studies and assessments examine the question of whether it can be proven that any dumping of radioactive wastes and other radioactive matter at sea will not harm human life and/or cause significant damage to the marine environment;
5. *Requests* the IAEA to advise Contracting Parties with respect to certain outstanding scientific and technical issues relating to the sea dumping of radioactive wastes; specifically:
 - (a) To determine whether additional risks to those considered in the revised IAEA Definition and Recommendations justify re-examination of the definition of radioactive wastes and other radioactive matter unsuitable for dumping at sea for certain individual radionuclides;
 - (b) To establish source (dose) upper bounds appropriate to the practice of radioactive waste dumping under the Convention;
 - (c) To define quantitatively the exempt levels of radionuclides for the purposes of the Convention
6. *Requests* the Organization to approach appropriate international agencies to establish and maintain an inventory of radioactive wastes from all sources entering the marine environment;
7. *Calls upon* Contracting Parties to develop, as envisaged in Article 10, procedures for the assessment of liability on accordance with the principles of international law regarding State responsibility for damage to the environment of other States or to any other area of the environment resulting from dumping.

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