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Transboundary Damage in International Law

XUE HANQIN

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Transboundary Damage in International Law

The Chernobyl disaster, the *Amoco Cadiz* oil spill and the Colorado River dispute are examples of an activity conducted by one State which has serious adverse effects in the territory of another, or in global common areas. This book details the international rules and compensation procedures, and is intended for use by governmental officials, international lawyers and jurists. It discusses existing laws on international liability and considers the underlying legal issues that require further development. It is one of the few books on the subject written from the perspective of a developing country with rapid economic and social development.

XUE HANQIN is Director-General of the Law and Treaty Department of the Ministry of Foreign Affairs of China. She is one of the first women members of the International Law Commission. She has broad experience in both bilateral and multilateral negotiations of international treaties on various subjects of public international law. She is also a professor of law at the Beijing University School of Law and the College of Foreign Diplomacy of China, and Vice-President of the Chinese Society of International Law. She has written extensively on different issues of contemporary international law.

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Foreword

International law has always recognized that its basic principle of territorial integrity cannot completely safeguard a State from physical damage originating outside of its borders. The principal response of international law has been to impose responsibility on a State guilty of causing the damage and accordingly to require that State to desist from the conduct causing the damage, and in addition to accord adequate reparation to the injured State. These basic ideas, simple in conception and generally accepted, are the starting point of Dr. Xue's wide-ranging examination of the contemporary law and practice applicable to claims by a State for physical damage originating in or caused by other States.

In recent years this age-old subject has taken on new dimensions, as Dr. Xue's study amply demonstrates. New technology, industrial development, and population growth have vastly increased extra-territorial damage. Polluted waters, toxic wastes, oil spills, industrial accidents, and ozone gaps have challenged governments and the international legal system to seek remedies. The worldwide expressions of concern have not only called for international action; they have also sensitized national governments and their public to the need both for protective action and for the peaceful settlement of disputes, especially those that threaten violence. Dr. Xue does not reach for "pie in the sky" in her examination of issues and solutions. Her years of practical experience on behalf of her government and her participation in international meetings have given her a realistic understanding of the bond between territorial integrity and sovereignty. She is also aware, however, of the felt need to avoid inter-State conflict and to reach solutions that appear just and equitable. Her study is valuable to the international lawyer (and it is hoped senior government officials) for the various ways she enlists basic

legal concepts in developing her thesis of international liability. Simply reading the sub-headings of the first two parts shows the broad scope of this study and especially how basic juridical ideas are related to practical solutions. The elusive concept of due diligence is pinned down to specific procedural duties and their relation to substantive rights and obligations. The third chapter focuses on damage to the global commons. It is particularly enlightening on questions of *erga omnes* and legal standing in dispute settlement.

In Part IV Dr. Xue considers the normative and jurisprudential ideas underlying international liability. The idea of normativity itself is analyzed in a stimulating discussion of the "pull of law" as manifested in State behavior and cooperative undertakings. Always realistic, she reminds us in this respect of the countervailing self-interest of States in exercising sovereignty over their respective territories and deciding on the use and distribution of their own resources. The polarities and dialectic manifested in competing values are viewed by Dr. Xue as reinforcing each other in the quest for agreement – and thereby enriching the legal order.

A practical note is a discussion of "efficiency" in its dual meaning of capacity to produce results and its suitability for achieving the agreed end. Dr. Xue gives more specific meaning to this concept by drawing on cases and situations. A rather unexpected example of "efficiency" is her reference to the Chernobyl disaster and the fact that neighboring States which had suffered damage did not pursue claims of liability. Dr. Xue observes that this accorded with "efficiency" in that the urgent needs of the source country (Ukraine) were far greater than the damage in neighboring countries. This is a delicate point, and Dr. Xue is quick to disclaim the inference that a better-off country should not always be entitled to reparations for damage caused by a poor country, and she sensibly concludes that liability can only be a part of the economic response to unexpected damage.

"Fault" and "liability," the two basic legal constructs of international responsibility, are examined in a broad perspective that takes account of the evolving domestic law toward strict liability for ultra-hazardous activities and the use of insurance to cover many risks. Dr. Xue remains cautious and pragmatic in noting that strict liability has limited acceptance in international law and (in her view) only applies when prescribed in treaties. However, she recognizes (and favors) strict liability in cases where the allocations of risk can be measured and calculated with reasonable accuracy. She also makes the important practical observation

that a financial mechanism (e.g. insurance) is probably essential to cope with rules of liability for accidental damage.

Written originally for a doctoral thesis, this book is nonetheless a "good read"; it is also intellectually stimulating and sensible in its practical suggestions. One need not be an international lawyer to appreciate its thoughtful examination of the relation of juridical concepts and the diverse political issues raised by inter-State physical damage. It is a work that will surely have a positive impact on future cases and legal solutions.

OSCAR SCHACHTER
Professor Emeritus of International Law & Diplomacy, Columbia University
Past President, American Society of International Law

Preface and acknowledgments

It has taken me a number of years to complete this book, but for good reasons. In the early 1990s, when I began this project as my doctoral dissertation at the Columbia University School of Law, preparations for the United Nations Conference on Environment and Development were well under way. With many international actions being taken for the convening of the Conference, it was envisaged that international environmental law was likely to proliferate. In the years that followed, this anticipation proved far-sighted, as the numbers of new legal instruments on environmental protection were so overwhelming that it became difficult to keep pace with them. Although my research work had to be continually updated, these legal developments have greatly enriched my study on international liability for transboundary damage.

Meanwhile I had finished my residence requirement at Columbia Law School and returned to China, proceeding with the dissertation while working. As I was taking on greater responsibilities in the Legal Department of the Foreign Ministry, however, the project frequently had to give way to urgent office matters. After two years of hard work, I finally passed my oral defense in 1995 and set about revising the dissertation for publication. This book was therefore in part written in fulfillment of the requirements of my JSD degree at Columbia University School of Law. At this stage, developments in China led me to reflect on some of my original thinking on the study, particularly about the relationship between environment and development.

After seventeen years of rapid economic growth, China was faced with seriously deteriorating environmental conditions. In 1995, the Chinese Government formally adopted sustainable development as one of its two national guiding principles for social and economic advancement, attaching greater importance to environmental protection. This hard

experience demonstrated once again that environment and development must be dealt with hand in hand. The issue of international liability for transboundary damage in the final analysis is how to balance the interests between development need and environmental protection, between States with different priorities accorded to these two aspects and between the needs of individual States and the international community as a whole with regard to environment and development. Developed countries have realized their industrialization at the expense of the environment, while developing countries are left with fewer and tougher choices for a sustainable development. International law should endeavor to address both of these problems.

Throughout my study of this subject, I have received valuable guidance, advice, and support from my supervisors, three prominent scholars of international law at Columbia: Professors Oscar Schachter, Lori Damrosch, and David Leebron. Their dedication to law, devotion to professional excellence and personal integrity have always been a great inspiration for me. What they taught me goes well beyond this book. I wish to express my most sincere thanks to each one of them. I also greatly benefited from the advice of two of my former senior colleagues, who both served as members of the International Law Commission: Judge Jiurong Shi, Vice-President of the International Court of Justice, and Dr. Qizhi He, former Legal Counsel of the Foreign Ministry of China. Their insight on the subject of international liability for transboundary damage was most helpful and enlightening.

There are two other important figures to whom I would like to express my profound appreciation for their unfailing guidance in my professional development over more than twenty years: Professor Wang Tieya of Beijing University School of Law and Professor R. Randle Edwards of Columbia University School of Law. Without their constant encouragement and support, it would have been impossible for me to carry out my task to the end. My utmost gratitude also goes to Professor James Crawford of Cambridge University who gave me enormous help in the publication process. I was specially touched by his interest and sincerity in introducing different perspectives from developing countries on issues of contemporary international law.

I also wish to extend my heartfelt thanks to Ms. Catherine Siemann, a graduate student at Columbia University, for her time and efforts in improving the language of the manuscript, and to Ms. Khamla Pradaxay of the Columbia Law School Secretariat for her assistance in producing it. During the last editorial stage, when I needed library facilities and

materials to finalize the manuscript, Mr. Darren Peacock came to my help. His international law background and editing skills made his assistance especially valuable. I thank him most sincerely for the contribution he has made to the book.

Last but not the least, I would like to thank the Ford Foundation for its generous financial assistance for my study at Columbia. As a Ford Fellow, I appreciate very much the opportunity the Ford Foundation provides to scholars from developing countries, and the role it plays in promoting mutual understanding of different legal systems.

I feel extremely fortunate to have worked with these distinguished people. However, I should also make it clear that I alone assume all responsibility for any errors and mistakes that may be found in this book. Furthermore, the views expressed herein are entirely my own and do not in any way represent those of the institution for which I work.

List of treaties

Nuclear field

Convention on Third Party Liability in the Field of Nuclear Energy (Paris, July 29, 1960) and Additional Protocol (Paris, January 28, 1964), 956 UNTS 251 and 335

Convention Supplementary to the Paris Convention of July 29, 1960 on Third Party Liability in the Field of Nuclear Energy (Brussels, January 31, 1963), 2 ILM 685; amended by the additional Protocol of January 28, 1964 and the Protocol of November 16, 1982

Agreement Between the Government of the Kingdom of the Netherlands and the Government of the United States of America on Public Liability for Damage Caused by the NS Savannah (The Hague, February 6, 1963), 487 UNTS 114

Vienna Convention on Civil Liability for Nuclear Damage (Vienna, May 21, 1963), 1063 UNTS 265

Convention on the Liability of Operators of Nuclear Ships, (Brussels, May 25, 1963), *American Journal of International Law*, vol. 57 (1963), p. 268

Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Moscow, August 5, 1963), 480 UNTS 43

Exchange of Notes Constituting an Agreement Between the United States of America and Ireland Relating to Public Liability for Damage Caused by the NS Savannah (Dublin, June 18, 1964), 530 UNTS 217

Exchange of Notes Constituting an Agreement Between the United States of America and Italy Concerning Liability During

Air space and outer space

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Moscow, London, and Washington, January 27, 1967), 610 UNTS 205

Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (London, Moscow, and Washington, April 22, 1968), 672 UNTS 119

Convention on International Liability for Damage Caused by Space Objects, (London, Moscow, and Washington, March 29, 1972), 961 UNTS 187

Convention on Registration of Objects Launched into Outer Space (New York, November 12, 1974), 1023 UNTS 15

Exchange of Notes Constituting an Agreement Between the United States of America and Canada Relating to Liability for Loss or Damage from Certain Rocket Launches (1975), 992 UNTS 98–99

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (New York, December 5, 1979), 1363 UNTS 21

ECE Convention on Long-Range Transboundary Air Pollution (1979), 18 ILM 1442

Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Long-Term Financing of the Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (Geneva, September 28, 1984), 1491 UNTS 167

Vienna Convention for the Protection of the Ozone Layer (Vienna, March 22, 1985), 1513 UNTS 323

Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal, September 16, 1987), 1522 UNTS 451

Convention on Environmental Impact Assessment in Transboundary Context (Espoo, February 25, 1991), 30 ILM 800 (1991); Doc. E/ECE/1250

United Nations Framework Convention on Climate Change (New York, May 9, 1992), 1771 UNTS 107

Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto, December 11, 1997), UN Doc. FCCC/CP/1997/7/Add.1

Aarhus Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (POPs) (Aarhus, June 24, 1998), 37 ILM 505 (1998)

Maritime area

International Convention for the Prevention of Pollution of the Sea by Oil (London, May 12, 1954), 327 UNTS 3, and its amendments of 1962 and 1969, which were superseded by the International Convention for the Prevention of Pollution from Ships (London, November 2, 1973), 1340 UNTS 18

International Convention Relating to the Limitation of the Liability of Owners of Seagoing Ships (Brussels, October 10, 1957), in Singh, *International Maritime Law Conventions*, p. 2967

Convention on the High Seas (Geneva, April 29, 1958), 450 UNTS 11

International Regulations for Preventing Collisions at Sea (1960), UKTS (1996) No. 23; TIAS No. 5813

International Convention for the Safety of Life at Sea (1960), 536 UNTS 27

International Convention on Civil Liability for Oil Pollution Damage (Brussels, November 29, 1969), 973 UNTS 3

International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (Brussels, November 29, 1969), 970 UNTS 211

International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Brussels, December 18, 1971), 1110 UNTS 57; three protocols adopted respectively in 1976, 1984, and 1992

Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-bed and the Ocean Floor and in the Subsoil Thereof (London, Moscow, and Washington, February 1, 1971), 955 UNTS 115

Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo, February 15, 1972), 932 UNTS 3, Kiss, *Selected Multilateral Treaties*, No. 52, p. 266

Protocol Concerning Mediterranean Specially Protected Areas (Geneva, April 3, 1982), 1425 UNTS 160

United Nations Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396

Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region (Cartagena de Indias, March 24, 1983), 22 ILM 240

Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena de Indias, March 24, 1983), 1506 UNTS 157

Supplementary Protocol to the Agreement on Regional Cooperation in Combating Pollution of the South-East Pacific by Hydrocarbons or other Harmful Substances in Cases of Emergency (Quito, July 22, 1983), Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 137

Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (Bonn, September 13, 1983), Misc. 26 (1983) 9104, Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 268

International Convention on Oil Pollution Preparedness, Response, and Cooperation (London, November 30, 1990), 1891 UNTS 77

Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris, September 22, 1992), 32 ILM 1069 (1993)

Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and other Harmful Substances in Emergency Situations (1992), 1764 UNTS 24 (1994)

Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping (1992), 1764 UNTS 27 (1994)

Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land-Based Sources (1992), 1764 UNTS 18 (1994)

Protocol to the 1969 International Convention on Civil Liability for Oil Pollution Damage (1992), 973 UNTS 3

Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1992), 1110 UNTS 57

Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki, April 9, 1992)
Convention on the Protection of the Black Sea Against Pollution (Bucharest, April 21, 1992), 1764 UNTS 3
Protocol for the Protection of the Mediterranean Sea Against Pollution from Offshore Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (Madrid, October 14, 1994)
Protocol for the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal (1996), in Cubel, "Transboundary Movements," p. 461
Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1996), 36 ILM 1

Polar regions

Antarctic Treaty (Washington, 1 December 1959), 402 UNTS 71
Convention on the Regulation of Antarctic Mineral Resource Activities (Wellington, June 2, 1988), 27 ILM 868
Protocol on Environmental Protection to the Antarctic Treaty (Madrid, October 4, 1991), 30 ILM 1460, and Annexes

International transportation

Additional Convention to the 1970 International Convention Concerning the Carriage of Passengers and Luggage by Rail (CIV) of February 25, 1961, Relating to the Liability of the Railway for Death of and Personal Injury to Passengers (Bern, February 26, 1966) Protocol B (Bern, February 26, 1966), and Protocol I (Bern, October 22, 1971), 1101 UNTS 94
Athens Convention Relating to the Carriage of Passengers and Their Luggage by Sea (Athens, December 13, 1974), 1463 UNTS 19
Consolidated Text of the Convention Concerning International Carriage by Rail (COTIF) (Berne, May 9, 1980), 1397 UNTS 76

Chemical and other toxic and hazardous substances

Agreement Concerning the International Commission for the Protection of the Rhine Against Pollution (June 13, 1965), in Kiss, *Selected Multilateral Treaties*, No. 29, p. 176

European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products (Strasbourg, September 16, 1968), 788 UNTS 181

Convention for the Protection of the Rhine Against Chemical Pollution (Bonn, December 3, 1976), 16 ILM 242

Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel, March 22, 1989), 1673 UNTS 125

ECE Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (Geneva, October 10, 1989), UN Doc. ECE/TRANS/79, UN Sales No. E.90.11.E.39 (1990)

Fourth Lomé Convention (Lomé, December 15, 1989), 29 ILM 783

OAU Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa (Bamako, January 29, 1991), 30 ILM 773 (1991)

Convention on the Transboundary Effects of Industrial Accidents (Helsinki, March 17, 1992), 31 ILM 1330 (1992)

Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano, June 21, 1993), 32 ILM 1228 (1993)

International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (London, May 3, 1996), 35 ILM 1415

International waters

Rio Grande and Rio Colorado Convention Between the United States and Mexico (March 1, 1889), 26 Stat. 1512, US Treaty Series 232, 9 Bevans 877

Treaty Relating to Boundary Waters and Questions Arising Along the Boundary Between the US and Canada (Washington, January 11, 1909), TS No. 548

Treaty Relating to the Utilization of the Waters of the Colorado and Tijuana Rivers, and of the Rio Grande (Rio Bravo), from Fort Quitman, Texas, to the Gulf of Mexico (Washington, February 3, 1944), and Supplementary Protocol (Washington, November 14, 1944), 3 UNTS 313

Agreement Concerning Frontier Watercourses (Helsinki, April 24, 1964), 537 UNTS 231

Treaty Concerning the Rio de la Plata and the Corresponding Maritime Boundary (Montevideo, November 19, 1973), 1295 UNTS 306

Treaty Concerning the Construction and Operation of the Gabcikovo-Nagymaros System of Locks (Budapest, September 16, 1977), 1109 UNTS 235

Agreement Between the United States of America and Canada on Great Lakes Water Quality (1978), 837 UNTS 213, 1153 UNTS 187; Can. TS 1978/20

Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, March 17, 1992), 31 ILM 1312 (1992)

Special Agreement for Submission to the International Court of Justice of the Differences Concerning the Gabcikovo-Nagymaros Project (Brussels, April 7, 1993), 1725 UNTS 225

United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (New York, May 21, 1997), General Assembly Resolution 51/229; UN Doc. A/51/869

Others

Agreement Concerning the Regime on the Polish–Soviet State Frontier (Moscow, July 8, 1948), 37 UNTS 25

Treaty Between Czechoslovakia and Hungary Concerning the Regime of State Frontiers (Prague, October 13, 1956), 300 UNTS 125

European Communities Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters (Brussels, September 27, 1968), OJ C189/2, July 28, 1990; consolidated and updated version of the 1968 Convention and the Protocol of 1971, following the 1989 accession of Spain and Portugal, reprinted in 29 ILM 1413 (1990)

List of cases

Advisory Opinion on the International Status of South-West Africa, ICJ Reports (1950), p. 127

Alabama Claims, in J. B. Moore, *History and Digest of the International Arbitrations to which the United States has been a Party* (Washington, US Government Printing Office, 1898), vol. I, p. 653; vol. IV, p. 4144

Allison v. *Chandler*, 11 Michigan 542 (1863)

Anderson v. *American Smelting & Refining Co.*, 265 *Federal Reporter* 928 (1919)

British South Africa Company v. *Companhia de Moçambique* [1893] AC 602

Case Concerning the Barcelona Traction, Light and Power Company Ltd (Belgium v. *Spain)*, Second Phase, ICJ Reports (1970), p. 3

Case Concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya), ICJ Reports (1982), p. 17

Case Concerning the Factory at Chorzów, PCIJ (1928), Series A, No. 17

Case Concerning the Gabcikovo-Nagymaros Project (Hungary/Slovakia), ICJ Reports (1997), p. 7

Case No. A18, 5 Iran–US CTR, p. 251

Corfu Channel (United Kingdom v. *Albania)*, ICJ Reports (1949), p. 4

Grant v. *Australian Knitting Mills Ltd and Others* [1936] AC 85

Gut Dam Case (United States of America v. *Canada)*, 8 ILM 118 (1969)

Handelskwekerij GJ Bier BV v. *Mines de Potasse d'Alsace SA*, Case 21/76 [1976] ECR 1735

Lake Lanoux Case (Spain v. *France)*, RIAA, vol. XII (1957), p. 281

Abbreviations

1935 Convention	1935 Convention for the Settlement of Difficulties Arising from Operation of Smelter at Trail, BC
1977 Liability Convention	1977 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources
1977 Treaty	Treaty Concerning the Construction and Operation of the Gabcikovo-Nagymaros System of Locks
Antarctic Mineral Resource Convention	1988 Convention on the Regulation of Antarctic Mineral Resource Activities
Articles on State Responsibility	ILC's Articles on Responsibility of States for Internationally Wrongful Acts, 2001
ATCM	Antarctic Treaty Consultative Meeting
Basel Convention	1989 Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
Brussels Convention	1968 EC Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters
CH_4	Methane
CO_2	Carbon dioxide
COPUOS	United Nations Committee on the Peaceful Uses of Outer Space
CRTD	1989 ECE Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels

ECE	Economic Commission for Europe
Fund Convention	1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage
HCFCs	hydrochlorofluorocarbons
HFCs	hydrofluorocarbons
HNS Convention	1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea
HNS Fund	International Hazardous and Noxious Substances Fund
ILC	International Law Commission
ILM	*International Legal Materials*
IPCC	Intergovernmental Panel on Climate Change
London Dumping Convention	1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
N_2O	nitrous oxide
OECD	Organization for Economic Cooperation and Development
Lugano Convention	1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment
Oil Pollution Liability Convention	1969 International Convention on Civil Liability for Oil Pollution Damage
Outer Space Principles Treaty	1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies
Paris Convention	1960 Convention on Third Party Liability in the Field of Nuclear Energy
Partial Test Ban Treaty	1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water
PFCs	perfluorocarbons
Rio Conference	1992 United Nations Conference on Environment and Development
SDR	Special Drawing Right
SF_6	sulphur hexafluoride

Space Liability Convention	1972 Convention on International Liability for Damage Caused by Space Objects
UN International Watercourse Convention	1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses
UNCED	United Nations Conference on Environment and Development
Vienna Convention	1963 Vienna Convention on Civil Liability for Nuclear Damage
WARC	World Administrative Radio Conference
WHO	World Health Organization

1 Introduction

That large-scale industrial, agricultural, and technical activities conducted in the territory of one country can cause detrimental effects in the territory of another country or to areas of the global commons is by no means a novel problem in international law. Such transboundary damage has given rise to numerous theories of State responsibility or liability, focusing on remedial rules. But for a long time State practice in this field remained inconsistent and fragmentary. During the past two decades, however, the scope and content of the subject have dramatically expanded, exerting a direct impact on the codification and progressive development of international law in three important fields: (1) the regime of State responsibility; (2) international liability for injurious consequences arising from acts not prohibited by international law; and (3) international environmental law. State responsibility and international liability for injurious consequences have been two of the major issues on the agenda of the International Law Commission (ILC).

In current parlance, transboundary damage is also often referred to as environmental damage, but of a specific type, namely, environmental damage caused by or originating in one State, and affecting the territory of another. There is a vast body of international treaties on various forms of transboundary damage – pollution of international waters, long-range air pollution, land-source damage to the ocean and oil pollution, to give only a few examples. While some of the treaties directly lay down rules on liability and compensation, most contain only general provisions dealing with State responsibility and liability, leaving issues of detailed implementation aside for future action.

Amidst the worldwide demand for increased environmental protection, international jurists, academic and practicing, have again raised the topic of transboundary damage, urging more and stricter rules of

international liability for the protection of the environment. Some contend that strict liability (liability without proof of fault on the part of the actor) should be recognized as a general principle of international law, applicable to all transboundary damage cases, as already accepted by many national laws and as adopted by some international treaties. But actual practice, as witnessed in the aftermath of the Chernobyl nuclear catastrophe, has not sustained such normative claims.

The discrepancy between theory and practice raises basic questions. First of all, as the tragedy of the Chernobyl accident unfolded, international lawyers asked what kind of responsibility a State should bear under international law to prevent and remedy damage caused to other States. If the law is to impose strict liability on States, what legal mechanisms are required? Should these only be specified on an *ad hoc* basis, in particular contexts, by treaty? Or should customary rules be recognized as applicable on a more general basis, by analogy with the general practice of States at the domestic level in the field of civil liability?

In the light of these challenges, this study considers the nature and scope of the current law on international liability for transboundary damage, why it has so evolved, and how it will continue to develop in the future. No doubt the study of international liability rules is only one aspect of the problem of transboundary damage. The development of international environmental law has to a large extent changed the traditional approach of international law towards such issues by focusing on the prevention of damage at its source rather than on compensation for harm caused. Nonetheless transboundary environmental harm continues to occur and issues of liability and responsibility arise. Taking examples and case studies from the industrialized world, one objective of this study is to provide some policy guidance for those States which are bound to face similar problems in the course of their own industrialization.

The study will begin in this chapter with an introduction to basic terms and concepts, particularly the term "transboundary damage," with a view to establishing a meaningful framework for inquiry into international liability rules. Given the huge volume of legal materials and literature on international environmental law, three perspectives are purposely chosen for the study: (1) accidental damage (Chapters 2 and 3); (2) non-accidental damage (Chapters 4 and 5); and (3) damage to the global commons (Chapters 6 and 7). In these chapters, the existing legal regimes on international liability will be reviewed, and relevant legal issues examined. This approach seeks to reveal the underlying general

pattern of legal rules and the basic policy objectives they have been designed to pursue.

Obviously the law does not address damage in the abstract, but only for a specific social purpose. Thus Chapter 8 undertakes a qualitative analysis of liability rules using three criteria – normativity, equity, and efficiency. These criteria serve to determine to what extent international liability regimes will develop and to what extent States will be prepared to accept and be governed by these rules.

On the fundamental issue – the basis of international liability – recent developments, particularly the work of the ILC on State responsibility and international liability for injurious consequences, have given rise to much debate. First, the apparent distinction between State responsibility for wrongful acts and international liability for "lawful acts" (acts not prohibited by international law) challenges standard views of the basis for State responsibility for activities conducted on its territory. The normative claim that strict liability for transboundary damage under customary international law should be imposed on States equally bears on the origin of State responsibility and liability. At the core of the matter lies the fundamental question of the extent of national sovereignty in the conduct of activities within a State's own territory. The basis for imposing liability for damage caused therefrom raises the question of the extent to which perceived sovereign rights to economic development should be restrained. Chapter 9 will focus on these issues.

The scope of the subject: the definition of transboundary damage

Transboundary damage can arise from a wide range of activities which are carried out in one country but inflict adverse effects in the territory of another. Traditionally, however, transboundary damage as a term of art normally refers to border-crossing damage via land, water, or air in dyadic State relations. In international environmental law, such damage is often referred to as international environmental damage or international environmental harm.[1] But since the term "environment"

[1] In comparison with the more general term "environmental damage," the term "transboundary damage" serves to narrow the scope of the relevant damage to that which directly affects more than one State. The definition of environmental damage and equivalent terms varies among different legal instruments. Some definitions are restricted to the objectives of the given treaty and some are rather broad with general reference to the whole area. One jurist defines environmental damage broadly as

has evolved to have such broad connotations, the discussion of transboundary damage in the present study is restricted by four elements: (1) the physical relationship between the activity concerned and the damage caused; (2) human causation; (3) a certain threshold of severity that calls for legal action; and (4) transboundary movement of the harmful effects.[2] Each of these elements is explained below.

The physical relationship between the activity and the damage

Acts that may give rise to transboundary damage for the purposes of this study are those which directly or indirectly involve natural resources, e.g. land, water, air, or the environment in general. In other words, there must be a physical linkage between the activity in question and the damage caused by it. Typically, industrial, agricultural, and technological activities fall into this category. For example, when a nuclear plant is to be built in the border area, placing a vulnerable neighbor at risk, or a border airport creates a nuisance from overflight of a village situated in a neighboring country, the normal conditions of the environment are disturbed or interrupted by the activity.

More dramatic are cases where factories emit noxious fumes and, as a result, residents living on the other side of the border experience increased risk of lung or skin diseases;[3] or where a fault in a border highway construction incidentally causes a landslide that damages the crops of the neighboring farm of another country.[4] Not surprisingly, damage arising from such activities has often been addressed locally or

"damage to: (a) fauna, flora, soil, water, and climatic factors; (b) material assets (including archaeological and cultural heritage); (c) the landscape and environmental amenity; and (d) the interrelationship between the above factors": Philippe Sands, "Liability for Environmental Damage," in Sun Lin and Lal Kurukulasuriya (eds.), *UNEP's New Way Forward: Environmental Law and Sustainable Development* (Nairobi, UNEP, 1995), p. 73, at p. 86, n. 1.

[2] In defining environmental harm and risk, Professor Schachter proposes four conditions which must exist for environmental damage to fall within the definition of transboundary environmental harm. First, the harm must be a result of human activity; secondly, the harm must result from a physical consequence of that human activity; thirdly, there must be transboundary effects; and, fourthly, the harm must be significant or substantial. See O. Schachter, *International Law in Theory and Practice* (Dordrecht, Martinus Nijhoff, 1991), pp. 366–368.

[3] For instance, the *Trail Smelter* arbitration between the US and Canada, reported in RIAA, vol. III (1938), p. 1905; (1941), p. 1938; and discussed in Whiteman, *Digest of International Law* (Washington, US Government Printing Office, 1963–1973), vol. 6, at p. 253.

[4] For example, the incident between the US and Mexico in the 1950s, documented in Whiteman, *Digest*, vol. 6, at p. 260.

regionally,[5] as these incidents generally involve two or three countries in the region. The gist of this first element is that activities in one State directly give rise to harm in a neighboring State or States.

This first definitional element also encompasses the physical consequences of the activity in question. It serves to exclude activities which may cause consequential damage across a border, but not of a "physical" character – for example, expropriation of foreign property, discriminatory trade practices, or currency policies. Such damage may also be grave and material, but it is mainly of an economic or financial nature.[6] When the ILC first embarked on the topic of "international liability for injurious consequences arising out of acts not prohibited by international law," one of the major debates was whether to confine the topic to environmental damage only, or to cover all kinds of transboundary damage, tangible or intangible, especially economic, financial, and trade activities.[7] The ILC eventually reached agreement, with the approval of the General Assembly, not to include economic and financial activities, since damage caused by these activities is of a different character and should be addressed by different rules.[8] This approach is also taken in the present study.

Thus the physical element denotes "bodily, materially or environmentally" harmful consequences. Bodily harm also includes anything injurious to human senses, e.g. nuisance caused by noise, odor, etc.

[5] There is a series of studies on transboundary pollution and environmental damage carried out by the Organization for Economic Cooperation and Development (OECD): OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977).

[6] This categorization may seem odd to private law lawyers accustomed to the concept of physical harm in tort law or civil law in domestic legal practice, which refers to damage to persons or property, while non-physical damage could include injury to reputation or invasion of privacy. See generally Page Keeton, Robert E. Keeton, Gregory Keating and Lewis D. Sargentich, *Cases and Materials on Tort and Accident Law* (3rd edn., St. Paul, West Publishing Co., 1998). The emphasis in the present context is on the physical form of the damage. Economic loss may be tangible but not physical in form. More importantly, by such classification, certain international economic, financial, and trade activities are treated separately from environmental activities.

[7] See M. B. Akehurst, "International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), pp. 3–16.

[8] The Working Group set up by the ILC at its thirtieth session recommended: "[the topic] concerns the way in which States use, or manage the use of, their physical environment, either within their own territory or in areas not subject to the sovereignty of any State. [It] concerns also the injurious consequences that such use or management may entail within the territory of other States, or in relation to the citizens and property of other States in areas beyond national jurisdiction": *Yearbook of the ILC* (1978), vol. II (Part Two), pp. 150–151, Doc. A/33/10, Chapter VIII, section C, Annex, para. 13.

The requirement of human causality

The second defining element is the human (i.e. anthropogenic) cause of transboundary damage. Damage that may affect more than one country is not caused by human activities alone. Natural factors, such as earthquakes, floods, volcanos, and hurricanes, can also bring about tremendous losses to human society across a wide area. For such "acts of God," so to speak, liability rules do not apply. A standard *force majeure* clause is usually contained in treaties to exonerate States from legal liability for such damage.[9] In principle, transboundary damage should have "some reasonably proximate causal relation to human conduct."[10]

Furthermore, in accordance with the principles of State responsibility and liability, remediable damage must be connected with a legal right or interest of a State, i.e. an entity with plenary legal personality in international law. In the domestic environmental law field, damage to the public domain could be claimed by the government on behalf of the State community. In international practice, such anthropocentric linkage with the rights and interests of international persons presents little problem in dyadic relations, where the injured State can be easily identified. However, in the case of damage to the global commons – namely, areas situated beyond national jurisdiction and control (e.g. polar areas, the high seas, or outer space) – it has traditionally been thought that no State can claim damage on behalf of the international community under international law if its own legal rights or interests are not directly affected. In recent years, the idea of claims for damage to the global commons has gained force,[11] as communal

[9] However, developments in international environmental law indicate the emergence of higher standards of conduct. Under the Rio Declaration adopted during the 1992 UN Conference on Environment and Development (UN Doc. A/CONF.151/26 (vol. I)), if serious or irreversible damage to the environment may occur as the result of certain human activities, the source State should consider taking precautionary measures, even when the human causation of such damage is not yet scientifically proved. Current global efforts in preventing the depletion of the ozone layer and climate change have promoted such a standard. Although this development does not preclude human cause of damage, it embodies the precautionary approach, calling for earlier preventive measures and setting higher standards of conduct. Further, human activities which directly or indirectly increase the risk of natural catastrophe may not escape liability in the event of damage.

[10] Schachter, *International Law*, p. 366.

[11] See discussion in Chapters 6 and 7. See also M. Glennon, "Has International Law Failed the Elephant?," *American Journal of International Law*, vol. 84 (1990), p. 1, at pp. 28–30; C. Stone, "Should Trees Have Standing? – Toward Legal Rights for Natural Objects," *South California Law Review*, vol. 45 (1972), p. 450; and Schachter, *International Law*, p. 367.

interests in the protection of the commons come to be recognized and expressed in various legal instruments.[12] It is still arguable, however, that all States parties to such instruments have the responsibility to protect the natural environment and the common areas, and correlative rights to see that others do so. In this regard, whether the commons are *res communis* or *res nullius* is no longer relevant, so far as they are open and accessible to all States for exploration and peaceful use under international law.[13] Therefore, transboundary damage does not solely refer to bilateral cases or to claims among a few States, as the word "transboundary" may imply. It also comprises damage to the commons arising from national activities or emanating from sources on national territory.

The threshold criterion

Transboundary damage does not necessarily give rise to international liability in all cases. As has been observed:[14]

> [t]o say that a State has no right to injure the environment of another seems quixotic in the face of the great variety of transborder environmental harms that occur every day. . . . No one expects that all these injurious activities can be eliminated by general legal fiat, but there is little doubt that international legal restraints can be an important part of the response.

International law only tackles those cases where transboundary damage has reached a certain degree of severity. Both in theory and in practice, the need for a threshold criterion has never been doubted, but what that should be has long been debated, along with the dilemma of how strict international liability rules should be. Evidently severity is a factual inquiry which changes with the circumstances of a given case. In

[12] These treaties include the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Moscow, London, and Washington, January 27, 1967), 610 UNTS 205; 6 ILM 386 (1967); the 1959 Antarctic Treaty (Washington, December 1, 1959), 402 UNTS 71; Alexandre C. Kiss (ed.), *Selected Multilateral Treaties in the Field of the Environment* (Nairobi, United Nations Environment Programme, 1983), p. 150; the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (December 5, 1979), 1363 UNTS 21; the UN Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396; etc.

[13] The most relevant example is the Antarctic Treaty regime. See Chapter 6.

[14] Schachter, "The Emergence of International Environmental Law," *Journal of International Affairs*, vol. 44 (1991), p. 457; also in Louis Henkin, Richard C. Pugh, Oscar Schachter and Hans Smit, *International Law: Cases and Materials* (3rd edn., St. Paul, West Publishing Co., 1993) at p. 1377.

different international legal instruments on natural resources and the protection of the environment, various terms qualifying the damage such as "serious," "significant," "substantial," and "appreciable" have been adopted.[15] The choice of such a term serves to set the threshold criterion for invoking international liability and to indicate the standard of conduct that State governments deem appropriate. The change of terms in the context of the ILC's early work on non-navigational uses of international watercourses, from "serious" to "appreciable" and finally to "significant," demonstrates the difficulty in deriving generally accepted rules of conduct for riparian States in the uses of international watercourses.[16] To be legally relevant, damage should be at least "greater than the mere nuisance or insignificant harm which is normally tolerated."[17] However, different limits are required for different purposes and in different contexts.

The transboundary movement of harmful effects

On the international plane, transboundary movement of harmful effects implies that more than one State is involved in or affected by the activity in question. The most straightforward example is the use of international rivers and lakes. When a river runs through more than one country, it may be considered an international river,[18] whether it serves as a boundary river or flows successively in different States. If the upstream State, in developing its water resources, either by building dams or by using the water for irrigation, brings about detrimental effects on the downstream State (e.g. the diversion of a large quantity of water

[15] Among others, see the American Law Institute, *Restatement of the Law Third: The Foreign Relations Law of the United States* (St. Paul, American Law Institute Publishers, 1987), vol. 2, § 601, and comment (c), pp. 103–105; the UN Convention on the Law of the Non-Navigational Uses of International Watercourses, adopted by the General Assembly by Resolution 51/229 of May 21, 1997 (UN Doc. A/51/869); Article 2 of the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, adopted by the ILC on second reading in 2001, in Report of the ILC on the Work of its Fifty-Third Session, April 23–June 1 and July 2–August 10, 2001, General Assembly Official Records (GAOR), Fifty-Sixth Session, Supp. No. 10 (A/56/10), p. 370.

[16] Detailed discussions of these concepts will be presented in the following chapters, in particular Chapter 4. See also J. Barboza, "Sixth Report on International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law," March 15, 1990, UN Doc. A/CN.4/428 (Article 2(b) and (e)), reproduced in *Yearbook of the ILC* (1990), vol. II (Part One), p. 83, at pp. 88–89 and 105.

[17] *Ibid.*

[18] There has been a long debate on the definition of an international watercourse. See the work of the ILC on the topic of the law of the non-navigational uses of international watercourses, discussed in Chapter 4.

resulting in serious damage to the crops in the territory of another State, or raising substantially the level of salinity of the water downstream, rendering it undrinkable), it causes transboundary damage. Another example is long-range air pollution. Industrial fumes produced in one State move across the border into a neighboring State, forming "acid rain" that ruins the forests and crops in that other State.

As explained above, the media for the transborder movement of the effects can be water, air, or soil. With national boundaries in mind, the term "transboundary" stresses the element of boundary-crossing in terms of the direct or immediate consequences of the act for which the source State is held responsible. It is the act of boundary-crossing which subjects the consequent damage to international remedy and initiates the application of international rules. Moreover, a "transboundary" harm may result from a transboundary movement across several boundaries that causes detrimental effects in several States. A transboundary act may also take the form of an act which causes harm in and beyond national jurisdiction or control, such as marine pollution of the high seas from land-based sources.

In the event of the transfer of hazardous technology, where there is no tangible movement of harmful substances across a border via the media of water, air, or soil, the activity may nonetheless cause detrimental environmental harm in another State. By definition, transfer of technology falls into a different category since the act, the harmful effects, and the victims are often all within one country. The word "transnational," rather than "transboundary," is usually chosen to describe situations involving the transfer of technology. The nuance lies in the fact that transfer of technology presents more an issue of international trade than a problem of environmental damage. Thus the Hague Conference on Private International Law, in its consideration of the law applicable to civil liability for environmental damage,[19] draws a comparison between the two notions. Referring to "transboundary" cases as "international," it says:[20]

> the "international" case involves the situation where human activity carried on in one country produces damage on the territory of another country. The "transnational" case is where the activity and the physical damage all occur within one country, but nonetheless there is a transnational involvement,

[19] Preliminary Document No. 9 of May 1992 for the attention of the Special Commission of June 1992 on general affairs and policy of the Conference.

[20] See T. Ballarino, "Private International Law Questions and Catastrophic Damage," *Recueil des Cours*, vol. 220 (1990-I), p. 293.

for example, because capital (including technological know-how) has been exported from another country in order to make possible the activity which has caused environmental damage and, presumably, any profits realized from such exported capital will be returned in one way or another to its country of origin.

This implies two separate categories of legal issue. Even though the activity and physical damage may have occurred within one country, the word "transnational" denotes the involvement of another State by way of business transactions surrounding the transfer of the hazardous technology.

But the distinction may be difficult to draw. For example, in the Bhopal catastrophe,[21] despite the fact that there was no transborder movement of either the act, the effects, or the victims, the resulting claims for damage were international in character. Damage was inflicted not only on the population, but also on the environment. The Bhopal incident thus possessed most of the features of a typical case of transboundary damage. At a time when transnational corporations are more and more inclined to move their business to developing countries (among other reasons, to take advantage of more lenient environmental regulations), the exclusion from the category of transboundary damage of cases which involve transboundary movement of capital or technology, rather than the harmful act or effects, is not reflective of reality.

The above four elements – physical nature, human causation, damage criterion, and boundary movement – limit the scope of the term "transboundary damage." By definition, transboundary damage embodies a certain category of environmental damage, including physical injury, loss of life and property, or impairment of the environment, caused by industrial, agricultural, and technical activities conducted by, or in the territory of, one country, but suffered in the territory of another country or in the common areas beyond national jurisdiction and control.

Three perspectives

This study is divided into four Parts, the first three of which will take an empirical approach and address the subject of transboundary harm from three perspectives: accidental damage, non-accidental damage, and damage to the global common areas. The line between accidental damage and non-accidental damage may be blurred in certain cases, and even

[21] See Chapter 2.

arbitrary, but these categories of cases have been treated with different policy considerations in practice. The final part will examine underlying principles and consider future directions.

Accidental damage

"Accidental damage" means damage that arises from the sudden and generally unforeseen occurrence of an event (or a series of occurrences with a common origin). Whether the damage resulted from the occurrence of an accident, or came about through a process of cumulative harmful effects, makes no difference so far as liability is concerned. In either scenario, the actor may be held liable. In national laws, the issue of damage is normally addressed on the basis of the nature of the activity in question, e.g. liability for intentional harm or negligence, for malpractice, for products, for ultra-hazardous activities, etc.[22] The policy considerations underlying liability rules are dictated by those attached to the relevant activity, and therefore their terms may vary from activity to activity. In international practice, liability rules have followed a similar course of development, borrowing in large part from private law. In the present context, the reason for distinguishing between accidental and non-accidental damage is essentially to afford different legal treatment to sudden and gradual occurrences of damage as reflected in the existing legal regimes on international liability. At a more detailed level of analysis, the distinction serves several purposes.

First, by its nature, transboundary damage caused by industrial and technological activities is often accidental, as a result of structural or operational failure. Most existing treaties relating to the area of international liability are directed at accidental damage. By comparing these various types of liability regimes, it is possible to focus on some of the basic issues of State responsibility and liability, such as the question of attribution, and forms of damage.

Secondly, with a view to defining the scope of remedies, damage is often limited to one or a series of occurrences of damage of common origin. For instance, in the event of a meltdown of a nuclear reactor, damage is confined by law to one or several occurrences of damage resulting from the same "accident," thus rendering it possible to set a limitation of liability insurable under the financial mechanism, which is designed both to provide for compensation and to sustain the activity

[22] For a detailed study on the subject, see generally Keeton *et al.*, *Cases and Materials*.

in question. Domestically it is the insurance industry that is chosen to serve the purpose. This pattern has to some extent been adopted in several treaties on international liability.[23] Strict liability is often imposed on the operator with the intention of shifting the loss to the party with the "deepest pocket." The industry, on the other hand, by insurance and market adjustments, spreads the loss to society.[24] In the domestic environmental field, where liability rules are becoming more and more strict, insurability and liability limitation for environmental damage, among other things, have become increasingly problematic for the industries concerned. Among different economies, the loss-shifting and loss-spreading is further complicated by the stratification of development. It would be a worthwhile exercise to re-examine existing mechanisms to see how far they can be expanded or adopted generally for other types of transboundary damage.

The third consideration relates to the work of the ILC. In its discussions on the item of international liability for injurious consequences arising out of acts not prohibited by international law, the ILC distinguished the situation where damage is caused by a sudden event from that where damage is caused gradually (e.g. harmful effects caused by uses of an international watercourse), and emphasized different legal considerations in the two cases.[25] For the latter, the ILC has turned its attention from liability to a comprehensive consideration of damage-prevention and mitigation for certain types of activities.

The fourth and final point concerns procedural issues relating to transboundary damage claims. In the case of private parties, there are primarily two avenues for redress. The parties can either have their government present their case to the foreign government concerned for compensation or resort to legal proceedings, if available, in a foreign

[23] For example, treaties on civil liability in the field of nuclear energy and on maritime oil pollution. See Chapter 2.

[24] This practice is currently under criticism, because it often fails to achieve the ultimate aim of regulating the behavior of the operator.

[25] Ever since its inception, the item of international liability for injurious consequences arising out of lawful acts has been controversial among scholars, because, in their view, it has created conceptual confusion in the rules of State responsibility. The ILC originally intended to establish a parallel regime of international liability for "lawful acts," but without much success. After several earlier drafts prepared by successive Special Rapporteurs, the ILC is now working on a set of rules from prevention to compensation, which differs from State responsibility, because it includes both primary rules and secondary rules. See, for the first instalment of this work, ILC Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (2001).

court. In practice, however, both procedures can present difficulties.[26] Obviously, if the claim is made through diplomatic channels, much depends on the negotiations and cooperation with the country concerned. So far as transnational litigation is concerned, such legal issues as jurisdiction, rules of evidence, choice of law, and enforcement of foreign judgments can be problematic and are likely to delay or hinder the successful pursuit of individual claims. In practice, procedural justice is a primary concern.[27] As the Indian Supreme Court pointed out in the Bhopal case:[28]

> The law's delays are, indeed, proverbial. It has been the unfortunate bane of the judicial process that even ordinary cases, where evidence consists of a few documents and the oral testimony of a few witnesses, require some years to realize the fruits of litigation.

These problems are not limited to cases of accidental damage: they are relevant to transboundary damage in general.

Non-accidental damage

As defined above, non-accidental damage refers to the injurious consequences resulting from the gradual, incremental effects of an activity. It can come from a continuous process, such as the emission of industrial fumes, or from repeated acts, such as the dumping of waste into a river

[26] Given the problems of resorting to public international law to deal with transboundary damage, some scholars advocated opening up national legal systems to transboundary litigation in respect of environmental damage for the following reasons: it de-escalates disputes "to their ordinary neighborhood level" where they can be resolved using national law, and avoids turning them into inter-State controversies based on problematic concepts of responsibility in public international law; it facilitates the implementation of a "polluter pays" approach to the allocation of environmental costs by allowing direct recourse against the enterprise causing the damage, thus giving effect to a policy of internalizing the true economic costs of pollution; and it empowers individuals by enabling the private plaintiff to act without the intervention of his or her government. See Peter H. Sands, *Lessons Learned in Global Environment Governance* (Washington, World Resources Institute, 1990), at p. 31.

[27] See P. W. Birnie and A. E. Boyle, *International Law and the Environment* (Oxford, Clarendon Press, 1992), Chapter 4. See generally F. Francioni and T. Scovazzi (eds.), *International Responsibility for Environmental Harm* (London, Graham & Trotman, 1991).

[28] *Union Carbide Corporation* v. *Union of India and Others*, Reasons for the Settlement Ordered by the Indian Supreme Court, Order dated May 4, 1989 in CA Nos. 3187 and 3188 of 1988 with SLP (c) No. 13080 of 1988, (1989) 3 SCC 38, at p. 42.

or the sea. It most commonly manifests itself in the form of pollution damage.[29]

As evidenced by a number of international court decisions and arbitral awards,[30] principles of public international law have proved insufficient in coping with increasingly complicated matters arising from transboundary damage. Some early scholarly works dealt with the subject of transboundary industrial fumes or water pollution, but they mostly addressed issues of private international law.[31] The recent development of the law on non-navigational uses of international watercourses has provided a helpful source for the study of procedural as well as substantive rules on the uses of natural resources shared by several States. The work done by the ILC and approved by the UN General Assembly illustrates well the progressive development of the law in the past twenty years, particularly in respect of the principles of prevention and mitigation of transboundary damage.

The purpose of singling out non-accidental damage for separate treatment in Part II of this study is two-fold. In the environmental law field, an array of international legal instruments has been developed on the duties to assess environmental damage, and to notify and consult with other States. The tendency is to lay down more specific rules of conduct on prevention, mitigation, and cooperation so as to render those general principles operative and applicable in practice. So far, the duties of prevention are mostly procedural requirements of conduct on the acting State. In this connection it is necessary to examine the impact of these procedural duties on the substantive rules of liability in case of damage. In other words, if the acting State observes its duties to take preventive measures every step of the way to avoid damage to other States by duly notifying or consulting with the potentially affected State on the possible transboundary damage as required by law, should it nonetheless be held answerable for damage? The ILC made it clear that the answer is affirmative, since the duty not to cause damage is unconditional.[32] This

[29] Although pollution damage arises from both cumulative harmful effects as well as accidents.

[30] The best known is the *Trail Smelter* case, discussed in the following chapters, in particular Chapter 4.

[31] Among others, see Stephen C. McCaffrey, *Pollution Suits Between Citizens of the Republic of Mexico and the United States: A Study in Private International Law* (Karlsruhe, Müller, 1976).

[32] This position taken by the ILC is particularly demonstrated in the prior notification requirement contained in Articles 12 and 13 of the Convention on the Law of the Non-Navigational Uses of International Watercourses, under which the author State

position has been criticized,[33] but the policy considerations behind it require further inquiry.

The second purpose of Part II is to review the issue of the threshold criterion, which bears on both layers of rules – rules of conduct and rules of liability. It is both the yardstick for the standards of conduct and the trigger point for the application of liability rules. The difficulty in setting up proper threshold criteria for non-accidental or pollution damage lies with the nature of the activity. Activities that are not prohibited by international law because of their necessity to society may nonetheless give rise to transboundary damage. Unlike ultra-hazardous activities (where a high risk to the public and neighboring States can be predicted), activities with cumulative effects harmful to the environment can be normal operations of daily life and production. Even though the acting State is required to notify or consult with the neighboring States with respect to possible harm, the assessment of the potential risk to the neighboring States can still be problematic. For the extent to which the acting State should abide by the firm rules of conduct to prevent transboundary damage is certainly a matter of policy. The threshold criterion serves to balance the interests of the acting State and the affected State. Part II will make a special study of the work of the ILC on the law of the non-navigational uses of international watercourses, as it offers a relatively sophisticated example of the treatment of non-accidental damage in the field of international environmental law.

Damage to the global commons

Presently there are two types of legally identified damage to the global common areas, which are located beyond national jurisdiction and control. Damage to the polar areas, the high seas, or outer space during their exploration and use by States have been dealt with under the general rules of State responsibility. One example is the current work of the Consultative Parties to the Antarctic Treaty on the drafting of a

must notify the downstream State of any planned project which might adversely affect the downstream State and allow six months for the latter to reply. Even if the downstream State fails to make its comments on the planned project in time, the upstream State still remains obliged not to cause damage in accordance with international law.

[33] Symposium on the Draft Articles on the Non-Navigational Uses of International Watercourses Adopted on First Reading by the ILC, *Colorado Journal of International Environmental Law and Policy*, vol. 3, No. 1 (1992), pp. 66–72 and 109–114.

legal document on international liability for damage to the Antarctic environment.[34]

In the wake of the landmark 1992 United Nations Conference on Environment and Development (the Rio Conference), a number of global environmental issues were raised for international action – the depletion of the ozone layer, global warming, the reduction of biological diversity, forestry, and desertification. Such environmental issues constitute another type of non-accidental damage, but with a few distinctions. First, the damage as such is not to a particular State but to the common areas. Further, it is caused over a long span of time by human activities and yet cannot be attributed to any particular State. The harmful effects of the damage, if not duly controlled in time, will affect the community as a whole; therefore, there is a common interest among States to take action. Finally, any preventive or remedial action taken by a single State is of no use to reverse the course of degradation and deterioration. Only by getting all States on board to take joint action can such adverse developments be effectively controlled.

During and after the Rio Conference, several international treaties were concluded to cope with global environmental issues. The approach adopted by the new regimes has departed from the traditional pattern of State responsibility for damage. Instead of addressing the consequential damage to the commons, it sets the target as well as the deadline to control and reduce the sources of damage. Additionally, trade sanctions are imposed for the purposes of implementation and compliance with the treaty objectives under some regimes.[35] Part III will be devoted to this relatively new area.

In short, State responsibility for transboundary damage is a complicated but dynamic field, developing at a rapid pace. It is hoped that treating transboundary damage from these three separate perspectives, a rather novel approach, will provide some special insight into the subject which generally reflects State relations in the protection and use of natural resources.

[34] See Chapter 6.

[35] For example, the treaty regime on the protection of the ozone layer contains trade sanctions against those who do not comply with the provisions of the relevant treaty.

PART I • ACCIDENTAL DAMAGE

2 Liability for accidental damage

As modern technology continues to promote economic and social ties between States and their peoples, serious accidents arising from the negative effects and by-products of these human inventions are also increasingly taking on an international dimension. Some incidents have invoked immediate international responses while many others have simply left the victims to bear their loss. Among them, nuclear disasters, space accidents, oil spills, and contamination by hazardous substances are prime targets for international regulation. Political outcry has resulted in some legal measures on the control of technological mishaps.

Accidental transboundary damage will be the focus of this chapter. The following section will survey the existing regimes governing strict liability for certain types of accidental damage. Against the background of that legal framework, the substantive rules and principles relating to transboundary damage (e.g. the issue of attribution, the relationship between the financial mechanism and liability and recoverable damage) will be examined in detail in Chapter 3.

The factual context

This chapter will focus on four areas of "typical" ultra-hazardous activities: nuclear activities, space activities, maritime oil transportation, and activities involving other hazardous substances. These represent the most topical concerns of the international community in the field of transboundary accidents. The consequences of the accidents occasioned by these activities are often formidable and unforgettable, and are among the worst disasters experienced by humankind.

Nuclear activities

At the dawn of the nuclear era, humankind was confronted with an unprecedented power. Its dangers, if unleashed, are likely to produce catastrophic results that are virtually irreversible and beyond human control. In the early days of nuclear development, hazards came predominantly from military nuclear weapon tests and nuclear installations.[1] In spite of certain preventive measures, there were nevertheless a few incidents that gave rise to a series of questions on the legality of such activities, especially in the area beyond national jurisdiction and control.[2]

In March 1954, the United States conducted nuclear tests at Eniwetok Atoll in the South Pacific. In January 1957, the United Kingdom carried out its first hydrogen bomb tests on the high seas around Christmas Island. Both countries established a "danger area" and undertook substantial preparation and precautions against possible harm to nearby shipping, civil aviation, and fishing activities.[3] Nevertheless, radioactive contamination resulted in the surrounding areas. In the Eniwetok Atoll nuclear tests conducted by the United States, some Japanese fishermen were exposed to radiation and one died as a result. Without accepting international liability, the United States Government paid US$2 million as compensation *ex gratia*, to Japan for damage caused by the tests, including both personal injuries suffered by the Japanese fishermen and damage to the Japanese fishing industry.

Between 1966 and 1974, the French Government carried out a series of atmospheric nuclear tests in the Mururoa Atoll in the South Pacific. No immediate damage to the surrounding area was reported. Nevertheless,

[1] M. J. L. Hardy, "Nuclear Liability: The General Principles of Law and Further Proposals," *British Yearbook of International Law*, vol. 36 (1960), p. 223, at p. 238. Note the visit of the US nuclear ship *Savannah* to the European countries, where the US had signed a number of agreements with these countries on public liability for any nuclear damage caused by the ship: see the Exchange of Notes Constituting an Agreement Between the United States of America and Italy Concerning Liability During Private Operation of NS Savannah (Rome, December 16, 1965), 574 UNTS 139; Agreement Between the Government of the Kingdom of the Netherlands and the Government of the United States of America on Public Liability for Damage Caused by the NS Savannah (The Hague, February 6, 1963), 487 UNTS 114; Exchange of Notes Constituting an Agreement Between the United States of America and Ireland Relating to Public Liability for Damage Caused by the NS Savannah (Dublin, June 18, 1964), 530 UNTS 217.

[2] See, for example, the French Nuclear Tests Cases of December 20, 1974: *Australia* v. *France*, ICJ Reports (1974), p. 253; and *New Zealand* v. *France*, ICJ Reports (1974), p. 457; and the US nuclear tests documented in Whiteman, *Digest*, vol. 4, pp. 553–607.

[3] Whiteman, *Digest*, vol. 4, pp. 553–607.

Australia and New Zealand brought cases against France before the International Court of Justice, seeking a ruling on the lawfulness of nuclear tests conducted on the high seas.[4] The Court did not render a judgment on the merits of the case, finding that the claims of Australia and New Zealand no longer had any object when France eventually undertook to refrain from further testing.[5] Even so, these cases directly raised the issue of State responsibility for environmental damage to the common area of the high seas.

In 1963, the Treaty Banning Nuclear Weapon Tests prohibited such tests in the atmosphere, in outer space, and under water.[6] Although the question of nuclear weapon tests belongs to the domain of disarmament, its legal dimensions also bear on the issue of international responsibility and liability for environmental damage.[7]

[4] Nuclear Tests Cases of December 20, 1974: *Australia* v. *France*, ICJ Reports (1974), p. 253; and *New Zealand* v. *France*, ICJ Reports (1974), p. 457.

[5] See E. Margolis, "The Hydrogen Bomb Experiments and International Law," *Yale Law Journal*, vol. 64 (1955), p. 629; M. S. McDougal and N. A. Schlei, "The Hydrogen Bomb Tests in Perspective: Lawful Measures for Security," *Yale Law Journal*, vol. 64 (1955), p. 648; M. S. McDougal, "The Hydrogen Bomb Tests and the International Law of the Sea," *American Journal of International Law*, vol. 49 (1955), p. 356.

[6] Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Moscow, August 5, 1963), 480 UNTS 43.

[7] In 1994, the General Assembly adopted Resolution A/49/75K, requesting the International Court of Justice to give an advisory opinion on the question whether the threat or use of nuclear weapons is in any circumstances permitted under international law. The World Health Organization had earlier presented a similar but not identical request to the Court, although the Court had refused to give an opinion on the basis that the legality of the use of nuclear weapons fell outside the WHO's remit. On July 8, 1996, the Court delivered its Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, (1996) 35 ILM 809 and 1343. The Court held:

> A. Unanimously,
> There is in neither customary nor conventional international law any specific authorization of the threat or use of nuclear weapons;
> B. By eleven votes to three,
> There is in neither customary nor conventional international law any comprehensive and universal prohibition of the threat or use of nuclear weapons as such; . . .
> C. Unanimously,
> A threat or use of force by means of nuclear weapons that is contrary to Article 2, paragraph 4, of the United Nations Charter and that fails to meet all the requirements of Article 51, is unlawful;
> D. Unanimously,
> A threat or use of nuclear weapons should also be compatible with the requirements of the international law applicable in armed conflict, particularly those of the principles and rules of international humanitarian law, as well as with specific obligations under treaties and other undertakings which expressly deal with nuclear weapons;

Obviously, potential nuclear risk does not come from military activities alone. Peaceful uses of nuclear energy for power generation, and other beneficial purposes, have also on occasion demonstrated its devastating side. In recent years, after major disasters, there is greater anxiety over civil nuclear activities.[8] The greatest disaster of all was the Chernobyl nuclear accident.

On April 26, 1986, a chemical explosion occurred at one of the four reactors at the Chernobyl nuclear power plant near Kiev in the former Soviet Union. The accident resulted in serious damage that became one of the gravest technological disasters in history. The consequences were of incomparable scale. There had been 192 tons in the core of the exploded reactor and about 4 per cent of this amount, made up of radioactive iodine, strontium, plutonium, and other isotopes, was thrown into the atmosphere for ten days immediately following the accident. The radioactive waste in total was close to 50 million Curie, which equals the intensity of radioactivity that would have resulted from the simultaneous explosion of 500 A-bombs.[9] Some 9 million people were directly or indirectly affected by the accident. Almost 350,000 of them were forced to abandon their homes. High-level radiation was detected in many European countries; a large quantity of agricultural produce was contaminated, and normal life was interrupted.[10] It was reported that among the member States of the OECD only Australia, for the simple

E. By seven votes to seven, by the President's casting vote,
It follows from the above-mentioned requirements that the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law;

However, in view of the current state of international law, and of the elements of fact at its disposal, the Court cannot conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defence, in which the very survival of a State would be at stake; . . .
F. Unanimously
There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.

[8] The concern is further intensified by reports of unsafe conditions in some nuclear plants situated in the former Eastern Europe and of a leak of radiation from a nuclear power plant outside St. Petersburg, Russia: see *Washington Post*, February 21, 1992, p. A14; March 25, 1992, p. A25.

[9] The press release by the Permanent Missions of the Republic of Belarus, of the Russian Federation and of Ukraine to the United Nations on the post-Chernobyl situation in Belarus, the Russian Federation and Ukraine issued on May 1, 1998 in New York.

[10] For details of the case, see Gunther Handl and Robert E. Lutz (eds.), *Transferring Hazardous Technologies and Substances* (London, Graham & Trotman, 1989), pp. 11–16.

reason of its geographical location, escaped contamination.[11] About 7.3 million people, including 3 million children, continued to live in the contaminated areas of what are now three countries – Belarus, Russia, and Ukraine. A vast majority of people who took part in the clean-up work (about 800,000 in total) were exposed to significant doses of radiation. The accident resulted in a very serious impact on the health of the population. Mortality rates have risen in the affected areas with a dramatic increase in thyroid cancer among children. The impact of the Chernobyl disaster is most dramatically observed in the depth and magnitude of its lasting socio-psychological consequences. It has transformed the mentality of the affected population, and changed the system of social and cultural values.[12] Despite the efforts made by the international community in the wake of the disaster to restore some semblance of normalcy,[13] the contaminated areas still bear the scars to this day.[14]

[11] OECD Nuclear Energy Agency (NEA), *The Radiological Impact of the Chernobyl Accident in OECD Countries* (1987), p. 7; also International Atomic Energy Agency (IAEA), *Summary Report on the Post-Accident Review Meeting on the Chernobyl Accident*, Safety Series No. 75, INSAG-1 (1986).

[12] Press release issued by the Permanent Missions of the Republic of Belarus, of the Russian Federation and of Ukraine to the United Nations on the post-Chernobyl situation in Belarus, the Russian Federation and Ukraine on May 1, 1998 in New York.

[13] In assisting in the mitigation of the consequences of the disaster, a UN interagency mission in May 1997 led to the formulation of the "Interagency Program of International Assistance to Areas Affected by the Chernobyl Disaster." At present this Program forms a basis for further joint efforts of the three States concerned and the international community in minimizing the after-effects of Chernobyl. See UNGA Resolution 52/172 of December 16, 1997.

[14] In the aftermath of the accident, Western Europe and the international community were reminded of the international nature of nuclear disaster. What can be concluded from the accident is that in the nuclear age, the concept of distance can become meaningless. Grunwald muses that there is no longer a distinction between "here" and "there": once nuclear power spirals out of control, "there is only one all-encompassing 'here', wherever one may be on the globe": Jürgen Grunwald, "The Role of Euratom," in Peter Cameron, Leigh Hancher, and Wolfgang Kühn (eds.), *Nuclear Energy Law After Chernobyl* (London, Graham & Trotman, 1988), p. 33. Because of the accident, the international regime on nuclear liability has been strengthened both in term and scope. See the discussions below on civil liability for nuclear damage. For further information on Chernobyl, see J. Barron, "After Chernobyl: Liability for Nuclear Accidents Under International Law," *Columbia Journal of Transnational Law*, vol. 25, No. 3 (1987), pp. 647–672; M. A. Heller, "Chernobyl Fallout: Recent IAEA Conventions Expand Transboundary Nuclear Pollution Law," *Stanford Journal of International Law*, vol. 23, No. 2 (1987), pp. 651–664; A. E. Boyle, "Chernobyl and the Development of International Environmental Law," in W. E. Butler (ed.), *Perestroika and International Law* (Dordrecht, Martinus Nijhoff, 1990), pp. 203–219; and N. Pelzer, "The Impact of the Chernobyl Accident on International Nuclear Energy Law," *Archiv des Volkerrechts*, vol. 25, No. 3 (1987), pp. 294–311.

Apart from accidents in nuclear installations, other activities with nuclear power sources can also cause environmental damage. For instance, the malfunction of nuclear-powered ships or missiles on the high seas is a menace to countries both near and far. The possible resulting contamination of the maritime environment raises serious concerns in the international community.

Space activities

While States have derived enormous benefit from the peaceful use of space science and technology, States are not immune from the potential hazards posed by such activities. The dropping of space objects, the collision of spacecraft, and radioactive pollution by nuclear-powered satellites are serious incidents with international ramifications. The crash of the Soviet satellite Cosmos 954 is one significant example.

On January 24, 1978, it was reported that Cosmos 954, a Soviet nuclear-powered satellite, was out of control, plummeting toward the earth. Emergency measures were taken by those countries at the greatest risk. Eventually, the satellite broke up, scattering over a sparsely populated area of 50,000 square kilometers in the northwest of Canada. Large-scale emergency search and rescue operations were conducted by the Canadian Government, for which it claimed compensation from the former Soviet Union in the amount of US$14 million, pursuant to the 1972 Convention on International Liability for Damage Caused by Space Objects[15] and general principles of international law.[16] After negotiations between the two governments, the former Soviet Government eventually paid US$3 million by way of settlement.

Maritime oil transportation

In the 1960s, in order to decrease the congestion on international navigational courses and expedite oil transport, the size of oil tankers increased until disastrous oil-spills from some supertankers brought a halt to this trend.[17] On March 18, 1967, the oil tanker *Torrey Canyon* ran aground on the Seven Stones Reef between the Isles of Scilly and Land's End, causing great damage to the fishing, tourism, and recreation industries of the

[15] 961 UNTS 187.

[16] For the facts of the event, see J. Willisch, *State Responsibility for Technological Damage in International Law* (Berlin, Erichsen, 1987), p. 9.

[17] See Nagendra Singh, *International Maritime Law Conventions* (London, Stevens & Sons, 1983), vol. 3, pp. 2233–2235.

affected coastal States, and to the natural environment and wildlife of the region.[18] Vessel-source oil pollution thus became known as one of the major threats to the maritime environment.

Eleven years later, on March 16, 1978, the supertanker *Amoco Cadiz* poured most of its 230,000 ton load of crude oil into the sea, breaking the record for oil-pollution disaster. As in the *Torrey Canyon* case, the oil pollution caused devastating damage to coastal fishing, farming, tourism, and wildlife.[19] The accident cost France FFr370 million for clean-up and compensation.

However, oil-shipping is not the only cause of large-scale oil pollution. The blow-out of the *Ixtoc One* drilling platform in the Gulf of Mexico in 1979 was described by many as the worst oil disaster in history. With oil gushing into the Gulf continuously for nine months before the well was finally shut down, the damage spread to the waters, coast, fishing industry, and tourism of the United States. It is conceivable that the incident could have had global effects if the oil had entered the Straits of Florida and subsequently been drawn into and spread by the Gulf Stream.[20]

Eleven years later, in 1989, another devastating oil spill took place in North America,[21] which once again brought the matter into the public eye. On March 24, 1989, the *Exxon Valdez* ran aground off the coast of southeastern Alaska, spilling 240,000 barrels (11 million gallons) of oil into Prince William Sound. The oil severely damaged the fragile ecosystem of Prince William Sound, harming wildlife such as sea otters, sea lions, harbor seals, salmon, Pacific herring, and various marine birds. As a result, the Alaskan natives' subsistence way of life was destroyed.[22] The physical clean-up of the spill eventually came to an end but the

[18] Willisch, *State Responsibility*, p. 7. [19] *Ibid.* [20] *Ibid*., p. 8.

[21] It is said that oil spills are a reasonably common occurrence, although the magnitude of the *Exxon Valdez* spill and the physical damage that it caused distinguishes it from other spills. The firm of Temple, Barker & Sloane compiled a list of 189 "significant" oil tanker spills for the period between 1970 and 1987. They defined a significant spill as a spill which caused damage in excess of US$1 million. Of these significant spills, only six involved damages greater than US$50 million, and none of these occurred in US waters. The study also identified 17,000 minor spills which occurred prior to 1982: Temple, Barker & Sloane, Inc., "The International Oil Protocols: Should the United States Ratify?" (report prepared for the US Coast Guard, October 2, 1988); Victor P. Goldberg, "Recovery for Economic Loss Following the *Exxon Valdez* Oil Spill," *Journal of Legal Studies*, vol. 18 (1994), p. 1.

[22] Stephen Raucher, "Raising the Stakes for Environmental Polluters: The *Exxon Valdez* Criminal Prosecution," *Ecology Law Quarterly*, vol. 19 (1992), p. 147; Darrin J. Quam, "Right to Subsist: The Alaska Natives' Campaign to Recover Damages Caused by the *Exxon Valdez* Spill," *Georgetown International Environmental Law Review*, vol. 5 (1992), p. 177.

mess of lawsuits proved stickier.[23] Over 100 law firms participated in over 200 suits in federal and State courts involving more than 30,000 claims. Fishermen, cannery workers, fishing lodges, tour boat operators, oil companies whose shipments were delayed, and even California motorists facing higher gasoline prices filed claims against Exxon and its fellow defendants.[24]

Meanwhile, in response to this catastrophic environmental disaster, the United States charged Exxon Shipping Company, the owner of the *Exxon Valdez*, and its parent, Exxon Corporation, with five criminal counts each.[25] In March 1991, Exxon and the government agreed to a settlement of US$125 million comprising US$25 million in federal fines and US$100 million in criminal restitution split between the state and federal governments, resulting in the largest criminal fine in US environmental history.[26] The crucial consequence of this settlement for the Alaskan natives, fishermen, and other independent parties was that it ensured that their civil claims would be unaffected by the government's departure from the case.

Other hazardous substances

Accidental leakage of chemicals, toxic matters, and other hazardous substances also endanger human life and the environment. However, while the nuclear industry has, from its inception, generally been subject to national regulation of safety standards and liability rules, which to a large extent have been harmonized by international treaties,[27] activities involving chemicals, toxic matters, and other hazardous substances lack

[23] Marla Williams, "Mess of Lawsuits is Proving Stickier than *Valdez* Oil Spill," *Seattle Times*, July 26, 1991, p. A1.

[24] The action by Californian motorists was later dismissed: *ibid*.

[25] Count One arose under the Clean Water Act, Count Two under the Refuse Act, Count Three under the Migratory Bird Treaty Act, Count Four under the Ports and Waterways Safety Act and Count Five under the Dangerous Cargoes Act: Indictment at 1, *United States* v. *Exxon Corp*., 2 *Oil Spill Litigation News* (Litigation Reporting Service), p. 1048 (D. Alaska 1990) (No. A90-015 CR), cited in Stephen Raucher, "Raising the Stakes for Environmental Polluters: The *Exxon Valdez* Criminal Prosecution," *Ecology Law Quarterly*, vol. 19 (1992), p. 147, at p. 148, n. 3.

[26] Michael Parrish, "Exxon Reaches $1.1 Billion Spill Settlement Deal," *Los Angeles Times*, October 1, 1991, p. A1.

[27] See Patrick Reyners and Enery Lellouche, "Regulation and Control by International Organizations in the Context of a Nuclear Accident: The International Atomic Energy Agency and the OECD Nuclear Energy Agency," in Cameron *et al*., *Nuclear Energy Law*, p. 1.

the same degree of international regulation. Activities involving chemical and toxic substances are normally subject to national regulation and licensing regimes. At the international level, the import and export of chemical and toxic substances and technology are also subject primarily to national measures of control. With different national standards and a lack of harmonization at the international level, highly toxic industries tend to move to States with less stringent safety standards. The outrage over the international trade in hazardous and radioactive wastes to developing countries in the 1980s evidences the shortcomings of the existing regulatory controls over such activities.[28] The Bhopal disaster and the Seveso accident are two examples in point.

At midnight on December 2, 1984, toxic gas leaked from an underground storage tank at the Union Carbide chemical subsidiary plant at Bhopal, India.[29] The escape of the deadly chemical fumes from the pesticide factory caused an industrial disaster. The tragedy took an immediate toll of 2,660 human lives and left tens of thousands of people physically impaired or affected in varying degrees.[30] The factory was using methyl isocyanate, a lethal gas whose potentiality for destruction of life and biotic communities was apparently matched only by the lack of adequate scientific knowledge as to the ameliorative medical procedures for immediate neutralization of its effects.[31] The Indian Government received 500,000 claims.[32] The long-term effects of exposure to the deadly gas remain uncertain.

[28] For a study on the current situation in the international trade in hazardous and radioactive wastes, see Elli Louka, *Overcoming National Barriers to International Waste Trade: A New Perspective on the Transnational Movements of Hazardous and Radioactive Wastes* (London, Graham & Trotman, 1994); Michael P. Walls, "Chemical Exports and the Age of Consent: The High Cost of International Export Control Proposals," *New York University Journal of International Law and Policy*, vol. 20 (1988), p. 753.

[29] For detailed factual and legal analysis of the case, see Ved P. Nanda and Bruce C. Bailey, "Nature and Scope of the Problem," in Handl and Lutz, *Transferring Hazardous Technologies*, pp. 7–11.

[30] It was first reported that there were 2,000 people dead as a result of the disaster and more than 200,000 injured. Two years after the accident, the Indian Government reported that the death toll had risen to 2,347 people and 30,000 to 40,000 people had suffered serious injuries: see Bureau of National Affairs, *International Environment Reporter: Current Report*, vol. 10 (1987), p. 148. The figures used in the text are taken from the official report by the Indian Government and used by the Indian Supreme Court in its decision on the settlement.

[31] See the Order dated May 4, 1989 by the Indian Supreme Court on the reasons for the settlement ordered, in CA Nos. 3187 and 3188 of 1988 with SLP No. 13080 of 1988, (1989) 3 SCC 38.

[32] Miller, "Two Years after Bhopal's Gas Disaster, Lingering Effects Still Plague Its People," *Wall Street Journal*, December 5, 1986, p. 30, col. 2.

Immediately after the incident, the Indian Government adopted the Bhopal Gas Leak Disaster Ordinance and enacted the Bhopal Gas Leak Disaster (Processing of Claims) Act,[33] under which the Indian Government assumed responsibility as the sole representative of all victims of the gas leak to bring a single action against Union Carbide, the parent company of the Bhopal plant of Union Carbide India Ltd (UCIL). Subsequently, the Indian Government as *parens patriae* filed a lawsuit on behalf of the victims against Union Carbide in the Federal District Court for the Southern District of New York, seeking both compensatory and punitive damages of an unspecified amount. The Indian Government blamed the parent company for errors in the design, management, and oversight of the Bhopal plant. Additionally, the plaintiffs argued that India's "developing system of jurisprudence" was inadequate for a litigation of such magnitude as the present, and that the delays endemic to the Indian justice system rendered a satisfactory resolution unlikely without decades of protracted litigation.[34] In response the defendant, Union Carbide, argued that responsibility must lie with its 51-percent-owned subsidiary along with the State of Madhya Pradesh where the plant was located and with the central government of India for the reason that "it sold general design drawings to its Indian subsidiary… and it trained some of the plant managers, but was unable to dictate the plant's daily operations."[35] In addition, the defendant claimed that a trial in New York would violate its right to due process, because it would not be able to subpoena documents and witnesses critical to its defense. After eighteen months of litigation in the US courts, resulting in legal costs in excess of US$25 million, the court held that the United States was not a proper forum.[36] Accordingly, the case was sent back to

[33] The text is reproduced in 25 ILM 884 (1986).

[34] Bureau of National Affairs, *International Environment Reporter: Current Report*, vol. 8 (1985), p. 3. As stated in the brief by the plaintiffs to the court, a legal precedent for this particular case was practically non-existent in India: "A recent survey of the 10-year period from 1975 to 1984 revealed 56 tort cases reported by the Supreme Court and High Courts. Of those, only 22 involved negligent tort. None of the cases involved product liability, nor did any case result from industrial processes or injury from chemicals or similar substances." Finally, the plaintiffs claimed that the scope of pre-trial discovery in India was far too narrow to adequately prepare a litigation as large and complex as the Bhopal case.

[35] Handl and Lutz, *Transferring Hazardous Technologies*, p. 8.

[36] Stephen C. McCaffrey, "Expediting the Provision of Compensation to Accident Victims," in Handl and Lutz, *Transferring Hazardous Technologies*, pp. 199–200. In his ruling, Judge John F. Keenan of the US District Court for the Southern District of New York dismissed the case on the grounds of *forum non conveniens* on three conditions: first, that Union Carbide consent to submit to the jurisdiction of the courts of India,

the Indian courts. Finally, in February 1989, pursuant to the directions and orders of the Indian courts, the parties agreed settlement of US$470 million to be paid by the Union Carbide Corporation and Union Carbide India Ltd, by which all claims, causes of action and civil and criminal proceedings against the company were disposed of once and for all.[37]

Strictly speaking, the Bhopal disaster does not represent a typical case of transboundary damage, as the damage was both caused and inflicted in one country. There was no transboundary movement of physical damage between different States. Nevertheless, aspects of the Bhopal case, by analogy, may shed light on the question of international liability for transboundary damage, i.e. attribution of State responsibility for private activities, the problem of different national standards of conduct at the international level, legal process to recover damage, and so forth.

On July 10, 1976, an explosion occurred in Meda, Italy, at the ICMESA plant, a subsidiary of a Swiss-controlled chemical combine.[38] The explosion released approximately two kilograms of the substance 2,3,7,8 dibenzo-paradioxin, known as TCDD or dioxin, into the atmosphere. The toxic cloud was spread by the wind to permeate parts of seven nearby towns. Severe contamination caused the death of thousands of domestic animals, the shutdown of local businesses, and the abandonment of residential homes. A large number of chloracne disease cases were later reported among the inhabitants. Initially, the Italian Government allocated US$48.4 million for the evacuation and relocation of the residents of the contaminated area, for decontamination, and for medical care. The Swiss subsidiary later compensated the Italian Government and the local government with a total of US$80 million for the expenses incurred as a result of the accident, and settled with the commune of Seveso for US$7.2 million. The misconduct and gross negligence of the plant management with regard to the inadequate safety system that eventually led to the accident escaped the scrutiny of both importer and exporter countries. However, the issue of State responsibility of the Swiss Government was never raised; liability and compensation were settled at the business

and continue to waive defenses based upon the statute of limitations; secondly, that Union Carbide agree to abide by the decisions of the Indian courts as long as the courts fulfill "minimal requirements of due process"; and, thirdly, that Union Carbide agree to pre-trial discovery according to United States rather than Indian rules. See *Re Union Carbide Corp. Gas Plant Disaster*, 634 F. Supp. 842, p. 867.

[37] See the Indian Supreme Court order of February 15, 1989 and "Terms of Settlement Consequential to the Directions and Orders Passed by This Honorable Court," 1989 (1) Supreme Court Almanac, SCALE, pp. 381–383; (1989) 1 SCC 674.

[38] See Willisch, *State Responsibility*, pp. 3–7.

level by negotiations between the Italian Government and the Swiss subsidiary.

The Basel chemical spill highlights yet another dimension to the issue of State responsibility for transboundary damage.[39] Efforts to put out a fire at a chemical storage warehouse belonging to Sandoz, in Basel, Switzerland, resulted in a huge discharge of toxic chemicals being washed into the Rhine by water used by the firefighters to extinguish the fire. The discharge adversely affected not only Switzerland, but also France, Germany, and the Netherlands. It was subsequently reported that Basel escaped a major environmental disaster "by a whisker" due to the efforts of the firefighters, for the city could have suffered damage from toxic fumes if the fire had been allowed to burn longer. In this case, damage caused by the firefighting operation was accidental and due to the overwhelming necessity of the emergency situation. However, the negative impact of the damage on the river environment has attracted the close scrutiny of the international community. The far-reaching ecological consequences of the firefighting operation which extended to several adjoining riparian States cannot be ignored, and the potential for such widespread and severe damage must be taken into consideration before taking action in future situations of a similar nature.

These three cases of chemical accidents are merely indicative of the types of scenario which may give rise to issues of State responsibility for transboundary damage. Together, they provide a framework for consideration of the basic legal issues in this area.[40]

The existing legal regimes on accidental damage

This section will examine the existing international regimes relating to accidental damage caused by ultra-hazardous activities. Various

[39] For the facts of the case, see *ibid*., pp. 16–18.

[40] Boundary accident cases are common, but their impact is limited and thus without much significance with respect to State relations. For example, in the 1955 Douglas drainage canal floods case, the canal in Douglas, Arizona, caused floods in Mexico. When Mexico complained, the US State Department referred the complaint to the mayor of the city, and noted "the principle of international law which obligates every state . . . to refrain from creating or authorizing or countenancing the creation on its territory of any agency . . . which causes injury to another state or its inhabitants": Whiteman, *Digest*, vol. 6, p. 265. Another instance is the Mura case, in which experiments conducted by several hydroelectric facilities located on the Austrian section of the River Mura caused the flooding of two Yugoslavian paper mills and damage to Yugoslavian fishing resources: Gunther Handl, "State Liability for Accidental Transnational Environmental Damage by Private Persons," *American Journal of International Law*, vol. 74 (1980), p. 546.

international conventions have been adopted in response to specific crises to meet the immediate need for the control of certain types of ultra-hazardous activities. In the early stage of development, the unification of liability rules focused on international transport, where "the public calling" required unified rules, for example liability for the carriage of passengers and luggage by rail,[41] by air,[42] or by sea.[43] This was due to several factors. First, in the early stage of development, these activities were often run directly by government agencies as a matter of "State practice." In order to overcome the jurisdictional barrier in the case of lawsuits against the governmental agencies for damage suffered by passengers, various treaty provisions imposed liability for compensation on the operator, whether public or private. The consolidated text of the Convention Concerning International Carriage by Rail (COTIF) is an example. Article 26 of Appendix A[44] deals with the basis of liability and provides:

> 1. The railway shall be liable for the loss or damage resulting from the death of, personal injuries to, or any other bodily or mental harm to, a passenger, caused by an accident arising out of the operation of the railway and happening while the passenger is in, entering or alighting from railway vehicles. The railway shall also be liable for the loss or damage resulting from the total or partial loss of, or damage

[41] See the Additional Convention to the International Convention Concerning the Carriage of Passengers and Luggage by Rail (CIV) of February 25, 1961, Relating to the Liability of the Railway for Death of and Personal Injury to Passengers (Berne, February 26, 1966), Protocol B (Berne, February 26, 1966) and Protocol I (Berne, October 22, 1971), 1101 UNTS 94; United Kingdom Treaty Series, No. 20 (1973) Cmnd. 5249. The 1961 CIV was subsequently replaced by the 1970 International Convention Concerning the Carriage of Passengers and Luggage by Rail (CIV) (Berne, February 7, 1970), 1101 UNTS 372, to which the 1966 Additional Convention was linked. However, these agreements have now been abrogated by the entry into force on May 1, 1985 of the Consolidated Text of the Convention Concerning International Carriage by Rail (COTIF) (Berne, May 9, 1980): see Article 24(2).

[42] The 1952 Convention Relating to Damage Caused by Foreign Aircraft to Third Parties on the Surface (Rome, October 7, 1952), 310 UNTS 181, laid down the rules of liability for damage to persons on the surface by aircraft in flight or objects falling from such aircraft.

[43] See the Convention on Limitation of Liability for Maritime Claims (London, November 19, 1976), 1456 UNTS 221 which replaces the International Convention Relating to the Limitation of the Liability of Owners of Seagoing Ships (Brussels, October 10, 1957), in Singh, *International Maritime Law Conventions*, p. 2967; and the Athens Convention Relating to the Carriage of Passengers and Their Luggage by Sea (Athens, December 13, 1974), 1463 UNTS 19. The purpose of these Conventions is primarily to place a limit on liability for maritime damage so as to protect the shipping industry.

[44] Appendix A contains the Uniform Rules Concerning the Contract for International Carriage of Passengers and Luggage by Rail (CIV), Title III of which deals with liability.

to, any articles which the passenger, victim of such an accident, had on him or with him as hand luggage, including any animals.

...

4. For the purposes of this chapter, the railway that is liable shall be that which, according to the list of lines or services provided for in Articles 3 and 10 of the Convention, operates the line on which the accident occurred. If, according to that list there is joint operation of the line by two railways, each of them shall be liable.

Liability is similarly imposed on the operator of aircraft by the 1952 Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface, without any distinction between State-owned and private aircraft.[45]

Secondly, in the event of an accident, if different national laws of civil liability were to apply, the victims of the same accident may be differentially compensated, thus encouraging forum-shopping.[46] Thirdly, since these activities involve a public service, it is also necessary to protect the operators from the undue burden of unlimited liability in respect of foreign lawsuits.[47]

Apart from these international commercial activities, States have also adopted a number of treaties on civil liability for certain ultra-hazardous activities. With similar policy considerations based on a balance of interests between protection of the industry and the public, States have formulated a systematic pattern of strict liability for ultra-hazardous activities. It is often based on these regimes that advocates lay claim to

[45] Rome, October 7, 1952, 310 UNTS 181. Article 1 states:

Any person who suffers damage on the surface shall, upon proof only that the damage was caused by an aircraft in flight or by any person or thing falling therefrom, be entitled to compensation as provided by this Convention. Nevertheless there shall be no right to compensation if the damage is not a direct consequence of the incident giving rise thereto, or if the damage results from the mere fact of passage of the aircraft through the airspace in conformity with existing air traffic regulations.

[46] This is apparent from the objectives of these treaties, as exemplified by the preamble to the 1957 International Convention Relating to the Limitation of the Liability of Owners of Seagoing Ships: "Having recognized the desirability of determining by agreement certain uniform rules relating to the limitation of liability of owners of seagoing ships..."

[47] The 1952 Convention Relating to Damage Caused by Foreign Aircraft to Third Parties on the Surface provides in the preamble: "Moved by a desire to ensure adequate compensation for persons who suffer damage caused on the surface by foreign aircraft, while limiting in a reasonable manner the extent of the liabilities incurred for such damage in order not to hinder the development of international civil air transport..."

the existence of normative rules of strict liability for ultra-hazardous activities.

The nuclear regime

Public anxiety over the safe use of nuclear energy during peacetime arose at the inception of the nuclear age in reaction to the global experience of the atomic bomb.[48] In the 1960s, after a number of minor incidents,[49] international treaties as well as national laws on nuclear liability were adopted, among which the two most important instruments were the 1960 Convention on Third Party Liability in the Field of Nuclear Energy[50] (the "Paris Convention") and the 1963 Vienna Convention on Civil Liability for Nuclear Damage[51] (the "Vienna Convention"). The Paris Convention is primarily a regional treaty concluded within the Organization for Economic Cooperation and Development (OECD).[52] In 1963, in order to ensure compensation for nuclear damage, the contracting parties to the Paris Convention concluded the Convention Supplementary to the Paris Convention,[53] which further specified the territorial scope of application of the regime and set up two supplementary public funds

[48] In this regard, the first report on the risk assessment of civilian nuclear power produced by the US, the Brookhaven Report of 1957, canvassed the theoretical possibilities and consequences of major accidents in large nuclear power plants, and predicted massive injury to life and property in the worst case of a nuclear incident: Norbert Pelzer, "Concepts of Nuclear Liability Revisited: A Post-Chernobyl Assessment of the Paris and the Vienna Conventions," in Cameron *et al.*, *Nuclear Energy Law*, p. 97, at p. 98.

[49] In each case, although there was some release of radioactivity, no evidence of damage to third parties was found. Among them are the 1957 Windscale accident where there was a considerable release of radioactivity, but no resulting civil liability law claims: see Accident at Windscale No. 1 Pile on October 10, 1957 (Cmnd. 302, HMSO 1957); and the 1979 Three Mile Island accident, which was not considered an "extraordinary nuclear occurrence" under the Price–Anderson Act with the result that compensation for preventive measures was paid on the grounds of arrangements, not under the US nuclear third party liability law: J. G. Kemeny, "Report of the President's Commission on the Accident at Three Mile Island," (Washington, 1979), cited in Cameron *et al.*, *Nuclear Energy Law*, p. 97, n. 2.

[50] Convention on Third Party Liability in the Field of Nuclear Energy (Paris, July 29, 1960) and Additional Protocol (Paris, January 28, 1964), 956 UNTS 251 and 335.

[51] Vienna Convention on Civil Liability for Nuclear Damage (Vienna, May 21, 1963), 1063 UNTS 265.

[52] It entered into force on April 1, 1968, with seventeen State parties.

[53] Convention Supplementary to the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy (Brussels, January 31, 1963), 2 ILM 685, in Kiss, *Selected Multilateral Treaties*, p. 171. See Articles 2 and 12 in particular.

in addition to the operator's civil liability.[54] The regime was amended in 1982, raising the upper ceiling of the public funds.

The Vienna Convention was a general treaty, open to all States. For a long time, however, there were few parties, most of them non-nuclear power States.[55] After the Chernobyl incident, a large number of Eastern European States joined the Convention either by succession or by accession.

The Convention on the Liability of Operators of Nuclear Ships was adopted to cover nuclear installations on ships.[56] Because of the possible overlap between the treaties and national laws, particularly in the maritime transport of nuclear material, in 1971 the Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material was adopted to harmonize the rules in the field.[57]

In the wake of the Chernobyl catastrophe, "in order to provide for broader scope, increased amount of liability of the operation of a nuclear installation and enhanced means for securing adequate and equitable compensation,"[58] the international community has taken two significant steps with a view to strengthening the existing legal regimes on State responsibility and liability for nuclear damage. The first was the adoption of a joint protocol in 1988, by which the Paris Convention and the Vienna Convention were linked so that they jointly have a larger

[54] One of the funds comes from the installation State and the other from contributions by the States parties. The formula for contribution to the public funds is based on (a) the ratio between the gross national product of each contracting party and the total of the gross national product of all the parties; and (b) the ratio between the thermal power of the reactors of each contracting party and the total thermal power of the reactors of all the parties. See Article 3(b) and Article 12 of the Convention.

[55] By April 1999, there were thirty-two State parties to the Convention, most of which come from the Eastern European region. Twenty have become parties since 1990.

[56] Convention on the Liability of Operators of Nuclear Ships (Brussels, May 25, 1963), *American Journal of International Law*, vol. 57 (1963), p. 268.

[57] Under Article 1 of the Convention:

> Any person who by virtue of an international convention or national law applicable in the field of maritime transport might be held liable for damage caused by a nuclear incident shall be exonerated from such liability: (a) if the operator of a nuclear installation is liable for such damage under either the Paris or the Vienna Convention, or (b) if the operator of a nuclear installation is liable for such damage by virtue of a national law governing the liability for such damage, provided that such law is in all respects as favorable to persons who may suffer damage as either the Paris or the Vienna Convention.

See Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material (Brussels, December 17, 1971), 974 UNTS 255.

[58] See the preamble to the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (reproduced in IAEA INFCIRC/566 of July 22, 1998).

coverage.[59] The second was the conclusion of a protocol amending the Vienna Convention and a convention on supplementary compensation for nuclear damage in September 1997.[60] The Protocol's amendments to the Vienna Convention indicate a shift in nuclear liability policy towards greater protection for the general public against nuclear damage. It first enlarges the scope of coverage by extending liability to, *inter alia*, economic loss, the costs of measures of reinstatement of impaired environment and preventive measures.[61] The definition of a "nuclear incident" is extended to include an incident which creates a grave and imminent threat of causing nuclear damage but only with respect to preventive measures.[62] Secondly, it provides that the Convention shall apply to nuclear damage wherever suffered.[63] However, it leaves the option open for the contracting parties to enact legislation excluding from the application of the Convention damage suffered in a

[59] Joint Protocol Relating to the Application of the Vienna Convention on Civil Liability for Nuclear Damage and the Paris Convention on Third Party Liability in the Field of Nuclear Energy (Vienna, September 21, 1988), 1672 UNTS 301, in Iwona Rummel-Bulska and Seth Osafo (eds.), *Selected Multilateral Treaties in the Field of the Environment*, vol. 2 (Nairobi, Grotius Publications Ltd, 1991), p. 447; see also "Meeting of the Standing Committee on Civil Liability for Nuclear Damage," *Nuclear Law Bulletin*, No. 39 (September 1987), p. 31. By June 2001, there were twenty-four States parties to the Joint Protocol.

[60] On September 8–12, 1997, a diplomatic conference was held at IAEA headquarters in Vienna, with delegates from over eighty States. The conference adopted the Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage (reproduced in IAEA INFCIRC/566 of July 22, 1998) and the Convention on Supplementary Compensation for Nuclear Damage (reproduced in IAEA INFCIRC/567 of July 22, 1998). The Protocol sets the possible limit of the operator's liability at not less than 300 million Special Drawing Rights (SDRs) and the Convention defines additional amounts to be provided through contributions by States parties on the basis of nuclear capacity and UN rates of assessment. The Convention is an instrument to which all States may adhere regardless of whether they are parties to any existing nuclear liability conventions or have nuclear installations on their territories. Pursuant to Article XX, the Convention will enter into force on the ninetieth day following the date on which at least five States with a minimum of 400,000 units of installed nuclear capacity have deposited an instrument to become a party. By November 2000, only three States – Argentina, Morocco, and Romania – were parties.

[61] Article 2(2) of the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage of 1997; see the amendment to paragraph 1(k) of Article I of the Vienna Convention.

[62] Articles 2(3) and (4)(n) of the Protocol; see the amendment to paragraph 1(l) of Article I of the Vienna Convention. The amended text reads: "(l) 'Nuclear incident' means any occurrence or series of occurrences having the same origin which causes nuclear damage or, but only with respect to preventive measures, creates a grave and imminent threat of causing such damage."

[63] Article 3 of the Protocol. Two articles – Articles IA and IB – were added to the Convention with regard to the territorial coverage of the Protocol.

non-contracting party or in its maritime zones. Such exclusion, nonetheless, may only apply to a non-contracting State with a nuclear installation in its territory and which does not afford equivalent reciprocal benefits to the contracting party (new Article 1A). Moreover, military installations, or installations "used for non-peaceful purposes," are also excluded from the application of the Convention (new Article 1B). Thirdly, the Protocol raises the amount of liability for the nuclear operator for each nuclear incident.[64] With regard to the public funds, the Convention on Supplementary Compensation for Nuclear Damage provides for contributions to public funds from State parties on the basis of installed nuclear capacity and UN rates of assessment.[65]

As summarized by Pelzer, the liability regime imposed by these treaties contains the following leading principles:[66]

1. Strict liability of the operator of a nuclear installation (including the owner of a nuclear ship);
2. Channeling of liability exclusively onto the operator and away from the state;
3. Limitations of liability in amount and in time;
4. Obligation of the operator to have and to maintain financial security in an amount which is equivalent to his liability (congruence of liability and coverage);
5. Exclusive jurisdiction of the courts of the Contracting Party in whose territory the nuclear incident occurred;
6. Enforcement of judgements of the competent court in the territory of any other Contracting Party;
7. Free transfer of compensation and related sums between the monetary areas of the Contracting Parties;
8. Application of the Convention and of the implementing and supplementing national law without discrimination based upon nationality, domicile, or residence.

The objectives

From the outset it was clear that the objectives of the liability regime for nuclear damage were not limited to compensating victims injured by

[64] Article 7. Under this article, the operator is required to undertake a certain amount of liability. Such amount may be shared by public funds established by the installation State of the liable operator.

[65] Article IV of the Convention on Supplementary Compensation for Nuclear Damage.

[66] Norbert Pelzer, "Concepts of Nuclear Liability Revisited: A Post-Chernobyl Assessment of the Paris and the Vienna Conventions," in Cameron *et al*., *Nuclear Energy Law*, p. 97, at p. 100.

a nuclear accident, although these compensation schemes significantly buoyed public confidence in nuclear energy programs. Rather, the compensation policy was carefully counterbalanced with the interests of sustaining the industry and protecting it from ruinous claims for compensation. This dual policy goal was spelled out in the preamble to the Paris Convention, which stated that its goals were to ensure "adequate and equitable compensation for persons who suffer damage caused by nuclear incidents whilst taking the necessary steps to ensure that the development of the production and uses of nuclear energy for peaceful purposes is not thereby hindered."

Notably, the Vienna Convention does not specify a similar desire to ensure the development of the industry. However, it seems plausible that a similar legal framework on the limitation of liability of the operator can nevertheless be interpreted to embody similar policy objectives. After thirty-four years, however, the adoption of the 1997 Protocol to the Vienna Convention demonstrates a swing of the pendulum of public pressure on the nuclear industry, particularly from the non-nuclear States, toward enhanced safety measures. The increase of civil liability of the operator of nuclear installations in terms of amount, time, and territorial scope, and State responsibility to ensure adequate public funds for compensation, demonstrates a greater inclination on the part of States to impose more stringent controls over the peaceful uses of nuclear energy.

The party liable

The common thread in all of the treaties discussed above is that strict liability is imposed on the operator of a nuclear activity.[67] Because of the intrinsic high risk of nuclear activity, injured parties do not have to prove fault on the part of the operator of the nuclear installation which caused the damage. Under the Paris Convention, the "operator" means the person so designated or recognized by the competent public authority of the installation State.[68] In the case of carriage of nuclear substances, the operator is held liable for damage caused when he is in possession of the materials.[69] Article 6 of the Paris Convention reads, in part:

[67] Article IV(1) of the Vienna Convention states that "[t]he liability of the operator for nuclear damage under this Convention shall be absolute." As we shall see, what is meant here is strict liability.

[68] Article 1(vi) of the Paris Convention. [69] *Ibid*., Article 4.

a. The right to compensation for damage caused by a nuclear incident may be exercised only against an operator liable for the damage in accordance with this Convention ...
b. Except as otherwise provided in this Article, no other person shall be liable for damage caused by a nuclear incident ...

Under the Vienna Convention, the "operator" is similarly defined,[70] and the same provisions relating to carriage of nuclear substances are adopted.[71] The operator is absolutely liable for nuclear damage.[72] If nuclear damage involves more than one operator, the operators involved shall be jointly and severally liable.[73]

The claimant can directly sue the insurer or financial guarantor, if permitted by national law or the law of the competent court.[74] The channeling of strict liability to the operator is regarded as one special feature of the nuclear liability regime. By adopting this liability regime, the parties to the Vienna Convention hoped to achieve two ends: first, to simplify the question of who is legally liable in each individual case so as to avoid complicated cross-actions; and, secondly, to provide financial security for the payment of compensation.

Avoiding complex lawsuits by establishing a simple and manageable insurance scheme provided a practical solution to a complex problem: the operator is strictly liable under the terms of the Convention, and liable within the territories of the contracting parties,[75] or as otherwise provided.[76] The Vienna Convention's liability regime also spared the nuclear manufacturing industry the heavy burden of product liability suits, and simplified the process by which victims can receive compensation for the injuries suffered.[77]

[70] The operator is "the person designated or recognized by the Installation State as the operator of that installation": Article I(1)(c) of the Vienna Convention.
[71] Articles II and III of the Vienna Convention.
[72] Article IV of the Vienna Convention. [73] Article II(3) of the Vienna Convention.
[74] Articles 6(a) and 10 of the Paris Convention; and Articles II(7) and VII of the Vienna Convention.
[75] Article 2 of the Paris Convention provides that the Convention generally does not apply to nuclear incidents occurring in the territory of non-contracting States, except as otherwise provided by legislation in the installation State. Under Article XVI of the Vienna Convention, recovery of compensation under another international treaty on civil liability in the field of nuclear energy precludes recovery under the Vienna Convention for the same nuclear damage.
[76] The 1997 Protocol to the Convention expands the territorial coverage to non-nuclear and non-contracting parties.
[77] In the years to follow, this scheme, despite its effectiveness and simplicity, was criticized by some countries and in the IAEA.

For nuclear activities that are directly conducted by the State itself, liability should in principle lie with the State.[78] In practice, in the case of nuclear damage caused by military activities, liability is normally settled by means of previous arrangements between the governments concerned; otherwise, the author State may simply pay compensation *ex gratia*. For example, in the 1960s, when the US nuclear ship *Savannah* set out on a voyage in European waters, the US Government reached agreement through diplomatic channels with several countries concerning liability in the event of nuclear damage caused by the ship. According to its national law,[79] the US Government agreed to indemnify up to US$500 million for any damage to people or goods in the territory of the country concerned, deriving from a nuclear incident, or resulting from the operation, repair, maintenance, or use of the ship.[80]

The extent of liability

Both the Paris Convention and the Vienna Convention lay down a specific scope of liability. In terms of damage, they cover loss of life, physical injury, and damage to property other than to the installation itself or to any means of transportation carrying the nuclear substances.[81] The 1997 Protocol amending the Vienna Convention extends the scope of the Convention by additional coverage of costs of reinstatement of impaired environment, costs of preventive measures, and other economic loss.[82] In terms of territorial application, unless otherwise provided by the national laws of the contracting parties, the Paris Convention only applies

[78] Norbert Pelzer, "Concepts of Nuclear Liability Revisited: A Post-Chernobyl Assessment of the Paris and the Vienna Conventions," in Cameron *et al*., *Nuclear Energy Law*, p. 97, at p. 100.

[79] Section 11 of the United States Atomic Energy Act of 1954; Public Law 85-256 (Annex A), 532 UNTS 144; as amended by 85-602 (Annex B), 532 UNTS 154.

[80] See the Exchange of Notes Constituting an Agreement Between the United States of America and Italy Concerning Liability During Private Operation of NS Savannah (Rome, December 16, 1965), 574 UNTS 139; Agreement Between the Government of the Kingdom of the Netherlands and the Government of the United States of America on Public Liability for Damage Caused by the NS Savannah (The Hague, February 6, 1963), 487 UNTS 114; Exchange of Notes Constituting an Agreement Between the United States of America and Ireland Relating to Public Liability for Damage Caused by the NS Savannah (Dublin, June 18, 1964), 530 UNTS 217.

[81] Article 3(a) of the Paris Convention. The term "property" is not specifically defined – for a potential interpretation, see Cameron *et al*., *Nuclear Energy Law*, pp. 110–111. The scope under the Vienna Convention could be wider – see Vienna Convention, Article I(1)(k), as amended by the 1997 Protocol.

[82] Article 2(2) of the 1997 Protocol, amending Article I(1)(k) of the Vienna Convention.

among the contracting parties and not to an incident that takes place in the territory of a non-contracting party.[83] The Vienna Convention originally did not contain any specific provision on its geographic scope, and, in accordance with the accepted rules of treaty interpretation, it would likewise presumably be interpreted as applying only among the contracting parties.[84] This point was amended by the 1997 Protocol, which added new Article IA as follows:[85]

1. This Convention shall apply to nuclear damage wherever suffered.

2. However, the legislation of the Installation State may exclude from the application of this Convention damage suffered—

a. in the territory of a non-Contracting State; or
b. in any maritime zones established by a non-Contracting State in accordance with the international law of the sea.

3. An exclusion pursuant to paragraph 2 of this Article may apply only in respect of a non-Contracting State which at the time of the incident—

a. has a nuclear installation in its territory or in any maritime zones established by it in accordance with the international law of the sea; and
b. does not afford equivalent reciprocal benefits.

4. Any exclusion pursuant to paragraph 2 of this Article shall not affect the rights referred to in sub-paragraph (a) of paragraph 2 of Article IX and any exclusion pursuant to paragraph 2(b) of this Article shall not extend to damage on board or to a ship or an aircraft.

Under this provision, the contracting parties undertake absolute liability for damage caused by operators under their jurisdiction and control to all non-nuclear States, as well as to those nuclear States in respect of which liability is not specifically excluded by national legislation pursuant to Article IA.

The most important feature of both the Vienna and Paris Conventions is the limitation on the amount of compensation recoverable. Under

[83] Article 2 of the Convention. The territorial coverage of the Paris Convention and the Vienna Convention was joined by the Joint Protocol adopted in 1988.

[84] Under Article 34 of the Vienna Convention on the Law of Treaties (Vienna, May 23, 1969), 1155 UNTS 331, a treaty does not create either obligations or rights for a third State without its consent: Louis Henkin, Richard C. Pugh, Oscar Schachter, and Hans Smit, *Basic Documents Supplement to International Law: Cases and Materials* (3rd edn., St. Paul, West Publishing Co., 1993), p. 94. When such a heavy financial obligation is involved, the consent of the third party as well as the agreement of the contracting parties to assume such an obligation for the third party should not be presumed.

[85] Article 3 of the 1997 Protocol.

both Conventions, the operator is subject to a limited amount of compensation as provided by the treaties. The Paris Convention set the upper ceiling at 15 million Special Drawing Rights of the International Monetary Fund (SDRs) for the damage of each incident.[86] The contracting parties can establish by legislation a greater or lesser amount, but in no event can it be less than 5 million SDRs.[87] The 1963 Convention Supplementary to the Paris Convention increased the limit of liability to 300 million SDRs per incident.[88] The Vienna Convention provides in Article V(1): "The liability of the operator may be limited by the Installation State to not less than US$5 million for any one nuclear incident." The figure was amended later to "not less than" 300 million SDRs by the 1997 Protocol to the Vienna Convention.[89] The Protocol does not, however, set an upper ceiling on the liability. The 1962 Convention on the Liability of Operators of Nuclear Ships also sets the maximum liability at FFr1,500 million for any one nuclear accident.[90]

Additionally, the Vienna and Paris Conventions include limitations on the time period for which liability continues.[91] The 1997 Protocol extends the period set down in the Vienna Convention for claims for loss of life and personal injury, and specifies a shorter period of limitation for other damage.[92]

[86] Article 7 of the Paris Convention. [87] *Ibid*., Article 7(b).

[88] Article 3(a) of the Convention of January 31, 1963 Supplementary to the Paris Convention, as amended by the additional Protocol of January 28, 1964 and the Protocol of November 16, 1982.

[89] Article 7 of the 1997 Protocol. [90] Article III of the Convention.

[91] Ten to twenty years is the period set by both treaties: Article 8 of the Paris Convention; and Article VI of the Vienna Convention.

[92] Article 8 of the 1997 Protocol introduces in part the following changes to Article VI of the Vienna Convention:

> 1. (a) Rights of compensation under this Convention shall be extinguished if an action is not brought within—(i) with respect to loss of life and personal injury, thirty years from the date of the nuclear incident; (ii) with respect to other damage, ten years from the date of the nuclear incident. (b) If, however, under the law of the Installation State, the liability of the operator is covered by insurance or other financial security including State funds for a longer period, the law of the competent court may provide that rights of compensation against the operator shall only be extinguished after such a longer period which shall not exceed the period for which his liability is so covered under the law of the Installation State. (c) Actions for compensation with respect to loss of life and personal injury or, pursuant to an extension under sub-paragraph (b) of this paragraph with respect to other damage, which are brought after a period of ten years from the date of the nuclear incident shall in no case affect the rights of compensation under this Convention of any person who has brought an action against the operator before the expiry of that period.
>
> . . .

Financial guarantees

As a practical method of ensuring that the operator of a nuclear installation is able to bear its liability in case of an incident, all relevant treaties provide that insurance or other financial security up to a certain amount should be obtained. Such insurance and financial arrangements may take different forms, depending on the practice of each contracting party. Whatever form they take, they should be approved and guaranteed by the installation State before the installation goes into operation. In the case of carriage of nuclear substances, the operator is required to provide the carrier with a certificate issued by or on behalf of the insurer or financial guarantor furnishing the financial security required under the relevant treaty. Article VII(1) of the Vienna Convention provides:

> [t]he operator shall be required to maintain insurance or other financial security covering his liability for nuclear damage in such amount, of such type and in such terms as the Installation State shall specify. The Installation State shall ensure the payment of claims for compensation for nuclear damage which have been established against the operator by providing the necessary funds to the extent that the yield of insurance or other financial security is inadequate to satisfy such claim, but not in excess of the limit, if any, established pursuant to Article V.

This paragraph was amended by the 1997 Protocol by adding that the installation State may establish a limit of 300 million SDRs of financial security in cases where the liability of the operator is unlimited. For smaller nuclear installations or nuclear substances, the limit of financial security may be established by the installation State at not lower than 5 million SDRs.[93] Although the contracting party shall ensure the payment of claims for compensation for nuclear damage caused by the operator's installation or nuclear substances, the contracting party itself is not required to maintain insurance for such purpose.

Similarly, under the Convention on the Liability of Operators of Nuclear Ships, the licensing State shall ensure the payment of claims

> 3. Rights of compensation under the Convention shall be subject to prescription or extinction, as provided by the law of the competent court, if an action is not brought within three years from the date on which the person suffering damage had knowledge or ought reasonably to have had knowledge of the damage and of the operator liable for the damage, provided that the periods established pursuant to sub-paragraphs (a) and (b) of paragraph 1 of this Article shall not be exceeded.

[93] Article 9 of the 1997 Protocol.

for compensation by providing the necessary funds up to the limit to the extent that the operator's insurance or financial security turns out to be inadequate.[94] The security cannot be removed without proper notice to the competent authorities and may be drawn upon only for the purpose of the treaty.[95]

Apparently aware of the potential gravity of large-scale damage caused by a nuclear accident, the OECD countries, with a view to providing further protection to the public while sustaining the nuclear industry, set up public funds for compensation of nuclear damage victims.[96] Under the regime, if the operator cannot satisfy his liability by recourse to insurance or other financial security, the installation State shall cover the compensation from public funds up to a limit. Should that still prove inadequate, public funds contributed by the State parties shall provide the compensation up to the upper ceiling as laid down in the Convention.[97] The new Vienna Convention regime as adopted in the 1997 Protocol has set up a similar regime by adding public funds for compensation.[98]

The exoneration of liability

While strict liability is imposed, standard clauses in the relevant treaties exonerate operators of nuclear installations from liability for damage caused by certain events, including armed conflict, hostilities, civil war, insurrection, and grave natural disasters.[99] Despite the exoneration of the operator from liability under the relevant articles, individuals remain liable for damage caused by their acts or omissions which were intended to cause damage.[100] Under the Vienna Convention, if the operator proves that damage resulted wholly or partly either from the gross

[94] Article III of the Convention on the Liability of Operators of Nuclear Ships.

[95] Article 10 of the Paris Convention; and Article VII of the Vienna Convention.

[96] Convention Supplementary to the Paris Convention of July 29, 1960 on Third Party Liability in the Field of Nuclear Energy (Brussels, January 31, 1963).

[97] *Ibid*., Article 3. The upper ceilings for operator's liability and public funds have been amended several times, both in amount and in unit of account.

[98] Article III of the Convention on Supplementary Compensation.

[99] See Article 9 of the Paris Convention; and Article IV(3) of the Vienna Convention. The Paris Convention provides that, except to the extent that national legislation of the installation State provides otherwise, the operator shall not be held liable for damage caused by a "grave natural disaster of an exceptional character," thus incorporating a strict *force majeure* test: Article 9. The same provision appears in the Vienna Convention, Article IV(3)(b).

[100] See Article 6(c)(i)(1) of the Paris Convention; and Article IV(7)(a) of the Vienna Convention.

negligence of the person suffering damage or from an act or omission of such person done with the intent to cause damage, the competent court may, in accordance with its law, excuse the operator wholly or partly from the obligation to pay compensation.[101] It should be noted that the 1997 Protocol to amend the Vienna Convention narrowed the scope of exoneration by deleting "grave natural disasters" from the list of events for which the operator is not liable.[102]

Procedural rules

The relevant treaties have attempted to harmonize the procedure for transnational litigation in this field. While there are detailed rules for the determination of jurisdiction, the general rule is that jurisdiction over actions taken under the treaties shall lie only with the courts of the contracting State within whose territory the incident occurred.[103] Judgments shall be recognized and enforced in any other contracting State. The treaties and national law of any court having jurisdiction thereunder shall be applied without any discrimination based upon nationality, domicile, or residence.[104] Finally, the contracting parties shall ensure that compensation is freely transferable into the currencies of other contracting parties, and, in particular, the contracting party within whose territory the damage was suffered, and the contracting party within whose territory the claimant is habitually resident.[105]

The approach of these treaties to civil liability for nuclear damage evidences the pervasive concern in the early stages for protection of the nuclear industry from exorbitant liability, manifested in the clauses on limitation of liability. The international regulation of the nuclear industry achieved by these Conventions has served well to sustain public confidence in the development of the industry. However, as the Chernobyl incident has demonstrated, an actual nuclear accident can result in damage that in monetary terms far exceeds the liability ceilings currently established in the Conventions.[106] When an industry is still in its

[101] Article IV(2) of the Vienna Convention.
[102] Article 6 of the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage of 1997.
[103] See Article XI of the Vienna Convention; and Article 13 of the Paris Convention.
[104] See Article 14 of the Paris Convention; and Article XIII of the Vienna Convention.
[105] See Article 12 of the Paris Convention; and Article XV of the Vienna Convention.
[106] In the Federal Republic of Germany alone, damage caused by the Chernobyl disaster was reported in excess of DM400 million, much higher than the limit of 15 million SDRs set by the Paris Convention: Cameron *et al.*, *Nuclear Energy Law*, p. 108.

infancy and in dire need of the support of the State, limited liability of the operator as set forth in the Paris Convention and the Vienna Convention would assist. Of course, as the industry grows stronger, it would be expected to shoulder greater liability. The subsequent amendments to the two Conventions on the limitation of liability in time and amount, and the provision of additional public funds to ensure equitable and efficient compensation imply not only tighter legal controls over nuclear activities, but also a change of policy priorities.

The outer space regime

In contrast to nuclear damage, international liability for damage arising from outer space activities has been wholly borne by States. In this regard, the 1972 Convention on International Liability for Damage Caused by Space Objects (the "Space Liability Convention") is often considered the only example where States themselves undertake strict or absolute liability for damage caused by space objects.[107] In recent years, private enterprises have increasingly become involved in commercial space activities. National laws on civil liability arising from these commercial space activities will not be dealt with in this study.

The objectives

Given the nature of space activities as analyzed above, it was recognized by all States and accepted by space States from the beginning of the space era that, despite precautionary measures to be taken by the launching State or international organizations involved in the launching, damage may nevertheless be caused by space objects in the exploration, use, and exploitation of the space environment. When a launching activity placed people on the surface of the earth in a helpless and vulnerable position, it was the duty of the space-faring State as the primary beneficiary of the launch to ensure the safety of people on the surface and to bear responsibility for compensation in the event of damage. The purpose of the liability regime is to ensure the prompt payment under the terms

[107] Convention on International Liability for Damage Caused by Space Objects (Washington, London, and Moscow, March 29, 1972), 10 ILM 965 (1971). The recent development of commercial satellite services and activities has complicated the situation with the participation of the private sector. Issues of State responsibility and international liability therefore have drawn increasing attention from national legislatures as well as international jurists.

of the Space Liability Convention of "a full and equitable measure of compensation to victims of such damage."[108]

In January 1975, when the US was to launch two rockets from Canadian territory, it assured Canada through an exchange of notes that, in the event of loss of life, personal injury, or damage to or loss of property resulting from the launch, it would take full responsibility. In settling such claims, the US would take the following considerations into account:[109]

1. The United States is the state which procures these launches;
2. The United States is the state which primarily benefits from these launches;
3. The United States Atomic Energy Commission is an agency of the Government of the United States;
4. Sandia Corporation, a subsidiary of Western Electric Company, will be primarily in control of the actual launches as agent of the United States Atomic Energy Commission.

These terms reflected the considerations of the Space Liability Convention. The United States, as the main beneficiary of the launching activity from the territory of Canada for the exploration and use of outer space, undertook the responsibility to pay compensation to Canada in case of damage.

The party liable

Under the Space Liability Convention, it is the launching State which shall be absolutely liable to pay compensation for damage caused by its space objects.[110] The launching State may take three forms: (1) the State which launches a space object; (2) the State which procures the launching of a space object; (3) the State from whose territory or facility a space object is launched.[111] As a launching activity may involve several States and a space object may consist of several component parts,[112] more than one State may be held liable for a single occurrence of damage.[113] States

[108] Paragraph 5 of the Preamble to the Space Liability Convention.

[109] Exchange of Notes Constituting an Agreement Between the United States of America and Canada Relating to Liability for Loss or Damage from Certain Rocket Launches, 992 UNTS 98–99.

[110] Article II of the Space Liability Convention.

[111] *Ibid*., Article I(c)(i) and (ii).

[112] *Ibid*., Article I(d).

[113] Articles IV and V of the Space Liability Convention provide joint and several liability where damage is caused by one launching State to another launching State and to a third State or is caused jointly by two or more States.

may be jointly and severally liable. These provisions to a large extent reflect perceptions formed during the early stages of space activities, when the contracting parties generally presumed that space activities would be undertaken primarily by State agencies or would be under the direct control of a State government. Space activities involving private sectors would be authorized and directly controlled by States.[114] However, the rapid development of space exploration and uses, including commercial activities of non-governmental entities of different nationalities in subsequent years, has provided a new perspective to outer space law.[115] So far, in practice, by national legislation as well as by the provisions of the Space Liability Convention, States have exercised strict control over private entities engaged in space activities and have undertaken State responsibility at the international level. If participants in a space activity come from different States, the international liability of the launching State as provided by the Space Liability Convention shall be first agreed upon by the parties.[116] For example, the United Kingdom Outer Space Act 1986 envisages the possibility that the parties engaging in a single space activity may come from different States. Therefore, section 3(2)(b) of the Act provides that a UK license is not required for an activity in respect of which it is certified by Order in Council that arrangements have been made between the United Kingdom and another country to secure compliance with the international obligations of the United Kingdom.

When the Space Liability Convention was being negotiated in the Legal Sub-Committee of the Outer Space Committee of the United Nations, it was also proposed that there should be a rule dealing with damage resulting from space activities of international intergovernmental organizations. In the event that such an entity failed to pay the damages within a certain time, the member States should be individually

[114] This is not only due to the enormous amount of investment involved in the activity, far exceeding that available to the average private entity, but also because space activities at their initial stage of development were directly linked to the development of military weapons. National security and protection of military information remained a priority concern.

[115] For a detailed analysis of the existing and potential issues in relation to the 1967 Outer Space Principles Treaty, the 1968 Astronauts Agreement, the 1975 Registration Convention, the 1979 Moon Treaty and the 1972 Space Liability Convention, see Bin Cheng, "International Responsibility and Liability of States for National Activities in Outer Space Especially by Non-Governmental Entities," in Ronald St. John Macdonald (ed.), *Essays in Honour of Wang Tieya* (London, Martinus Nijhoff, 1994), p. 145.

[116] See also the United States Commercial Space Launch Act 1984, as amended in 1988, 49 USCS Appx, s. 2605(a)(3)(A), cited in *ibid*., p. 156, n. 16.

and jointly liable.[117] This proposal came from Article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (the "Outer Space Principles Treaty"), which provides:

> When activities are carried on in outer space, including the moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.[118]

After careful consideration of the status of such international organizations and their rights and obligations, States decided to include provisions specifically addressing the international liability of international organizations. Under the Space Liability Convention, if an international organization declares its acceptance of the rights and obligations of the Convention and if a majority of the States members of the organization are States parties to the Convention and to the Outer Space Principles Treaty, the terms of the Space Liability Convention shall equally apply to such an organization as to a State.[119] If an international organization is liable for damage, that organization and its members which are parties to the Space Liability Convention shall be held jointly and severally liable.[120]

The extent of liability

In space activities, the launching State, as defined in the Space Liability Convention,[121] undertakes international liability for damage done by its space objects[122] to the surface of the earth or to aircraft in flight, and to areas other than the surface of the earth, namely, outer space,

[117] Carl Q. Christol, *The Modern International Law of Outer Space* (New York, Pergamon Press, 1982), p. 74, at pp. 89–90.

[118] 610 UNTS 205. [119] Article XXII of the Space Liability Convention.

[120] *Ibid*. For a detailed record of the negotiation history on the Space Liability Convention, see Christol, *Law of Outer Space*, pp. 59–120.

[121] Under Article I(c) of the Space Liability Convention, "The term 'launching State' means: (i) A State which launches or procures the launching of a space object; (ii) A State from whose territory or facility a space object is launched." Notably, there is no reference to the State which manufactures or produces the object. The issue of attaching liability to the producing State for damage as a direct result of manufacturing or other faults caused by the producer is problematic. When in commercial space activities, the manufacture and launching of space objects occur independently in separate States, determination of responsibility, and consequently liability, could be far more complicated than originally envisaged.

[122] Pursuant to *ibid*., Article I(d), "[t]he term 'space object' includes component parts of a space object as well as its launch vehicle and parts thereof."

the Moon and other celestial bodies.[123] Damage includes loss of life, personal injury, or other impairment of health; or loss of or damage to the property of States or of persons, natural or juridical, or to the property of international intergovernmental organizations.[124] Damage caused by military and civilian objects owned by a launching State, or by space objects belonging to international organizations or to private entities, is covered by the Convention.

Under the Space Liability Convention there are two types of liability. For damage to the in-flight space objects of a launching State caused by a space object of another launching State, the latter is liable only if the damage is due to its fault or the fault of persons for whom it is responsible.[125] This is because both launching States have assumed the risk of possible harm in the launching activity. The imposition of fault-based liability would induce the parties to exercise due care to avoid damage. On the other hand, if an incident results in damage to a third State on the surface of the earth or to aircraft in flight, the launching State is absolutely liable. If damage is caused by two or more States, they are jointly and severally liable to the third State.[126] In all cases of joint and several liability, the burden of compensation for damage shall be apportioned between the parties concerned in accordance with the extent to which they were at fault. If fault cannot be determined, the burden of compensation shall be equally divided among the parties.[127]

Claims for compensation must be presented to the launching State no later than one year after either the occurrence of the damage or the identification of the launching State liable.[128] The Space Liability Convention does not, however, cover damage suffered by nationals of the launching State, or foreign nationals participating in the operation of the space object or located in the vicinity of a launching or recovery area at the invitation of the launching State.[129] The matter was left to national laws to address. In practice, if foreign nationals are involved in the operation of the launching activity, special agreements between the States concerned may be concluded.

Financial guarantees

Neither the Outer Space Principles Treaty nor the Space Liability Convention contains any clause on the obligation of the launching State to

[123] *Ibid*., Articles II, III, and IV. [124] Christol, *Outer Space Law*, p. 104.
[125] Article III of the Space Liability Convention. [126] *Ibid*., Article IV(1)(a).
[127] *Ibid*., Article IV(2). [128] *Ibid*., Article X. [129] *Ibid*., Article VII.

make financial guarantees for compensation in case of damage arising from a space accident. The reason for this is simple and practical. Space activities were originally conducted primarily by States; therefore, the Space Liability Convention imposed absolute liability on the launching State at the international level for damage caused by space objects.[130] It was envisaged that, although space activities bore a high potential risk to all States on earth, the probability of actual damage resulting from such activities was relatively low. Furthermore, given the nature of space activities, it would be impractical to require any specific financial guarantees on the part of the launching State. The approach to liability under the current regime ensures that the launching State shall be held absolutely liable for any damage caused by its space activities, while actually reducing the financial burden on space States, and is thus conducive to promoting space activities.

Today, there is increased private sector involvement in space activities, exposing States to greater risk of liability in accordance with their treaty obligations. Consequently, at the national level, financial guarantees for various space activities undertaken by private parties have been prescribed by some national laws.[131]

The exoneration of liability

Even though the Space Liability Convention lays down rules of absolute liability, exoneration from such liability is also granted under certain circumstances. If a launching State establishes that the damage resulted

[130] *Ibid*., Article II. See also Article VII of the Outer Space Principles Treaty.

[131] For instance, the United Kingdom Outer Space Act 1986 establishes a licensing system for outer space activities conducted by United Kingdom nationals and bodies incorporated under the law of any part of the United Kingdom. Section 10 provides that "[a] person to whom this Act applies shall indemnify Her Majesty's government in the United Kingdom against any claims brought against the government in respect of damage or loss arising out of activities carried on by him to which this Act applies." Section 5(2)(f) confers discretion on the Secretary of State to grant a license subject to the condition that the licensee "insure himself against liability incurred in respect of damage or loss suffered by third parties, in the United Kingdom or elsewhere, as a result of the activities authorised by the license." Currently, documentation evidencing £100 million third party liability cover with the UK Government for both the launch phase and the in-orbit phase must accompany the license application: see paragraph 8 of "Outer Space Act 1986: Information for Applicants for a Licence," accompanying the "Outer Space Act 1986: Licence Application Form" dated October 16, 1997, supplied by the British National Space Centre and available on their website at www.bnsc.gov.uk.

either wholly or partly from gross negligence or from an act or omission done with intent to cause damage on the part of a claimant State or of any natural or juridical persons it represents, the launching State shall not be held liable for damage.[132] However, if the launching activity is not conducted in conformity with international law, no exoneration shall be allowed.[133]

Procedural rules

Claims for compensation must be presented to a launching State through diplomatic channels.[134] The State which suffers damage, or whose national or juridical persons or permanent residents are harmed, or in whose territory damage occurs, may present a claim for compensation.[135] Prior exhaustion of local remedies is not required.[136] If the parties concerned cannot agree on the settlement of a claim at the diplomatic level within one year, the parties must establish a Claims Commission at the request of either party.[137] The decision of the Commission shall be final and binding if the parties so agree. In the absence of such agreement, the award, while final, will be recommendatory only, but must nevertheless be considered in good faith.[138]

Article XII of the Space Liability Convention prescribes the applicable law for determining compensation for damage caused by space objects. The parties concerned, or the Claims Commission, if established, shall determine the amount of compensation "in accordance with international law and the principles of justice and equity" so as to restore the person (whether natural or juridical), State, or international organization on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred. Although this term reflects the general international principle of reparation,[139] it leaves room for the parties concerned to take into consideration the specific circumstances of each particular case. Therefore, the meaning of the term "absolute liability" as it applies to the launching State under the Convention is not entirely the same as is understood in civil law practice.

[132] Article VI(1) of the Space Liability Convention. [133] *Ibid*., Article VI(2).
[134] *Ibid*., Article IX. [135] *Ibid*., Article VIII. [136] *Ibid*., Article XI.
[137] *Ibid*., Article XIV. [138] *Ibid*., Article XIX(2).
[139] See the discussion on the use of equitable principles in international law in Chapter 8 below.

The regime for maritime accidents

Maritime pollution caused by oil shipping gave rise to serious concern over the marine environment during the 1950s, when the movement of oil by sea was greatly increased as a result of the expansion of industry. To assist in the prevention of such pollution, the international community adopted a series of treaties on preventive measures both for the normal course of shipping operations and for emergency situations.[140] Pollution damage by oil spills, damage to coasts and to beaches, the consequent hindrance to healthful recreation, the interference with the tourism industry, and the destruction of the marine environment, pushed States to adopt more effective action to protect the interests of coastal States as well as the marine environment. Inspired by the *Torrey Canyon* disaster in 1967, the International Convention on Civil Liability for Oil Pollution Damage[141] established the international regime of civil liability for damage caused by oil pollution.[142] True to the International Maritime Organization's motto of "safer ships and cleaner seas," over forty international conventions directly or indirectly concerned with

[140] Among them are: the International Convention for the Prevention of Pollution of the Sea by Oil (London, May 12, 1954), 327 UNTS 3, and its amendments of 1962 and 1969, which were superseded by the International Convention for the Prevention of Pollution from Ships (London, November 2, 1973), 1340 UNTS 184; the International Convention for the Safety of Life at Sea of 1960, 536 UNTS 27; the International Regulations for Preventing Collisions at Sea of 1960; the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties of 1969, 970 UNTS 211 and its subsequent amendments; Supplementary Protocol to the Agreement on Regional Cooperation in Combating Pollution of the South-East Pacific by Hydrocarbons or other Harmful Substances in Cases of Emergency (Quito, July 22, 1983), which extends the Protocol to massive oil spills (see Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 137); Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (Jeddah, February 14, 1982), *International Environmental Legal Materials and Treaties* 982:14, Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 150; Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region (Cartagena de Indias, March 24, 1983), 22 ILM 240, Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 265; Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (Bonn, September 13, 1983), Misc. 26 (1983) 9104, Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 268.

[141] International Convention on Civil Liability for Oil Pollution Damage (Brussels, November 29, 1969), 973 UNTS 3, in Kiss, *Selected Multilateral Treaties*, No. 44, p. 235.

[142] Accidental damage on the high seas and to the maritime environment is not solely attributable to oil pollution. The movement of hazardous and toxic substances by sea is another major source of serious damage, but for the sake of convenience, discussion of this issue will be reserved for the following part on hazardous substances.

environmental protection have been adopted.[143] Consequently, the United Nations General Assembly has specifically noted that this international treaty framework has reduced ship-source marine pollution to acceptable levels.[144]

In terms of liability for oil pollution damage at sea, there are three primary international treaties:[145] (1) the 1969 International Convention on Civil Liability for Oil Pollution Damage[146] (the "Oil Pollution Liability Convention"); (2) the 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage[147] (the "Fund Convention"); and (3) the 1977 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources[148] (the "1977 Liability Convention"). Unlike other areas discussed in this study, the oil shipping industry and the oil industry have also developed their own liability and compensation regime against discharge incidents, which some scholars consider as private international law. The regime comprises two principal agreements: (1) the Tanker Owners' Voluntary Agreement Concerning Liability for Oil Pollution, which tanker owners or bareboat charterers may join; and (2) the Contract Regarding a Supplement to Tanker Owner Liability for Voluntary Agreement Concerning Liability for Oil Pollution, to which oil companies may become parties.[149] Although States that

[143] Edgar Gold, *Handbook on Marine Pollution* (Arendal, Norway, Assurance foreningen Gard, 1985), pp. 53–57.

[144] Law of the Sea – Protection and Preservation of the Marine Environment, Report of the UN Secretary-General, UN Doc. A/44/461, September 18, 1989; Edgar Gold, "Marine Pollution Liability After 'Exxon Valdez': The US 'All-Or-Nothing' Lottery!" *Journal of Maritime Law and Commerce*, vol. 22 (1991), p. 423.

[145] This is only with regard to State responsibility and liability rather than civil liability.

[146] Brussels, November 29, 1969, 973 UNTS 3. The Oil Pollution Liability Convention entered into force on June 19, 1975. There are three protocols under the Convention. The first protocol was adopted in 1976 and entered into force in 1981. The second protocol was adopted in 1984, but was superseded by the third protocol which was adopted in 1992 and entered into force in 1996. The 1969 Convention is to be replaced by the 1992 Protocol as amended in 2000.

[147] Brussels, December 18, 1971, 1110 UNTS 57, in Kiss, *Selected Multilateral Treaties*, No. 51, p. 255. The Fund Convention entered into force on October 16, 1978. Like the Oil Pollution Liability Convention, there are three protocols under the Fund Convention, adopted in 1976, 1984, and 1992. The 1992 Protocol, which entered into force in 1996, is intended to replace the 1971 Convention.

[148] London, December 17, 1976, 16 ILM 1450, in Kiss, *Selected Multilateral Treaties*, No. 71, p. 474.

[149] For an analysis of the regime, see Bernadette V. Brennan, "Liability and Compensation for Oil Pollution from Tankers Under Private International Law:

own tankers and oil companies may also participate in these agreements, they do so only in their commercial capacity. Strictly speaking, these agreements are not international treaties, but private contractual agreements.[150] For the purpose of this study on State responsibility and liability, they will not be considered as relevant international treaties.

The objectives

When the Oil Pollution Liability Convention was adopted, the objectives of the regime were three-fold. In the preamble, two purposes were expressly laid down, namely, to ensure that adequate compensation was available to persons who had suffered damage resulting from oil pollution, and to adopt uniform international rules and procedures for determining questions of liability and compensation. Additionally, by policy implication, it was envisaged that limitation of liability based on the tonnage of the oil cargo would help curb the ever-increasing size of oil tankers so as to maintain tanker size within a manageable range.

Accidents during sea-bed oil drilling also cause serious damage to coastal States. The 1977 Liability Convention was adopted to ensure compensation is paid to the victims of oil pollution resulting from such activities and to unify the rules and procedures for determining questions of compensation. Due to its nature, civil liability for maritime oil pollution is primarily dealt with at the business level rather than at the State level, with the purpose to protect the interests of both the victims and the marine environment.

The party liable

Under the Oil Pollution Liability Convention, the ship owner assumes international liability for damage caused by oil pollution at sea. After the

TOVALOP, CRISTAL, and the *Exxon Valdez*," *Georgetown International Environmental Law Review*, vol. 2 (1989), p. 1.

[150] Some argue that this private law regime is indeed international, because, first, the tanker owner and oil company parties are nationals of sovereign States; secondly, the claimants may be of any nationality; thirdly, the agreements are administered by "foreign companies" and governed by "foreign laws"; and, finally, dispute resolution regarding the agreements is governed by international rules of conciliation and arbitration or by the English courts. The parties to the regime contracted to adhere to a uniform regime of liability and compensation for oil pollution damage throughout the world, which also applies to such otherwise wholly domestic incidents as the *Exxon Valdez* spill. Even so, the regime is different from private international law as it is normally understood.

adoption of the Oil Pollution Liability Convention, it was soon realized that this regime suffered from two defects. First, it did not afford full compensation for victims of oil pollution damage in all cases, even if additional insurance or financial security was required to be maintained by the ship owner pursuant to Article VII of the Convention. Secondly, the imposition of liability solely on the owner of the ship at the time of an incident placed an undue burden on the shipping industry. Because the direct beneficiaries of oil shipping also included the refinery industry, it was argued that the latter should bear some portion of any loss. In response to these two problems and in an attempt to improve the compensation scheme under the Oil Pollution Liability Convention, the Fund Convention established an international fund to cope with the situation.[151] Contributions are made on behalf of each contracting State by oil importers who receive more than 150,000 tons of oil per year transported by sea to the territory of that State. Thus, through the fund mechanism, the liability exposure of oil shipping is shared between oil shippers and oil importers.

Under the 1977 Liability Convention, the operator of an oil exploration installation shall be liable for damage caused by exploration and mining operations.

The extent of liability

The Oil Pollution Liability Convention defines pollution damage as "loss or damage caused outside the ship carrying oil by contamination resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, and includes the costs of preventive measures and further loss or damage caused by preventive measures."[152] The 1977 Liability Convention contains a similar definition for pollution damage, limiting it to damage occurring outside the installation.[153]

[151] Article 2(1) of the Fund Convention provides that the Fund is established for the following aims: "(a) to provide compensation for pollution damage to the extent that the protection afforded by the Liability Convention is inadequate; (b) to give relief to ship owners in respect of the additional financial burden imposed on them by the Liability Convention, such relief being subject to conditions designed to ensure compliance with safety at sea and other conventions; (c) to give effect to the related purposes set out in this Convention."

[152] Article I(6) of the Oil Pollution Liability Convention.

[153] Article 1(6) of the 1977 Liability Convention states: "'Pollution damage' means loss or damage outside the installation caused by contamination resulting from the escape or discharge of oil from the installation and includes the cost of preventive measures and further loss or damage outside the installation caused by preventive measures."

"Preventive measures" is defined to mean any reasonable measures taken after the occurrence of the incident to prevent or mitigate pollution damage.[154]

In terms of territorial application, all these conventions apply only to damage caused on the territory or within the territorial waters of a contracting State. Article II of the Oil Pollution Liability Convention provides explicitly that the Convention "shall apply *exclusively* to pollution damage caused *on the territory including the territorial sea* of a Contracting State and to preventive measures taken to prevent or minimize such damage."[155] This clearly excludes environmental damage caused to the area beyond national jurisdiction or control. In 1992, the scope of territorial application was extended to the exclusive economic zones of the States parties.[156] The Oil Pollution Liability Convention is expressed not to apply to warships and ships owned or operated by States, or used temporarily on government non-commercial service.[157]

In relation to rights to compensation, the three treaties discussed above set time limits on the notification of a claim or the bringing of an action,[158] ranging from twelve months to six years.

The most important feature of the three Conventions is the limitation on the amount of liability. Under the Oil Pollution Liability Convention, a ship owner assumes strict liability for pollution damage caused by an oil spill from his ship to the extent that, for any one incident, he may limit his liability to an aggregate amount for each ton of the ship's tonnage, in any event not exceeding a set amount.[159] For the purpose

[154] Article I(7) of the Oil Pollution Liability Convention; and Article 1(7) of the 1977 Liability Convention.

[155] Oil Pollution Liability Convention, Article II (emphasis added). Article 2 of the 1977 Liability Convention states: "This Convention shall apply exclusively to pollution damage: (a) resulting from an incident which occurred beyond the coastal low-water line at an installation under the jurisdiction of a Controlling State, and (b) suffered in the territory, including the internal waters and territorial sea, of a State Party or in the areas in which, in accordance with international law, it has sovereign rights over natural resources, and to preventive measures, wherever taken, to prevent or minimize such pollution damage."

[156] See the 1992 Protocol to Amend the Oil Pollution Liability Convention.

[157] Article XI of the Oil Pollution Liability Convention.

[158] Article VIII of the Oil Pollution Liability Convention; Article 6 of the Fund Convention; and Article 10 of the 1977 Liability Convention.

[159] The original amount was set at 2,000 "francs" (defined as a specific weight and fineness of gold) per ton by Article V of the Oil Pollution Liability Convention, with the aggregate amount not to exceed 210 million francs. However, this was later amended by the Protocol to the Convention adopted in 1976 to 133 "units of account" (defined as a Special Drawing Right of the IMF) per ton, with the aggregate

of taking advantage of this limitation of liability, the ship owner must constitute a fund for the total sum representing the limit of his liability with the court or other competent authority of the contracting State in which an action is brought. Once such a fund has been established, no claimant shall be entitled to exercise any right against any other assets of the owner.[160] In distributing damages payments to claimants from the fund, reasonable costs of preventive measures taken by the ship owner himself will rank equally with other claims against the fund.[161] This provision creates a clear incentive for the ship owner to take as many preventive measures as possible beforehand. Similar provisions relating to the establishment of a fund and distributions from the fund are contained in Article 6 of the 1977 Liability Convention.

By the terms of the Fund Convention, a ceiling of payment for pollution damage is fixed for each incident. The Fund shall pay compensation to any person suffering pollution damage if such person has been unable to obtain full and adequate compensation for damage under the terms of the Oil Pollution Liability Convention.[162] The total sum of the

amount not to exceed 14 million units of account: see Singh, *International Maritime Law Conventions*, vol. 3, p. 2392. In 1992, the Oil Pollution Liability Convention and the Fund Convention were further amended by Protocols to increase the amount of compensation and the scope of territorial application. The Protocols entered into force on May 30, 1996. Further amendments were made in 2000 increasing the compensation limits of the 1992 Protocols by 50 percent. These amendments are due to come into force on November 1, 2003 under tacit acceptance. In both cases the original Conventions are to be replaced by the 1992 Protocols as amended in 2000. By December 1996, nineteen States had become party to the Fund Convention as amended in 1992. They are the major contributors to the Fund, comprising 70 percent of the total contribution. There are currently eighty-six States parties to the 1992 Oil Pollution Liability Convention Protocol and eighty States parties to the 1992 Fund Convention Protocol. For the purpose of Article V of the Oil Pollution Liability Convention, the ship's tonnage is "the net tonnage of the ship with the addition of the amount deducted from the gross tonnage on account of engine room space for the purpose of ascertaining the net tonnage." Further, in the case of a ship which cannot be measured in accordance with the normal rules of tonnage measurement, the ship's tonnage shall be deemed to be 40 percent of the weight in tons of oil which the ship is capable of carrying: Article V(10).

[160] Article VI of the Oil Pollution Liability Convention.

[161] *Ibid*., Article V(8).

[162] Article 4 of the Fund Convention. The aggregate amount payable by the Fund in respect of any one incident was first set at 450 million francs and later increased to 675 million francs by the Assembly of the Fund. In the 1976 Protocols, Special Drawing Rights (SDRs) of the IMF replaced gold as the standard measure of a unit of liability, and the ceiling of compensation was adjusted to 1.3 million SDRs for the Liability Convention and 60 million SDRs for the Fund. By the 1992 Protocol, the ceiling of civil liability of the ship owner for compensation was raised to 59.7 million SDRs, and the ceiling for the total compensation including that from the Fund was

aggregate amount of compensation payable by the Fund and the amount of compensation actually paid under the Oil Pollution Liability Convention shall not exceed the fixed ceiling.[163] For the purpose of fulfilling its function under Article 2(1)(b) of giving relief to ship owners in respect of the additional financial burden imposed on them by the Oil Pollution Liability Convention, the Fund shall indemnify the owner and his guarantor for a portion of the amount they are required to pay in accordance with the Oil Pollution Liability Convention.[164]

Under the 1977 Liability Convention, the operator of the exploration installation may limit his liability under the Convention for each installation and each incident to the amount of 30 million SDRs until five years have elapsed from the date on which the Convention is opened for signature and to the amount of 40 million SDRs thereafter.[165]

Financial guarantees

As in the other liability treaties discussed earlier, a ship owner carrying more than 2,000 tons of oil as cargo is required to maintain insurance or other financial security, such as a bank guarantee or a certificate delivered by an international compensation fund, in the sum calculated by applying the limits of liability prescribed in Article V of the Oil Pollution Liability Convention. A certificate attesting to the existence of adequate insurance or financial security shall be carried on board the ship and a copy of the certificate deposited with the authorities who keep the record of the ship's registry.[166] As already discussed, the owner must constitute a fund for the total sum representing the limit of his liability, either by depositing the sum or by producing a guarantee. This sum shall be maintained available exclusively for the satisfaction of claims with the court or other competent authority of the contracting State in which an action is brought against him in accordance with the Oil Pollution Liability Convention. No other assets of the owner may be attached in the legal proceedings. The contracting States have a responsibility to ensure that these provisions are implemented by the adoption of appropriate national legislation.[167] The operator of an exploration

raised to 135 million SDRs. The 2000 amendments raise these amounts to 89,770,000 SDRs and 203 million SDRs respectively.

[163] Article 4(4) of the Fund Convention. [164] *Ibid*., Article 5(1).

[165] Article 6(1) of the 1977 Liability Convention.

[166] Article VII of the Oil Pollution Liability Convention.

[167] *Ibid*., Article VI(10) and (11).

installation is similarly required to maintain insurance or other financial security.[168] Where the operator is a State party, it is not under an obligation to maintain such insurance or financial security.[169] If a State party deems the amounts relating to either limitation of liability or insurance no longer adequate or otherwise unrealistic, the Committee established under Article 9 of the 1977 Liability Convention may meet to review the situation.[170]

The exoneration of liability

Under certain conditions, the ship owner or the operator shall be excused from liability. In the case of oil shipping, apart from the normal exoneration provisions for damage caused by war, hostilities, insurrection or natural phenomenon (*force majeure*), and fault on the part of the claimant, the owner is exonerated if he proves that the damage was wholly caused by an act or omission done with intent to cause damage by a third party, or was wholly caused by the negligence or other wrongful act of any government or other authority responsible for the maintenance of lights or other navigational aids in the exercise of that function.[171] Additionally, the servants or agents of the owner shall be exempt from liability.[172]

In the case of the operator of an oil installation, the general terms of exoneration with regard to damage caused by war, hostilities, insurrection, or *force majeure*, and by the fault of the claimant, shall apply.[173] Furthermore, he shall not be liable for damage caused from an abandoned well as defined in the 1977 Liability Convention.[174] Again, no claim may be made against the servants or agents of the operator.[175]

Procedural rules

Under the Conventions, all contracting parties must ensure that their courts possess the necessary jurisdiction to entertain actions for compensation. Claims may only be brought in the courts of the State in whose territory the pollution damage was suffered.[176] The defendant shall be

[168] Article 8 of the 1977 Liability Convention. [169] *Ibid*., Article 8(5).
[170] *Ibid*., Article 9(2). [171] Oil Pollution Liability Convention, Article III(2)(b) and (c).
[172] *Ibid*., Article III(4). [173] 1977 Liability Convention, Article 3(3).
[174] *Ibid*., Article 3(4). [175] *Ibid*., Article 4(2).
[176] Oil Pollution Liability Convention, Article IX; 1977 Liability Convention, Article 11. Note that, in the latter, for the purpose of determining where the damage was

duly notified of any such action. Once the ship owner or installation operator has established the liability fund required by the relevant Convention, the courts of the State in which the fund is constituted shall be "exclusively competent to determine all matters relating to the apportionment and distribution of the fund."[177] Any judgment given by a court with competent jurisdiction will be recognized and enforced in any other contracting party.[178] The compensation paid must be converted into the currency of the country in which the action is brought and therefore in which the fund is constituted.[179]

Compared with other treaty regimes on international liability for accidental damage, the regime on civil liability for oil pollution damage has been better received by States.[180] The ship owner or the operator of the installation is subject to strict liability for pollution damage under the terms and conditions as set out in the relevant treaties.

The regime for accidents caused by hazardous substances

Since the early 1980s, transboundary movements of hazardous wastes, as well as their disposal, have become a matter of grave international concern.[181] In 1991, the OECD attributed 90 percent of the waste generated annually in the world to developed nations.[182] Transboundary movements of hazardous wastes occur both among developed nations as well as among developed and developing nations.[183] However, the

suffered, "damage suffered in an area in which, in accordance with international law, a State has sovereign rights over natural resources shall be deemed to have been suffered in that State."

[177] Oil Pollution Liability Convention, Article IX(3); 1977 Liability Convention, Article 11(3).

[178] Oil Pollution Liability Convention, Article X; and 1977 Liability Convention Article 12.

[179] Oil Pollution Liability Convention, Article V(9).

[180] As discussed above, there are currently eighty-six States parties to the 1992 Oil Pollution Liability Convention Protocol and eighty States parties to the 1992 Fund Convention Protocol.

[181] See the preface by Mr. Mostafa D. Tolba, the former Executive-Director of UNEP, in Barbara Kwiatkowska and Alfred H. A. Soons (eds.), *Transboundary Movements and Disposal of Hazardous Wastes in International Law: Basic Documents* (Dordrecht, Martinus Nijhoff, 1993), p. XIII.

[182] See the caution expressed in the collection of information regarding transboundary movements of hazardous waste in Pablo Cubel, "Transboundary Movements of Hazardous Wastes in International Law: The Special Case of the Mediterranean Area," *International Journal of Marine and Coastal Law*, vol. 12 (1997), p. 447, at p. 448, n. 4.

[183] It is reported that in the OECD context most transboundary movements take place between member States (some 100,000 such movements occur in Europe and 6,000 in

most publicized are exports from developed to developing States,[184] and, to a lesser extent, from Western to Eastern European States, because the latter do not normally possess the necessary environmentally sound waste disposal facilities.[185] The reaction of the international community has been anxiety and unanimous condemnation, but, because of the economic dimension for the developed countries where transboundary movements of hazardous wastes have virtually become a boom industry, developed and developing countries could not agree on the approach to the problem (i.e. whether to ban altogether or regulate and restrict such trading).[186]

Numerous treaties, resolutions, and other legal documents on the international control and management of hazardous wastes and their disposal have been adopted.[187] Generally speaking, damage from hazardous substances may be caused by two types of situation: dumping; and

North America annually): Kwiatkowska and Soons, *Basic Documents*, p. XIII; Cubel, "Transboundary Movements," p. 448, n. 5.

[184] Some of the most notorious accidents took place in developing countries involving waste imported from developed countries: see Cubel, "Transboundary Movements," p. 448.

[185] Waste disposal in industrialized countries faced three problems: (1) increasing public pressure opposing careless waste disposal; (2) scarcity of disposal locations; and (3) tightening of environmental regulations on the relevant industries. Therefore, waste generators preferred to export their waste to developing countries where the costs were significantly lower. The problem in Africa is particularly acute, where waste disposal rates are at most US$40 per ton, while in Europe they are four to twenty-five times greater, and, in the US, twelve to thirty-six times greater. The "not in my backyard" attitude is criticized as one of the factors contributing to the problem of transnational movement of hazardous wastes: see the preface by Mr. Mostafa D. Tolba in Kwiatkowska and Soons, *Basic Documents*, p. XIII. On the current practice of waste disposal, see Louka, *Overcoming National Barriers*, Chapter 3, pp. 75–102.

[186] On this point, Mr. Tolba observed: "As most hazardous wastes come from industries that are among the most important to the growth and maintenance of a modern industrial society, such as iron and steel, nonferrous or precious metals, and the chemistry industry, generation of hazardous wastes would continue to be one of the major consequences of industrial development": Kwiatkowska and Soons, *Basic Documents*, p. XIII. In the mind of the African countries, this trade is "garbage imperialism." Because of this, the African countries initially refused to sign the Basel Convention for its failure to ban transboundary movements of hazardous wastes. In the 1991 OAU Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, the import of hazardous wastes into the African continent is banned, but the intra-continental movement of hazardous wastes is permitted with strict regulations. See Kwiatkowska and Soons, *Basic Documents*, p. LXXXIII.

[187] For a detailed and thorough introduction to the subject, see Kwiatkowska and Soons, *Basic Documents*, particularly the Editors' Introduction from p. XVII, and the Chronological Table of Selected Instruments and Developments from p. CXI.

accidents resulting from the transboundary movements of hazardous substances.

Pollution caused by the movement by sea of noxious and harmful substances, including radioactive material, is not a new problem.[188] After the adoption in 1969 of the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties,[189] the international community soon felt that the Convention should be extended to cover emergency situations relating to pollution casualties arising from the movements of hazardous substances.[190] In 1972, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the "London Dumping Convention") was adopted to cope with sea dumping problems.[191] Under the London Dumping Convention, dumping of high-level radioactive waste is prohibited and the dumping of some other harmful substances is subject to various restrictions.[192] In 1996, a new protocol to the London Dumping Convention was adopted.[193] It contains some novelties, prohibiting dumping

[188] See the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo, February 15, 1972), 932 UNTS 3, Kiss, *Selected Multilateral Treaties*, No. 52, p. 266; Articles 195 and 196 of the Convention on the Law of the Sea, Official Records of the Third United Nations Conference on the Law of the Sea, vol. XVII (United Nations, Sales No. E.84.V.3), p. 151, UN Doc. A/CONF.62/122; Agreement on Regional Cooperation in Combating Pollution of the South-East Pacific by Hydrocarbons or Other Harmful Substances in Cases of Emergency (Lima, November 12, 1981), in Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 134; and other treaties in connection with oil spills discussed above.

[189] 970 UNTS 211.

[190] The Convention was expanded to deal with certain substances other than oil by the Protocol Relating to Intervention on the High Seas in Case of Marine Pollution by Substances Other Than Oil (London, November 2, 1973), 1313 UNTS 3, *UN Juridical Yearbook* (1973), p. 91.

[191] See the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London, November 13, 1972), 1046 UNTS 120.

[192] Article IV of the London Dumping Convention reads:

> 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.

[193] 1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 36 ILM 1.

of wastes at sea, incineration at sea, and the export of wastes to other States, with some exceptions.[194]

One important step forward in the area of international liability and compensation is the adoption in 1996 of the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (the "HNS Convention"),[195] which will be the subject of detailed discussion below.

The objectives

Like other international conventions previously discussed, the HNS Convention serves three purposes: first, to ensure that adequate, prompt, and effective compensation is provided to the victims of damage; secondly, to provide uniform international rules and procedures for determining liability and compensation; and, thirdly, in order to maintain a proper balance of interests and duties among the relevant industries, to share the burden of compensation rather than imposing it on the ship owner alone.

The party liable

In contrast with oil shipping, hazardous substances do not consist of a single commodity. Therefore, apportioning liability proved difficult during the negotiations for the Convention. Instead of identifying the parties involved further down the processing chain for the relevant commodity, it is the party who first receives the cargo discharged in the ports and terminals who shares the costs of compensation for damage with the ship owner.[196]

The extent of liability

In terms of its scope of application, the HNS Convention applies: (1) to damage caused in the territory (including the territorial sea) of States

[194] Article 6 of the Protocol reads: "Contracting Parties shall not allow the export of wastes and other matter to other countries for dumping and incineration at sea." See Cubel, "Transboundary Movements," p. 465.

[195] IMO Doc. LEG/CONF.10/8/3, reprinted in 35 ILM 1415.

[196] The "receiver" is defined in Article 1(4) of the HNS Convention, and is charged with making contributions to the HNS Fund by virtue of Article 18.

parties and in their exclusive economic zones; (2) to damage other than damage by contamination of the environment caused outside their territory; and (3) to preventive measures wherever taken.[197] Certain types of damage are excluded from the scope of the Convention, including "pollution damage" as defined in the Oil Pollution Liability Convention, and damage caused by specified radioactive materials.[198] A State party is entitled to declare that the Convention will not apply to ships which do not exceed 200 gross tons and which carry hazardous and noxious substances only in packaged form while they are engaged on voyages between ports and facilities of that State,[199] or while engaged on voyages between ports and facilities of that State and a neighboring State, provided the neighboring State also agrees.[200]

Under Article 7 of Chapter II of the HNS Convention, the ship owner assumes strict liability for damage "caused by any hazardous and noxious substances in connection with their carriage by sea on board the ship, provided that if an incident consists of a series of occurrences having the same origin the liability shall attach to the owner at the time of the first of such occurrences."[201] The ship owner is entitled to limit liability in respect of any one incident up to an aggregate amount calculated under the terms of the Convention.[202] However, in order to benefit from this limitation of liability, the ship owner must constitute a fund (as discussed in the next section). In addition, the HNS Fund, an international fund (also discussed below), is established by the Convention. For any one incident or natural disaster, the total sum of compensation payable by the HNS Fund shall be limited to 250 million units of account.[203]

Claims for compensation for damage must generally be made against the ship owner, unless it can be shown that the damage resulted from the act or omission of another person, "committed with the intent to cause such damage, or recklessly and with the knowledge that such damage would probably result."[204] In order to encourage the owner to take adequate precautions to prevent damage, expenses reasonably and

[197] *Ibid*., Article 3. [198] *Ibid*., Article 4. [199] *Ibid*., Article 5(1).
[200] *Ibid*., Article 5(2). [201] *Ibid*., Article 7(1).
[202] According to Article 9(1) of the HNS Convention, the aggregate amount is calculated as follows: "(a) 10 million units of account for a ship not exceeding 2,000 units of tonnage; (b) for a ship with a tonnage in excess thereof, the following amount in addition to that mentioned in (a): for each unit of tonnage from 2,001 to 50,000 units of tonnage, 1,500 units of account; for each unit of tonnage in excess of 50,000 units of tonnage, 360 units of account; provided, however, that this aggregate amount shall not in any event exceed 100 million units of account."
[203] *Ibid*., Article 14(5). [204] *Ibid*., Article 7(5).

voluntarily incurred by the owner to prevent or minimize damage shall rank equally with other claims against the fund constituted by the ship owner pursuant to Article 9,[205] and shall also be treated as damage for the purpose of payment of compensation from the HNS Fund.[206]

Financial guarantees

Pursuant to Article 12(1), the ship owner must maintain insurance or other financial security in the sums fixed by applying the limits of liability prescribed in Article 9(1) of the HNS Convention, and a corresponding insurance certificate shall be issued to each ship.[207] Any claim for compensation for damage may be brought directly against the insurer or other provider of financial security.[208] It is the responsibility of each State party to ensure under its national law that such insurance or other security is in force in respect of any ship, wherever registered, entering or leaving a port in its territory, or arriving at or leaving an offshore facility in its territorial sea.[209]

In order to benefit from the limitation of liability discussed above, the ship owner must constitute a fund for the total sum representing the limit of liability for the payment of compensation.[210] The fund may be constituted by deposit of the relevant sum or by producing a bank guarantee or other guarantee. Where the ship owner has constituted the fund, his other assets cannot be seized for the purpose of compensation. If his ship or other property has been arrested, the court or other competent authority of any State party should order the release of the property.[211]

With a view to adequately compensating victims, an international fund is established by the HNS Convention (the International Hazardous and Noxious Substances Fund, or the "HNS Fund").[212] Contributions to the HNS Fund shall be made in respect of each State party by any person who was the receiver[213] in the preceding year of aggregate quantities

[205] *Ibid*., Article 9(8). [206] *Ibid*., Article 14(2). [207] *Ibid*., Article 12(2).
[208] *Ibid*., Article 12(8). [209] *Ibid*., Article 12(11).
[210] *Ibid*., Article 9(3). [211] *Ibid*., Article 10.
[212] *Ibid*., Article 13. The HNS Fund generally provides compensation to the extent that the protection afforded by Chapter II is inadequate or not available.
[213] Under Article 1(4) of the HNS Convention, the term "receiver" is defined as: "(a) the person who physically receives contributing cargo discharged in the ports and terminals of a State Party; provided that if at the time of receipt the person who physically receives the cargo acts as an agent for another who is subject to the jurisdiction of any State Party, then the principal shall be deemed to be the receiver,

exceeding 20,000 tonnes of contributing cargo which fall into the categories as defined by the Convention.[214] The HNS Fund shall have a general account and, for certain cargoes such as oil, liquefied natural gases of light hydrocarbons with methane as the main constituent (LNG), and liquefied petroleum gases of light hydrocarbons with propane and butane as the main constituents (LPG), there are separate accounts under the Fund.[215] The Fund pays limited compensation as a supplement when no liability arises under Chapter II of the HNS Convention, or when a ship owner is financially incapable of meeting his obligations under the Convention in full, or where damage exceeds the ship owner's liability under Chapter II.[216]

The exoneration of liability

As under other relevant regimes, the ship owner shall not be held liable under certain circumstances. He shall be exonerated from liability if the damage results from an act of war, hostilities, civil war, or insurrection, or from natural disaster; or if the damage is caused by willful misconduct of a third party; or if the damage is inflicted due to a failure to maintain proper navigational aids on the part of the competent authority; or if the damage is due to a lack of necessary information concerning the hazardous nature of the cargo.[217] The owner shall not be liable if he proves that the damage was caused intentionally or negligently by the victim himself.[218]

For the HNS Fund, the same rules of exoneration also apply. Damage resulting from public acts, from armed conflicts, or from intentional conduct of the victims shall not be compensated by the Fund.[219]

Procedural rules

Under the HNS Convention, victims must bring an action within three years from the date when they knew or ought reasonably to have known of the damage and of the identity of the owner. In no case may an

if the agent discloses the principal to the HNS Fund; or (b) the person in the State Party who in accordance with the national law of that State Party is deemed to be the receiver of contributing cargo discharged in the ports and terminals of a State Party, provided that the total contributing cargo received according to such national law is substantially the same as that which would have been received under (a)."

[214] *Ibid*., Articles 18 and 19. [215] *Ibid*., Articles 16 and 19.
[216] *Ibid*., Article 14(1). [217] *Ibid*., Article 7. [218] *Ibid*., Article 7(3).
[219] *Ibid*., Article 14(3) and (4).

action be brought later than ten years from the date of the causation of damage.[220]

As for jurisdiction, if damage is caused, or preventive measures have been taken, within the territorial sea or the exclusive economic zone of a State party, the courts of that State party have exclusive jurisdiction over any claim against the ship owner.[221] Otherwise, claims arising from damage outside the territory of the States parties, or from preventive measures taken to prevent or minimize such damage, may be brought in the court of any of the following States: the State where the ship is registered; the State whose flag the ship is entitled to fly; the State where the ship owner has his habitual residence or a principal place of business; or the State where a fund has been constituted by the owner in accordance with the HNS Convention.[222]

Actions against the HNS Fund must be brought in the court having jurisdiction, as determined in accordance with Article 38.[223] Every State party shall ensure that its courts have jurisdiction to entertain actions against the HNS Fund.[224] Once a judgment is rendered, it should be recognized in all other State parties without being substantively reviewed, provided certain conditions are met.[225]

The HNS Convention has not yet entered into force. To what extent State practice will accept it remains to be seen.

Other relevant instruments

At the regional level, a few important treaties have banned the dumping of hazardous wastes in the sea. Recent efforts include the 1991 Bamako Convention, adopted under the auspices of the Organization of African Unity (OAU), which prohibits ocean dumping of hazardous wastes, including their incineration at sea and disposal in the seabed and subseabed.[226] It further prohibits dumping of hazardous wastes in internal

[220] *Ibid*., Article 37. [221] *Ibid*., Article 38(1). [222] *Ibid*., Article 38(2).
[223] See *ibid*., Article 39(1). [224] *Ibid*., Article 39(3).
[225] *Ibid*., Article 40. A judgment which is enforceable in the State of origin where it is no longer subject to ordinary forms of review must be recognized in any State party except where it was obtained by fraud, or where the defendant was not given reasonable notice and a fair opportunity to present the case.
[226] Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako, January 29, 1991), 30 ILM 773 (1991) (the "Bamako Convention"). On the protection of the River Rhine from hazardous substances, for instance, see the Agreement Concerning the International Commission for the Protection of the Rhine

waters.[227] The Bamako Convention was not intended to be a regional treaty as such, but rather a dignified response by the African nations expressing their dissatisfaction at the Basel Convention, discussed below, for its failure to ban totally any type of transboundary movements of hazardous wastes from developed to developing countries.[228]

In 1989, the EU countries and the ACP group (formed by sixty-nine African, Caribbean, and Pacific States) adopted the Fourth Lomé Convention[229] by which they undertook to ban the dumping of hazardous wastes into the sea. In the Mediterranean region, there had been a series of legal instruments adopted under the regional seas program against maritime pollution in the region.[230] After the Rio Conference on Environment and Development, States in the region started a revision process, adapting the legal instruments to the new environmental concepts and techniques that had emerged from that Conference. Among other things, in 1996 they adopted a protocol on the prevention of pollution of the Mediterranean Sea by transboundary movements of hazardous wastes and their disposal, banning the dumping of hazardous wastes into the sea.[231]

Transboundary movement of hazardous substances presents a very complicated problem in the context of dumping. The movement of hazardous wastes between States, particularly from developed countries to developing countries, whether perceived as an issue of international

Against Pollution, *Journal Officiel*, 13 June 1965, in Kiss, *Selected Multilateral Treaties*, No. 29, p. 176; the European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products (Strasbourg, September 16, 1968), 788 UNTS 181, in Kiss, *Selected Multilateral Treaties*, No. 38, p. 214; the Convention for the Protection of the Rhine Against Chemical Pollution (Bonn, December 3, 1976), 16 ILM 242, in Kiss, *Selected Multilateral Treaties*, No. 70, p. 468.

227 Bamako Convention, Article 4(1).

228 The treaty entered into force on March 21, 1996.

229 African, Caribbean, and Pacific States–European Economic Community: Fourth Lomé Convention (Lomé, December 15, 1989), 29 ILM 783.

230 Among others are the 1976 Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona, February 16, 1976), 15 ILM 290; the 1980 Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources (Athens, May 17, 1980), 19 ILM 869; the 1982 Protocol Concerning Mediterranean Specially Protected Areas (Geneva, April 3, 1982), 1425 UNTS 160 the 1994 Protocol for the Protection of the Mediterranean Sea Against Pollution from Offshore Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (Madrid, October 14, 1994); and the 1996 Protocol for the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal. See Cubel, "Transboundary Movements," p. 461.

231 Cubel, "Transboundary Movements," p. 463.

transactional management[232] or as an environmental problem,[233] has a direct bearing on State relations. In recent years, States have tightened their control on the movement and disposal of such substances and wastes at both the regional and international levels. Apart from the regional actions mentioned above, the 1989 Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the "Basel Convention") represents perhaps the most important endeavor at the international level.[234]

The ultimate objective of the Basel Convention is to protect human health and the environment against the adverse effects which may result from the generation and management of the wastes involved in transboundary movements, as well as their disposal. It is based on the principle that the generation of wastes must be reduced to a minimum and, where unavoidable, the wastes must be disposed of as close as possible to the source of their generation. Under the Basel Convention, transboundary movements of hazardous wastes are not totally banned, but are restricted with a view to ensuring that such wastes are disposed of in an environmentally sound manner.[235] If a transboundary movement of hazardous wastes or other matter cannot be completed in accordance with the terms of disposal, which are usually required in the business deal for the movement of the substances concerned, the exporter has the duty to re-import the substances to the country of origin.[236] Illegal

[232] In a recent study on the international trade in hazardous and radioactive wastes, in particular to developing countries, Louka suggested that the inadequate infrastructure and lenient environmental laws in developing countries are the root-cause of the trade. To overcome the problems, rather than prohibiting the trade altogether, Louka proposes establishment of minimum standards for waste transfers so as to achieve sound international management: see generally Louka, *Overcoming National Barriers*.

[233] See generally, Handl and Lutz, *Transferring Hazardous Technologies*.

[234] See the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel, March 22, 1989), 1673 UNTS 125; 28 ILM 649 (1989). The Convention entered into force on May 5, 1992. At present, 150 States and the European Community have ratified, acceded to or approved it.

[235] The treaty provides for: the obligation to reduce the generation of hazardous wastes to a minimum; each country's sovereign right to ban the import of hazardous wastes, and to prohibit exports to and imports from non-parties unless subject to an agreement whose terms are no less stringent than those of the Basel Convention, and to dispose of them as close as possible to their source of generation unless the transboundary movements of hazardous wastes represent the most environmentally sound solution. Under the treaty, prior informed consent by the State of import is required. Movement of such wastes in contravention of the Convention is illegal traffic and a criminal act. See Articles 4 and 6 of the Convention.

[236] *Ibid*., Article 8.

traffic of hazardous wastes or other matter as provided under the Basel Convention is a criminal act.[237] Article 12 called for adoption of a protocol on international liability for damage from transboundary movement and disposal of hazardous wastes and other wastes. Since 1990, an *ad hoc* working group of legal and technical experts has been considering the matter. The final text of the Basel Protocol on Liability and Compensation was adopted at the Fifth Conference of Parties (COP-5) on December 10, 1999.[238]

As for the most controversial issue of the movement of hazardous wastes from developed countries to developing countries, regional efforts have imposed stricter control on such disposals. The Lomé Convention was the first binding agreement between developed countries (the EU member States) and the developing countries (the ACP group) banning transboundary movements of hazardous and nuclear waste.[239] Likewise, the Bamako Convention totally bans all exports of any type of hazardous waste from non-African nations. It allows movements only between developing countries and not from developed to developing countries. In contrast, the Basel Convention initially did not ban movements from developed to developing States, but, five years later, the Conference of the Parties adopted a formal decision to amend the Convention to prohibit transboundary movements from developed to developing countries.[240]

In Europe, one important regional treaty was concluded under the auspices of the Economic Commission for Europe (ECE) on civil liability for damage caused during carriage of dangerous goods by road, rail, and inland navigation vessels: the 1989 ECE Convention on Civil Liability for

[237] *Ibid*., Article 4(3).

[238] The text is included in the Report of the Fifth Meeting of the Conference of the Parties to the Basel Convention, Annex III, p. 88 (Doc. UNEP/CHW.5/29). For further discussion, see Chapter 3 below.

[239] See Article 39 of the Lomé Convention, which prevents EU States from exporting hazardous waste to ACP nations but does not affect intra-EU hazardous waste traffic nor EU exportation to non-ACP nations. However, Article 39 precludes ACP nations from directly or indirectly importing into their territory waste from the EU or from any other nation.

[240] During the Second Conference of the Parties, Decision II/12 was adopted on March 25, 1994, prohibiting all transboundary movements of hazardous wastes destined for final disposal from OECD and EU countries to non-OECD and non-EU countries. The same decision phases out transboundary movements of hazardous wastes destined for recycling or recovery from OECD and EU countries and to non-OECD and non-EU countries as of December 31, 1997. The Convention was officially amended by the decision at the Third Conference of the Parties. See Cubel, "Transboundary Movements," n. 19.

Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (the "CRTD"),[241] which adopted a legal regime of civil liability similar to the existing regimes. The purpose of the CRTD is to establish uniform rules of civil liability to ensure adequate and speedy compensation for damage caused during the carriage of dangerous goods from one country to another country within the contracting parties. It limits coverage to carriage by a sea-going ship, sea-borne craft or aircraft. It sets a different limitation of liability on road and rail from that on inland navigation.[242] Moreover, compensation for loss of life or personal injury is given priority over other claims. The carrier is strictly liable for damage done under the terms and conditions of the Convention. For this purpose, the carrier is obligated to acquire compulsory insurance or financial security, unless it is a State party or a constituent part of such State for non-commercial governmental service. The contracting parties can, through their national legislation, establish higher standards of liability, but no less than the conditions as laid down by the Convention.

There is another type of transboundary damage situation involving hazardous substances from industrial accidents, such as the abovementioned Seveso accident (1976) and Bhopal catastrophe (1984). To cope with such accidents with possible harmful transboundary effects, the Convention on the Transboundary Effects of Industrial Accidents was adopted at Helsinki in 1992.[243] It is primarily a regional treaty and applies only to accidents involving hazardous substances caused in the jurisdiction of one State party but resulting in serious effects in the territory of another State party.[244] It contains clauses concerning prevention, preparedness, and response to industrial accidents capable of having transboundary effects. In relation to international cooperation, it provides for mutual assistance, research and development, and the exchange of information and technology in relation to these activities. It precludes those accidents already dealt with under other treaty regimes such as nuclear accidents, marine accidents, and accidents

[241] Geneva, October 10, 1989, UN Doc. ECE/TRANS/79, UN Sales No. E.90.11.E.39 (1990). The CRTD Convention is not yet in force.

[242] Under Article 9 of the CRTD, road and rail carriers are subject to the same limitation, while inland navigation carriers are subject to a lower limitation, apparently due to their different business profitability.

[243] See the Convention on the Transboundary Effects of Industrial Accidents (Helsinki, March 17, 1992), 31 ILM 1330 (1992), which entered into force on April 19, 2000.

[244] *Ibid*., Article 1.

at military installations, among others.[245] On the issue of international liability, Article 13 briefly states: "the Parties shall support appropriate international efforts to elaborate rules, criteria and procedures in the field of responsibility and liability."[246]

In conclusion, the existing regimes on international liability for transboundary damage are the main source of international law in this field. To varying degrees, they reveal a pattern of State practice, or at least the extent to which States could agree upon terms relating to the rules of international liability for certain activities which seem desirable from the perspective of human advancement but which are inherently hazardous. These activities are limited and confined to a few areas that directly affect the wider community interests beyond national boundaries. As is often pronounced in the respective preambles to the treaties, the purpose and objective of the legal regulation is to strike a balance between the interests of the innocent victims and the interests of society at large. These pragmatic policy considerations set the tone for the regimes from the outset. They provide guiding principles of continuing value.

[245] *Ibid*., Article 2.

[246] As a further step, the Council of Europe adopted the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano, June 21, 1993), 32 ILM 1228 (1993), which provides civil liability for damage caused by hazardous activities which are carried on in one country but whose harmful effects are felt in another country. It concerns both accidental and non-accidental damage.

3 Substantive rules and principles: issues and problems

As illustrated in the previous chapter, the existing regimes on international liability for accidental damage are limited both in scope and in application. Before considering how their scope and application might be extended, however, a few substantive issues need to be examined.

The question of attribution: State responsibility

In the environmental field, transboundary damage bears directly on State responsibility in two respects. In its broadest sense, "State responsibility" denotes the obligation of States to take responsibility for the prevention, or at least minimization and mitigation, of such damage. In the narrow sense of the term, it refers to the obligation of States to redress or make reparation for damage. On the State level, it is the State government that is answerable to the injured State for any transboundary damage. In practice, it is equally true that private victims can often seek to have their grievances redressed only through representation by their government in all dealings with or actions against the government of the author State. Therefore, as the ultimate players in international relations, States shoulder a general responsibility for transboundary damage.

Under the general rules of State responsibility, a State is only responsible for acts or omissions that are attributable to it. Under the terms of the ILC's Articles on State Responsibility:[1]

[1] Articles on Responsibility of States for Internationally Wrongful Acts, 2001, annexed to GA Resolution 56/83, December 12, 2001 (hereinafter "Articles on State Responsibility"), Article 2. The text and commentaries are conveniently set out in James Crawford, *The International Law Commission's Articles on State Responsibility: Introduction, Text and Commentaries* (Cambridge, CUP, 2002).

There is an internationally wrongful act of a State when conduct consisting of an action or omission:

(a) Is attributable to the State under international law . . .

The purpose of attribution is to establish the link between the wrongful act and its responsible author. Thus international law may regard the action or omission concerned as "an act of the State."[2] Traditionally, the scope of the notion of an act of the State was strictly interpreted. As the ILC pointed out in the initial stages of its work:

in theory, there is nothing to prevent international law from attaching to the State the conduct of human beings or collectivities whose link with the State might even have no relation to its organization; for example, any actions or omissions taking place in its territory could be considered acts of the State. In practice, however, we find that what is, as a general rule, attributed to the State at the international level are the acts of members of its "organization," in other words, the acts of its "organs" or "agents." This is the basic principle.[3]

The rules have developed along the lines of a "functional theory." In other words, States are only responsible for acts that are performed in the exercise of governmental functions.

The doctrine of attribution serves to draw the line between the public domain and the non-governmental or private realm in order to isolate those acts or omissions which may be considered "acts of the State" and, consequently to determine when the State's responsibility should arise.[4] The doctrine has two aspects, negative and positive. On the negative side, it determines which acts or omissions do not invoke the direct responsibility of the State, thus leaving the matter to the private domain. In Western liberal thinking, this theory is intended to help maintain a manageable sphere within which the government may operate, while insulating it from undue interference from the private sector. Such a distinction would preclude State responsibility in cases where the wrongful conduct is of a purely private nature and there is thus no positive duty on the part of the State to answer for it. On the positive side, the doctrine dictates duties to the State to take action or refrain from action. These

[2] *Yearbook of the ILC*, vol. II (1970), p. 189, para. 37: Second Report on State Responsibility by Mr. Robert Ago, Special Rapporteur.

[3] *Yearbook of the ILC* (1973), vol. II, p. 189. See now the commentary to Part One, Chapter II, para. (2), in Crawford, *Articles on State Responsibility*, p. 91.

[4] Gordon A. Christenson, "The Doctrine of Attribution in State Responsibility," in Richard B. Lillich (ed.), *International Law of State Responsibility for Injuries to Aliens* (Charlottesville, University Press of Virginia, 1983), p. 322.

positive duties owed by States to each other and to the international community require full compliance. Should a State fail to perform them, it breaches its international obligation.[5] In other words, State responsibility encourages the observance of international obligations undertaken by a State.[6]

The distinction between what constitutes the act of a State and what does not can be blurred by various factual situations. Chapter II of the ILC's Articles on State Responsibility deals with attribution of conduct to a State. Essentially, conduct of any State organ exercising legislative, executive, judicial, or any other functions is defined as an act of the State.[7] By this functional standard, private acts, in which the State does not exercise any actual control, do not give rise to State responsibility. In reality, although State governments do sometimes answer for the injurious conduct of their citizens, they seldom interpret this as a legal obligation under international law. Whether relating to territorial or national control, the notion of governmental function tends to be broadly interpreted. Nevertheless, most States do not accept that a government is responsible for every act carried out in its territory or by its nationals.

In the context of transboundary accidental damage, international liability embodies two kinds of liability. One is international liability of the State: the legal duty to make reparation for damage caused when it breaches an international obligation. The other is the liability of private actors at the international level: the legal duty of the person or entity

[5] *Ibid*.

[6] The notion of primary rules and secondary rules is borrowed from H. L. A. Hart's theory of primary rules and rules of recognition. In the present context, primary rules mean rules of conduct, obligations undertaken by States to act or refrain from acting. Rules of State responsibility are considered secondary rules, similar to rules of recognition in Hart's terminology, which only address the consequential legal relations between the actor State and the injured State as a result of a breach of international obligation on the part of the actor State. See H. L. A. Hart, *The Concept of Law* (Oxford, Clarendon Press, 1961), p. 77.

[7] See Article 4(1) of the Articles on State Responsibility. During the drafting process, the ILC purposely chose the term "the acts of the State" to avoid any confusion with the "act of State" doctrine in English and US law. See *Yearbook of the ILC* (1980), vol. II (Part One). Whether the entity holds the status of an "organ" of the State is primarily to be determined in accordance with internal law: Article 4(2). The Articles also attribute various other forms of conduct to the State, including: conduct of persons exercising elements of governmental authority (Article 5); conduct of organs placed at the disposal of a State by another State (Article 6); conduct directed or controlled by a State, whether or not performed by an organ of the State (Article 8); conduct of an insurrectional movement which becomes the new government (Article 10); and conduct acknowledged or adopted by a State as its own, whether or not such conduct falls within any of the preceding categories (Article 11).

to make reparation either to a foreign country or to foreign nationals, natural or juridical, for damage they have caused. Here the legal distinction between the terms "responsibility" and "liability" needs elaboration. Generally speaking, "responsibility" embraces the duty to answer the legal consequences of a wrong, while "liability" largely describes a legal obligation to make reparation and compensation, contingent upon the existence of damage in case of breach of an obligation. In other words, "responsibility" is the broader concept, and encompasses "liability" in circumstances where damage has occurred.[8] In practice, however, the two terms are frequently confused.

There are generally three types of activity that may raise the issue of attribution. The first type consists of acts directly conducted by the State itself or its agents.[9] The best example is the traditional practice of space activities or nuclear activities for military purposes. In these cases, the question is directly addressed to whether there is a breach of an international obligation by the author State. For the purpose of invoking State responsibility, the official function of the act itself constitutes the necessary linkage between the act and the author. Whether the officers or organs concerned act pursuant to instructions or *ultra vires*, their government should be held answerable for the consequences of their conduct.[10] The key factor here is the actual ultimate control of the government over the activity.

[8] The parallel terminology of responsibility and liability lack equivalent separate usage in many other languages, including some of the working languages of the United Nations which are used as authentic languages of international legal instruments adopted under the auspices of the organ. See a comparison of the terms in English and French in the Preliminary Report on International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law by Special Rapporteur Mr. R. Quentin-Baxter, *Yearbook of the ILC* (1980), vol. II (Part One), pp. 250–251, n. 17; see also *ibid*. (1973), vol. I, p. 211. In Chinese, there is no separate terminology for responsibility and liability. To distinguish the two concepts, additional words have to be used. For a study of the two concepts, see L. F. E. Goldie, "Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 180.

[9] See Articles 4 and 6 of the Articles on State Responsibility.

[10] Article 7 of the Articles on State Responsibility states that "[t]he conduct of an organ of a State or of a person or entity empowered to exercise elements of the governmental authority shall be considered an act of the State under international law if the organ, person or entity acts in that capacity, even if it exceeds its authority or contravenes instructions." Further, Article 9 states that "[t]he conduct of a person or group of persons shall be considered an act of a State under international law if the person or group of persons is in fact exercising elements of the governmental authority in the absence or default of the official authorities and in circumstances such as to call for the exercise of those elements of authority."

The second category includes those activities that are conducted by non-governmental agencies or private enterprises but under the direct authorization and supervision of the State government.[11] The range of such activities can be fairly wide, subject to the domestic structure of governmental administration of each country. Examples can be found in the areas of the nuclear industry, the space industry, some public transportation such as civil aviation and railways, and certain strictly controlled import and export activities.[12] In some of these areas, States are under international obligations to ensure or guarantee that compensation shall be paid in case of damage. One example can be observed in Article 263 of the United Nations Convention on the Law of the Sea which provides that States shall be liable for damage caused by pollution of the marine environment arising out of marine scientific research undertaken by them *or on their behalf*.[13] This encompasses even scientific activities conducted by private entities, provided they are authorized by the State to conduct such activities. Because of their inherently public nature, many State governments directly supervise or control these activities. Nonetheless, this intimately identifiable relation between the activity and the State does not necessarily lead to the conclusion that the State should be held responsible for damage caused thereby to other countries; for example, in the case of civil aviation, a State is responsible for regulation of the activity, but is not directly accountable for damage caused by an airline. In this regard, a State may be held accountable

[11] See, for example, Articles 5 and 8 of the Articles on State Responsibility.

[12] For example, Article VI of the Outer Space Principles Treaty provides for the international responsibility of States parties to the treaty for "national activities in outer space . . . whether such activities are carried on by governmental agencies or by *non-governmental entities*," provided that "[t]he activities of non-governmental entities in outer space . . . shall require authorization and continuing supervision by the appropriate State Party to the Treaty" (emphasis added).

[13] See the United Nations Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396. Article 263 is entitled "Responsibility and Liability" and reads:

> 1. States and competent international organizations shall be responsible for ensuring that marine scientific research, whether undertaken by them or on their behalf, is conducted in accordance with this Convention.
>
> 2. States and competent international organizations shall be responsible and liable for the measures they take in contravention of this Convention in respect of marine scientific research conducted by other States, their natural or juridical persons or by competent international organizations, and shall provide compensation for damage resulting from such measures.
>
> 3. States and competent international organizations shall be responsible and liable pursuant to article 235 for damage caused by pollution of the marine environment arising out of marine scientific research undertaken by them or on their behalf.

for acts of private or non-State entities if, by an independent act or omission, it fails to meet its own duties with respect to that conduct.[14] Therefore, to determine State responsibility in a case of transboundary damage ultimately depends on what duties a State owes to other States and to their nationals. It is apparent that an overly strict interpretation of the classical rules would result in a simplistic and unresponsive approach to the growing problems of transboundary activities conducted by the private sector.

The last category comprises purely private activities. Private industrial activities that bear special risk of transboundary damage have become the focus of attention in recent years. Although much has been said about international liability, the real imperative is further attempts to unify and harmonize national laws on civil liability. In this context, there is no issue of attribution. But under international law, a State has the obligation not to allow its territory to be used against the interests of another State. This norm is generally recognized and accepted by States. In practice, however, such territorial linkage between the government and private acts may still prove problematic.

The Cherry Point oil spill case is an example.[15] In 1972, a Liberian-registered oil tanker leaked crude oil into the sea while unloading at the Atlantic Richfield refinery at Cherry Point, Washington. The oil eventually reached Canadian beaches and caused damage. The spill was relatively small but caused a series of actions at national and international levels on both sides. In response, the Canadian Government requested firm assurances from the US Government that "full compensation for all damages, as well as the cost of clean-up operations, will be paid by those legally responsible."[16] More interesting is the statement of the Canadian Secretary of State for External Affairs during House of Commons debates on the incident:

> We are especially concerned to ensure observance of the principle established in the 1938 Trail Smelter arbitration between Canada and the United States.

[14] Bernadette V. Brennan, "Liability and Compensation for Oil Pollution from Tankers Under Private International Law: TOVALOP, CRISTAL, and the *Exxon Valdez*," *Georgetown International Environmental Law Review*, vol. 2 (1989), p. 1.

[15] For the statement of the Hon. Mitchell Sharp (Secretary of State for External Affairs) in relation to the incident in House of Commons Debates, June 8, 1972, p. 2955, see A. L. C. de Mestral (ed.), "Canadian Practice in International Law During 1972 as Reflected in Resolutions of the House of Commons and in Government Statements in the House of Commons," *Canadian Yearbook of International Law* (1973) vol. 11, p. 314, at p. 333.

[16] *Ibid*., pp. 333–334.

This has established that one country may not permit the use of its territory in such a manner as to cause injury to the territory of another and shall be responsible to pay compensation for any injury so suffered. Canada accepted this responsibility in the Trail Smelter case and we would expect that the same principle would be implemented in the present situation.[17]

Eventually the private oil company responsible, the Atlantic Petroleum Corporation, paid the cost of clean-up operations. Thus the principle laid down in the *Trail Smelter* case[18] was not tested.

Canada based its claim against the US on the mere presence of a foreign business in the territory of the US from which damage was caused to the Canadian territory. On the basis of the *Trail Smelter* case, it requested an assurance from the US Government that compensation would be paid. It referred to the responsibility of a State for acts conducted within its territory regardless of whether the actor was a public or private entity. As the conduct in question in this case involved a purely private activity, the case could have been handled simply by negotiation with or litigation against the private company, without the involvement of the US Government. The interesting point in the statement by Canada is that the proposition it drew from the *Trail Smelter* award could lead to absolute responsibility of the State for *any* activity within its territory which may affect a foreign interest, regardless of the characterization of the activity or the entity conducting it.[19]

Admittedly, in the interests of State relations, a source State will often unilaterally elect to come to the rescue of a neighboring country which has been detrimentally affected by an accident in the territory of the source State, regardless of who caused the accident. This is often a political decision rather than a legal one. Moreover, in bilateral relations, there are an array of international treaties on State responsibility and liability regarding extraterritorial damage, including damage caused by private entities,[20] especially concerning border affairs. In scholarly writings,

[17] *Ibid*., p. 334. [18] *United States* v. *Canada*, RIAA, vol. III (1941), p. 1905.

[19] The Hon. Mitchell Sharp continued: "Indeed, this principle [established by *Trail Smelter*] has already received acceptance by a considerable number of States and hopefully it will be adopted at the Stockholm Conference as a fundamental rule of international environmental law": A. L. C. de Mestral (ed.), "Canadian Practice in International Law During 1972 as Reflected in Resolutions of the House of Commons and in Government Statements in the House of Commons," *Canadian Yearbook of International Law* (1973), vol. 11, p. 314, at p. 334.

[20] For example, Article 51 of the Treaty Concerning the Río de la Plata and the Corresponding Maritime Boundary (Montevideo, November 19, 1973), 1295 UNTS 306, between Argentina and Uruguay provides: "Each Party shall be liable to the other for

these cases tend to be regarded as instances where States have accepted original and strict liability for damage caused by private activities.

In principle, a State is under an international obligation to prevent activities conducted in its territory from causing damage to the territory of another country. If damage does occur, a State has the international obligation to facilitate a settlement of the matter in a manner conforming with international law and the general practice of States. It cannot be deduced from this principle, however, that a State will be held responsible and liable for damage arising from such activities, no matter who caused it. The doctrine of attribution sets up a coherent but separate relationship between the public domain and the private domain.

Liability and insurance: the issue of channeling

The importance of financial guarantee mechanisms to ensure the payment of compensation for transboundary damage hardly needs explanation. In the simple case of a border incident, reparation can be made relatively easily on the basis of general principles of law and equity. In the event of a massive disaster, allocation of loss requires serious policy considerations both on national and international grounds. The existing legal regimes on civil liability exemplify the process.

For nuclear damage, the Paris and Vienna Conventions impose strict liability exclusively on the operator of the nuclear installation, intentionally leaving aside other actors, for example the supplier and the carrier. This unique rule of liability stems from practical considerations rather than legal purposes. As discussed in Chapter 2, first, it saves multiple lawsuits and cross-actions by simplifying the recourse process. Secondly, by making the operator solely liable, it channels the available financial resources to where the industry needs them most. In other words, by holding the operator solely liable, other participants (e.g. the manufacturer of the nuclear equipment) are given the incentive to develop without any undue financial burden to insure for damage. Finally, by maintaining a limit on the operator's liability, both in amount and in time, it sustains both the industry itself and public confidence in the industry. In the developmental stages of the nuclear industry, policy concerns clearly leaned towards advancement of the industry. The deficiencies inherent in the regime of limitation of liability for nuclear damage both

damage inflicted as a result of pollution caused by its own activities or by those of individuals or legal entities domiciled in its territory."

in amount and in time were revealed by the Chernobyl disaster.[21] These deficiencies were re-examined by the member States of the Paris and Vienna Conventions, resulting in the enactment of the Joint Protocol Relating to the Application of the Vienna Convention on Civil Liability for Nuclear Damage and the Paris Convention on Third Party Liability in the Field of Nuclear Energy,[22] the Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage,[23] and the Convention on Supplementary Compensation for Nuclear Damage.[24] In a region such as Europe where there are highly extensive nuclear activities coexistent with high public sensitivity over environmental hazards, this reaction to the disaster required reconsideration of the original balance of interests between the nuclear industry and public safety and the national policies of the member States on the nuclear energy industry.[25]

The international civil liability regime for oil pollution damage is much more successful than other legal regimes in this area.[26] This is largely due to the fact that ocean-shipping is a well-developed trade

[21] In terms of amount, the limit set up by treaty was far below the actual amount of compensation paid to the Federal Republic of Germany after Chernobyl. In terms of time, it is said, the ten-year period is too short in relation to the peculiarities of radiation effects. See Norbert Pelzer, "Concepts of Nuclear Liability Revisited: A Post-Chernobyl Assessment of the Paris and the Vienna Conventions," in Cameron *et al*., *Nuclear Energy Law*, p. 97, at pp. 108–109.

[22] Vienna, September 21, 1988, 1672 UNTS 301.

[23] Vienna, September 29, 1997, IAEA INFCIRC/566 of July 22, 1998.

[24] Vienna, September, 29, 1997, IAEA INFCIRC/567 of July 22, 1998.

[25] Most of these States have limited liability for nuclear damage in their national legislation. There are only a few countries in the world that have adopted unlimited liability for nuclear damage (Bulgaria, Germany, Hungary, Japan, Poland, and Switzerland): see Norbert Pelzer, "Concepts of Nuclear Liability Revisited: A Post-Chernobyl Assessment of the Paris and the Vienna Conventions," in Cameron *et al*., *Nuclear Energy Law*, p. 97, at p. 108.

[26] The 1992 Protocol to the 1969 International Convention on Civil Liability for Oil Pollution Damage (Brussels, November 29, 1969), 973 UNTS 3, is now in force in eighty-six States, eighty of which are also parties to the 1992 Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Brussels, December 18, 1971), 1110 UNTS 57. The amount of compensation available has in practice proved sufficient to meet the claims presented in almost every incident dealt with under the Oil Pollution Liability Convention; the relatively clear terms leave little scope for argument on questions of liability, which fosters cooperation amongst interested parties in responding effectively to a spill. The oil-shipping industry is concerned that, as the assessment of the negative impact of oil pollution on natural resources becomes stricter, the scope of damage covered by the Convention might be broadened, following the trend already set by some national laws. For an analysis of the problems with the US Oil Pollution Act of 1990 adopted after the *Exxon Valdez* accident and its possible impact on the shipping industry, see Gerd Jan van der Ziel, "A Maritime View," in

built on a set of established customs and regulations. Additionally, the oil industry comprises a relatively uniform body of commercial interests identified with the single commodity of oil.[27] When the limit of the ship owner's liability under the Oil Pollution Liability Convention proved inadequate to afford full compensation, the international community quickly responded by providing an additional source of funding established under the Fund Convention, which was readily accepted by the industry. The supplementary channeling of liability for compensation to the oil importer spread the burden of the economic consequences of oil pollution damage. As oil importers raise their prices to compensate for the contributions which they are required to make to the Fund, some portion of any loss is indirectly channeled to oil consumers with the effect of sustaining the industry, while ensuring the availability of adequate compensation.

In contrast, there are greater difficulties in deciding on a proper channeling of liability for ocean-shipping of hazardous and noxious substances, as to do so requires an agreed policy as to which participants in the processing chain should share liability for damage. The HNS Convention was adopted on May 3, 1996, the product of years of work by the International Maritime Organization (IMO).[28] Due to specialized trade practices in the hazardous and noxious substances industry, and the complexity of the substances involved, the drafters were first required to define the particular hazardous or noxious substances covered by the regime.[29] Next, it was decided to establish the HNS Fund,[30] and limitations of liability both for the ship owner[31] and the HNS Fund[32] were determined, as well as insurance requirements.[33] The drafters were concerned not to set the limitations of liability too high for the industry to avoid creating practical difficulties for the insurance scheme.[34]

Ralph P. Kroner (ed.), *Transnational Environmental Liability and Insurance* (London, Graham & Trotman, 1993), pp. 237–238.

[27] Colin de la Rue, "Environmental Damage Assessment," in Kroner, *Transnational Environmental Liability*, p. 68.

[28] IMO Doc. LEG/CONF.10/8/3, reprinted in 35 ILM 1415.

[29] See Article 1(5) of the HNS Convention.

[30] *Ibid*., Article 13. [31] *Ibid*., Article 9. [32] *Ibid*., Article 14. [33] *Ibid*., Article 12.

[34] Suggestions were originally put forward for a limit of 15 million SDRs for small ships and up to 100 million SDRs for larger ships. However, Article 9 of the HNS Convention now imposes a sliding scale of liability on the ship owner depending upon the size of the ship. For ships not exceeding 2,000 units of gross tonnage, the limit is set at 10 million SDRs in respect of any one incident. For ships above that tonnage, an additional 1,500 SDRs is added for each unit of tonnage from 2,001 to 50,000, and 360 SDRs for each unit of tonnage thereafter. The total possible amount for which the

Looking for a practical solution, one trade member has commented that, as long as governments (who in many cases are amongst the largest claimants) maintain political pressure for full compensation for victims, there will never be a workable and effective liability regime for the carriage of hazardous and noxious substances:

> Certain risks are inherent to a modern society, in which we all drive our cars, wear nylon sweaters and use plastic products . . . Governments could and should pay still more attention to the prevention of damage than trying to impose on carriers "after-the-event" liabilities which go beyond what is reasonably insurable.[35]

Insurability is measured in terms of what is reasonable having regard to practice and the survival of the industry concerned. In this case, the most problematic feature was nominating the appropriate parties to bear liability both from the point of view of the industry and potential claimants. Under the HNS Convention, the structure and the terms of the regime mirror the oil liability regime. However, instead of identifying the parties liable, the Convention imposes on the "receiver"[36] of the cargo the burden of sharing liability by way of contributions to the Fund,[37] leaving the determination of the identity of the receiver, and therefore the actual channeling of liability, to national laws.

The economic dimension of different trades relating to hazardous and noxious substances is certainly a key factor in the apportionment of liability. In the 1989 ECE's CRTD Convention,[38] the limitations of liability imposed on the road carrier and the rail carrier are higher than that on the inland navigation vessel. The financial capabilities of the carriers as determined by market demand and the risk to which the public is exposed dictate the apportionment of liability.

The discussions leading up to the adoption of the Protocol on Liability and Compensation supplementary to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their

ship owner is liable is limited to 100 million SDRs. For ships under 2,000 gross tons, it is more than double the limit set under the US Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USCA ss. 9601 *et seq.*, in particular, s. 9607(c)). It is considered that with such high liability it would be extremely difficult for the P and I Clubs to find coverage on the reinsurance market against a reasonable premium. See Kroner, *Transnational Environmental Liability*, p. 239.

[35] *Ibid.* [36] Defined in Article 1(4) of the HNS Convention.

[37] *Ibid.*, Articles 18 and 19.

[38] Geneva, October 10, 1989, UN Doc. ECE/TRANS 79, UN Sales No. E.90.11.E.39 (1990); Kwiatkowska and Soons, *Basic Documents*, p. 836.

Disposal[39] faced the same tough issues regarding who should bear liability and to what extent. In the transnational movement of hazardous wastes, several actors are involved: the generator of the wastes, the disposer, the exporter (sometimes with the broker), and the importer. Initially, the draft protocol tentatively proposed three alternatives on the issue of which party should be held liable.[40] During the discussions of the working group held in October 1994, most experts supported choosing the generator and the exporter as the appropriate parties (Alternative 1) because that would be in conformity with the approach adopted by the Basel Convention, which in accordance with the "polluter pays" principle is designed to minimize the generation of wastes and their subsequent transboundary movement.[41] Different views, however, were also voiced, especially on the purpose of the Protocol. Some delegations expressed the view that the aim of the regime was not to minimize the generation of wastes but to compensate the victims and promote sound management.[42] Furthermore, views differed as to who should be considered as "the person in control" for the purposes of imposition of liability, because a person in possession of waste may not be in control of it.

Before comments were sought from governments on the limitation of liability, opinions of the insurance industry were solicited. During the experts' meeting, the representative of the International Group of P and I Clubs advised the working group that the International Group was in general opposed to the imposition of unlimited and strict liability on maritime carriers. He drew attention to the finite size of the marine insurance markets and its relation to the channeling of risks as well as certain difficulties in insuring liability for damage computed by abstract, theoretical methods, punitive liability and long tail liability.[43]

[39] Basel, March 22, 1989, 28 ILM 649 (1989).

[40] The three alternatives were as follows:

> Alternative 1: the generator, the exporter, and any person, including the disposer, who at the time of the incident is in [possession and/or] control of the hazardous wastes or other wastes, shall be liable for damage.
>
> Alternative 2: the generator, the exporter, and any person, including the broker, importer and disposer, involved in the transboundary movement or disposal of the hazardous wastes or other wastes, shall be liable for damage.
>
> Alternative 3: any person who at the time of the incident has operational control of the wastes, shall be liable for damage.

See the Report of the Ad Hoc Working Group on the Work of its Second Session, UNEP/CHW.1/WG.1/2/4, p. 10.

[41] *Ibid*., p. 5. [42] *Ibid*. [43] *Ibid*., p. 6.

Regarding Article 7 of the Draft Protocol, which provided that the State of export, State of transit, or State of import shall ensure that liability shall be covered by insurance, bonds, or other financial guarantees, the representative of Zurich Insurance pointed out that, for an insurance company to be able to determine appropriate premiums, the risk must be calculable, and, in order to keep losses to a minimum, risks must be controlled. He raised the situation where soil was already contaminated before the waste had been released and asked how this case should be dealt with in relation to the decision on the rate of contamination already existing and which portion of the clean-up costs should be paid by insurance. Even for a self-financing solution such as a fund, which could be an alternative to traditional insurance schemes for uninsurable or difficult to insure risks, the risk has to be calculable and also controllable.[44]

The debates were resolved with the adoption on December 10, 1999, of the Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal.[45] Article 4(1) of the Protocol provides that the person who notifies in accordance with Article 6 of the Basel Convention – that is, either the State of export, or the generator or exporter if the duty to notify is delegated to them by the State – is liable for damage until such time as the disposer has taken possession of the wastes, and thereafter the disposer is liable. Article 4(2) provides an exception with respect to wastes under Article 1(1)(b) of the Convention which have been notified as hazardous by the State of import in accordance with Article 3 of the Convention – in that case the importer is liable until the disposer has taken possession of the wastes and thereafter the disposer is liable.

Insurance availability and practicality have a direct impact on the effectiveness of the law on civil liability for damage caused by industrial activities.[46] When such highly risky activities as nuclear operations,

[44] The speaker also mentioned the involvement of very broad insurance branches such as transport insurance, marine insurance, casualty insurance, property insurance, and business interruption (loss of profits) insurance. On the preventive measures, the question was who defined "how clean is clean" and "how safe is safe," after clean-up operations. See *ibid*.

[45] The text is included in the Report of the Fifth Meeting of the Conference of the Parties to the Basel Convention, Annex III, p. 88 (Doc. UNEP/CHW.5/29).

[46] In the United States the nuclear industry is currently in retreat. Apart from public opposition to construction of nuclear plants, the insurance industry has suggested that limitation of liability stifles demand for liability coverage, since as long as utilities are protected by liability limits they do not have any incentives to purchase

large-scale oil shipping, and transboundary disposal of hazardous wastes are allowed to continue, policy-makers as well as the public are left with limited choice. For practical reasons related to the balancing of interests between industry and the public, the solution to control the adverse effects of these activities has to be both effective and pragmatic. From the drafting process of the existing international conventions on nuclear liability and hazardous wastes disposal, one can discern that liability rules, as a moving yardstick, serve to measure the capacity and capability of States in managing such risks. In international relations, however, such technical means as insurance and financial guarantees to ensure the effectiveness of liability mechanisms are not necessarily the decisive factors in maintaining such a balance of interests between the industry and the public. Instead, national interests among different economies with diverse priorities may prove to be the eventual prevailing force for a compromised solution among States. Needless to say, Western countries with the most sophisticated industrial and commercial infrastructure are often the key players in the legal process of developing liability rules. Thus the existing international regimes to a large extent have found their model in the general practice of the industrial world.

Recoverable damage

Once liability is determined, the liable party must pay compensation for damage. By the principle of effective causality, the loss claimed must be directly connected with the initial act that causes damage, or there would be an inadmissible extension of responsibility.[47] In the well-known *Alabama Claims* case of 1872 between the United States and the United Kingdom,[48] centering on the alleged failure of the United Kingdom to fulfill its duty of neutrality during the American Civil War, the arbitrators refused to take into account the indirect damage, i.e. the increased insurance payments and the additional costs incurred as a result of the prolongation of the war.[49] Despite some criticism in

coverage in excess of those limits. This is one aspect of the effects of insurance on the behavior of the actor.

[47] M. M. Whiteman, *Damages in International Law* (Washington, US Government Printing Office, 1943), vol. III, pp. 1765–1767.

[48] J. B. Moore, *History and Digest of the International Arbitrations to Which the United States Has Been a Party* (Washington, US Government Printing Office, 1898), vol. I, p. 653; vol. IV, p. 4144.

[49] Whiteman, *Damages*, pp. 1772–1775; Bin Cheng, *General Principles of International Law as Applied by International Courts and Tribunals* (Cambridge, Grotius Publications 1987), pp. 245–246.

subsequent cases on the criterion of directness, the principle is generally followed in practice. Thus so long as there is a clear, unbroken connection between the wrongful act and the loss complained of, the damage is allowable. A State is responsible only for the natural and proximate consequences of its act under international law.

Regarding transboundary damage caused by accidents, international conventions, court decisions, and arbitral awards usually recognize three types of damage: loss of life and personal injury, property damage, and the costs of preventive measures. More recently, compensation for impairment of the environment other than loss of profit from such impairment has also been recognized by some national courts and is being proposed in international practice.

Loss of life and personal injury

There are two types of physical damage – material injury and non-material injury. Although seldom claimed,[50] non-material injury is allowed by some treaties on civil liability. For instance, Article 29 of Appendix A to the Consolidated Text of the Convention Concerning International Carriage by Rail (COTIF) provides: "National law shall determine whether and to what extent the railway shall pay damages for injuries other than that for which there is provision in Articles 27 and 28, in particular for *mental* or physical pain and suffering (*pretium doloris*) and for disfigurement" (emphasis added). The remedy for loss of life and personal injury is generally recognized in domestic legal practice as well as international court decisions. In the *Corfu Channel* case, the International Court of Justice found Albania at fault for failing to give warning

[50] In the Palomares incident, a US B-52G nuclear bomber and a KC-135 supply plane collided, causing the former to drop four plutonium-uranium 235 hydrogen bombs on the coast of Spain. During the search for the lost bombs, fear and anxiety spread throughout the western Mediterranean basin. Two of the bombs scattered uranium and plutonium particles near the Spanish coastal village of Palomares. Although the United States and Spain took immediate remedial action to recover the bombs and to clean up the hazardous wastes, the United States did not pay any compensation for the apprehension caused by the incident. State practice thus reveals that reparation is rarely made nor claimed for non-material injury. For details, see T. Szulc, *The Bombs of Palomares* (New York, Viking Press, 1967); and the facts are reprinted in the *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 108, paras. 523 and 524. Again, in the nuclear test case in Eniwetok Atoll in 1954, the Japanese Government did not demand compensation for non-material injuries: Whiteman, *Digest*, vol. 4, p. 565; *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 108, para. 525.

to other States and their nationals about the laying of mines in its territory. The Court held that, by such grave omission:[51]

> Albania is responsible under international law for the explosions which occurred on October 22nd, 1946, in Albanian waters, and for the damage and loss of human life which resulted from them, and that there is a duty upon Albania to pay compensation to the United Kingdom.

In international damage cases, whether caused by a spacecraft accident, floods resulting from a dam burst, an industrial explosion, or a leakage of chemicals, the damage has to be calculated with a reasonable degree of certainty. In many cases, even if there is no proof of fault on the part of the actor, State, or private entity, the party causing injury is ready to compensate for any loss deriving from such accidents.

The more difficult cases involve damage resulting from nuclear accidents and chemical leakage, as in the case of Bhopal and Chernobyl, where compensation for loss of life and personal injury is complicated by the number of deaths and the lingering effects of exposure to nuclear and chemical contamination, which can last for generations. While causality presents no issue, the question remains as to how far the damages should go. As substantial studies on damage by radioactive contamination show,[52] ascertaining the extent of damage is more a scientific inquiry than a strictly legal question. In the case of radioactive exposure, personal injury can result from massive doses of radiation, or from exposure to significant or even to small amounts of radiation. In the most severe instances of radiation exposure, people suffer immediate damage, with symptoms such as burns or radiation sickness. There is no difficulty in associating the damage with the nuclear cause. In less severe cases, even with a significant amount of exposure, there may be no immediate, visible symptoms of physical injury, and thus it is more difficult to determine the extent of damage. The claims against the US Government for damage from the fall-out from nuclear tests performed decades earlier exemplify the latter scenario.[53] The difficulty lies in how to relate

[51] *Corfu Channel (United Kingdom* v. *Albania)*, ICJ Reports (1949), p. 4, at p. 23.

[52] For a discussion of damage due to radiation exposure, see E. B. Stason, "Tort Liability for Radiation Injuries," *Vanderbilt Law Review*, vol. 12 (1958), p. 93.

[53] The complexity of this case is demonstrated by Paul C. Szasz, "Measuring Liability for Damage Due to Radioactivity," in Daniel B. Magraw (ed.), *International Law and Pollution* (Philadelphia, University of Pennsylvania Press, 1991), p. 175, at pp. 189–190, n. 8: "A district court in Utah recently struggled with the problem of estimating the radiation dosage received by 24 sample plaintiffs (selected from 1,192 in a class action) who alleged that atmospheric testing by the government prior to 1963 had exposed them to large doses of radiation. The judge finally approximated the dose amounts by

the claimed exposure to any particular nuclear incident. The effects can stay with the victim for years and even decades to come, or enter the genetic chain and affect later generations. Modern science has not yet developed a method of accurately predicting the degree of such potential damage.[54]

Under the various treaty provisions, loss of life and physical injury is the primary category of damage. Some treaties ascribe preferential treatment to the payment of compensation for loss of life or personal injury. For example, the 1989 CRTD Convention provides that, if the liability limit for the compensation for loss of life or personal injury is inadequate, the sums ordinarily provided for property damage will be made available for payment of the unpaid balance of such claims.[55] Since most damage will be settled in national courts, to a large extent national law governs the calculation of damages in each case. A similar approach can also be found in the 1952 Convention on Damage Caused by Foreign Aircraft to Third Parties on the Surface,[56] Article 14(b) of which provides:

> [i]f the claims are both in respect of loss of life or personal injury and in respect of damage to property, one half of the total sum distributable shall be appropriated *preferentially* to meet claims in respect of loss of life and personal injury . . .[57]

Property damage

Property damage is a broad term. In making a claim for property damage, the claimant must prove that there is direct causality between the damage and the loss or the reduction in the value of the property.

amalgamating the few exposure estimates the government had made at the time with a single test contemporaneously done in the area by a Utah official, limited film badge data taken from two of the atomic tests, testimony from witnesses who observed events and remembered symptoms, present studies of trace amounts of radioactive residue in the soil, and expert witness testimony that sought retrospectively to project the exposure levels and which the judge termed 'educated guesses'" (cases cited omitted).

[54] *Ibid*., pp. 179–180.

[55] Article 9(3) of the ECE Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail, and Inland Navigation Vessels (Geneva, October 10, 1989), UN Doc. ECE/TRANS/79, UN Sales No. E.90.11.E.39 (1990).

[56] Rome, October 7, 1952, 310 UNTS 181.

[57] Emphasis added. Note that Article 14(a) provides that "if the claims are exclusively in respect of loss of life or personal injury or exclusively in respect of damage to property, such claims shall be reduced in proportion to their respective amounts."

When the loss of property is definite and concrete, it is relatively easy to meet the causality requirement.[58] For example, in the 1956 River Mura case,[59] several Austrian hydroelectric facilities along the Mura River, which flows into Yugoslavia, released accumulated sediments and partially drained their reservoirs as part of an experiment intended to forestall major flooding. Unexpected major pollution of the river resulted, causing damage to the downstream State of Yugoslavia. Soon thereafter Yugoslavia lodged a complaint with Austria, demanding compensation for economic loss incurred by two paper mills and for damage to its fisheries. Eventually, Austria paid monetary compensation and delivered a certain quantity of paper to Yugoslavia by way of settlement.

In the environmental damage cases, business loss, as with many other types of damage claims, is plagued with uncertainties (i.e. the short-term and long-term loss of business, loss of profits, etc.) which could all give rise to disputes, as the criteria for estimation may vary greatly according to the parties and the markets concerned. Prospective profits are always considered to be indirect damage and are therefore not generally recoverable. The rule adopted nearly a century ago by the Nicaraguan Mixed Claims Commission still holds today:[60]

> The Government is not responsible for "*lucro cesante*" (unaccrued or uncollected profits), or indirect damages suffered in business as a consequence of war.

From a policy standpoint, the Commission simply stated that "it is evident that if indemnity were allowed for such losses, no treasury would be rich enough to make payment."[61] In transboundary accident cases, the same policy consideration might also exclude compensation for indirect damages suffered by businesses, given their remoteness and uncertainty. Generally speaking, the causal relationship between the loss or shutdown of a business and a transboundary accident should be proved by the claimant State. The value of lost potential business has to be established at the time the accident occurred.[62] In practice, however, among

[58] In the *Alabama Claims* case between the United States and the United Kingdom mentioned above, the tribunal awarded damages to the United States in respect of damage suffered as a result of the UK's failure to exercise "due diligence": Moore, *International Arbitrations*, vol. I, p. 653.

[59] See Gunther Handl, "State Liability for Accidental Transnational Environmental Damage by Private Persons," *American Journal of International Law*, vol. 74 (1980), p. 525, at pp. 545–546.

[60] Whiteman, *Damages*, vol. III, p. 1783.

[61] *Ibid*., p. 1784.

[62] *Ibid*., pp. 1840 and 1871–1874. "However, the absolute certainty of prospective profits can scarcely ever be established in as much as in all cases they are to be realized *in futuro*. It is the worth of the expectation of future profits, appropriately discounted,

State actors, property damage including damage to natural resources and the environment is, more often than not, recompensed through settlement by negotiation, where equitable principles are applied. The reason is simple: too many uncertainties come into play when determining the scope of such damage.

Again, take the cases discussed previously by way of example. Immediately after the 1976 Seveso disaster, orders for furniture and clothes sold by local merchants were either canceled or large discounts were demanded. When the magnitude and nature of the accident were realized, the local authorities established three zones around the plant. In the most contaminated zone, all agricultural, industrial, and commercial activities were halted. In the settlement, it is not clear how much of the lump sum compensation payment was intended for business loss.[63] After the Sandoz chemical spill on the Rhine in 1986, France presented to the Swiss Government a bill for US$38 million for damage to French interests arising from the spill. The claim was based on the estimate made by an expert commission of short-term damage to the fishing and boating industries; medium-term damage to the ecosystem; and potential damage to dams and other facilities linked to the Rhine, such as the water pumping system. The estimate assumed that no significant pollution of the groundwater aquifer had occurred.[64] The Swiss Government and Sandoz officials expressed willingness to pay compensation, and indeed paid damages to French fishermen and the French Government respectively, but the settlement did not specify to what extent they had accepted responsibility,[65] or whether and to what extent the medium-term damage to the ecosystem and the potential damage to the pumping system were accepted by the Swiss. In the aftermath of the accident, Sandoz set up the "Sandoz Rhine Fund" to help repair ecological damage from the 1986 disaster and announced a donation of US$7.3 million to the World Wildlife Fund for a three-year project to restore the flora and fauna of the Rhine River.

In oil spill cases, the adverse effects of oil pollution on the tourism and fishing industries of coastal States may have equally devastating consequences. In the *Amoco Cadiz* case, the oil pollution brought to a

that is to be considered in cases where an award for the loss of prospective profits is appropriate": *ibid*., p. 1872.

63 Willisch, *State Responsibility*, p. 7.

64 Bureau of National Affairs, *International Environment Reporter: current Report*, vol. 10 (1987), p. 3.

65 "Sandoz Agrees to Meet Claims Over Rhine Pollution," *Financial Times*, November 4, 1986, p. 1, col. 3; "Sandoz Accepts Responsibility for Spill in the Rhine," *San Francisco Chronicle*, November 13, 1986, p. 21.

halt most of the fishing industry, including lobster and oyster farming, along the coastal area affected by the accident. The tourism industry suffered damage of approximately FFr800 million in less than three months.[66]

In the Chernobyl case, in order to minimize the effects of nuclear contamination, many States established a variety of "intervention levels" to prevent human consumption of contaminated foodstuffs. The European Community Commission suspended the import of certain agricultural products originating from Eastern European countries, which had a considerable effect on trade with those countries. The former Soviet Government condemned the action as unnecessary.[67] While reserving the right to claim for compensation from the Soviet Government, the former Federal Republic of Germany and the United Kingdom paid compensation to their respective nationals. Obviously, should claims have been made by these countries to the Soviet Government for compensation, it would be highly unlikely that the Soviet Government would accept them, since it would not have recognized them as damage directly or actually caused by the accident.[68]

In the environmental field, the concept of property damage is undergoing a drastic change in national legal practice, particularly in Western countries. First, property damage is no longer necessarily confined to physical damage of the property in question. It can be an impairment of its economic use or value without any physical damage to the property

[66] Willisch, *State Responsibility*, p. 7.

[67] Philippe Sands, "The Environment, Community and International Law," *Harvard International Law Journal*, vol. 30 (1989), p. 393, at p. 403.

[68] Because of the Soviet Government's refusal to pay any compensation, the Government of the Federal Republic of Germany under the terms of section 38 of the 1985 Atomic Energy Act paid compensation in the following cases:

- cattle were kept from grazing;
- milk had to be transformed into cheese, leaving radioactive whey;
- spring vegetables had to be destroyed or were seized;
- some kinds of fruits were unsaleable, though they were not all contaminated;
- the travel and transport industries specializing in Eastern Europe lost clientele;
- seasonal farm workers lost their jobs;
- import restrictions were imposed;
- sand in playgrounds was replaced;
- open air meetings were canceled;
- recommendations to refrain from eating certain foodstuffs were issued;
- filters of motor cars and of air-conditioning systems were replaced; and
- the changing conduct of customers led to a decline in turnover.

Such a broad range of claims obviously goes beyond the coverage as defined by the Paris and Vienna Conventions.

itself.[69] Secondly, damage to certain aspects of the natural environment to which it is difficult to establish any entitlement or interest (e.g. sea birds) has been recognized as giving rise to a claim in certain circumstances.

For instance, in the *Borcea* case, the Dutch Association for the Protection of Birds instituted an action in the Rotterdam District Court against the owners of the Rumanian bulk carrier *Borcea* for recovery of the costs the Association had incurred in cleaning up and saving sea birds from pollution caused by the leakage of oil from the vessel.[70] After establishing that Dutch law was applicable to the case, the District Court sustained the admissibility of the claim, and stated the following:

> Though sea birds are not related to a specific country and cannot be considered to belong to anybody, their maintenance and protection have to be seen as a general interest which deserves to be protected in The Netherlands according to common opinion nowadays. In view of the objects of the plaintiff and the activities which it has been carrying out for the realization thereof during 90 years, as alleged by the plaintiff and not contested by the defendant, that general interest must also be seen as *the plaintiff's own interest* and in case that interest is affected the plaintiff's claim can be admitted, that is to say not only its claim for stopping that interest from being affected but also its claim for compensation of damage which it sustained for limiting the consequences of that damage.

The Dutch Government, in response to the judgment of the Court, took the view that sea birds can be considered "goods" and that the claim of the Association was "consequential damage" which qualified for compensation as if it were a claim under a liability policy.[71] The position taken by the Dutch Government raises the issue as to what extent natural resources as such can be characterized as "goods" for the purposes of compensation.[72] It should be noted, however, that, even though sea birds

[69] For instance, under the US Oil Pollution Act of 1990, 33 USC s. 2701, loss of earnings from natural resources, and loss of *use* of natural resources are also included in the category of environmental damage. See Colin de la Rue, "Environmental Damage Assessment," in Kroner, *Transnational Environmental Liability*, p. 68.

[70] For more details, see Fred J. Rutgers, "Sea-Bird Protection Under Dutch Tort Law: The Judgment of the Rotterdam District Court of 15 March 1991" in Kroner, *Transnational Environmental Liability*, p. 82.

[71] *Ibid*., p. 84.

[72] To meet the requirements of tort liability under national law, the Court gave a rather broad interpretation to the element of interest. Under Dutch tort law, an action in tort must fall within one of the interests protected by law. This requirement demands that the court examine whether the plaintiff really has a special interest from the point of view of civil law – traditionally the plaintiff must prove property damage or personal injury. *Ibid*.

may be considered "goods," compensation sought by the plaintiff and ordered by the Dutch court here was not for the loss of sea birds but rather the preventive measures taken to preserve the birds, a point discussed in the following section.

On the international level, more recent treaties also recognize environmental damage as a separate category of property damage, distinguished from other property damage and preventive costs. Given the nature of such damage, it is limited to the costs of restoring the environment to normal conditions. For instance, under the 1993 Lugano Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment[73] (the "Lugano Convention"), compensation for the loss or damage by impairment of the environment is limited to the costs of measures of reinstatement actually undertaken or to be undertaken.[74] Compared with earlier treaties, this Convention represents an advancement on more vague definitions of environmental damage.[75]

The costs of preventive measures, response, and reinstatement

In a transboundary accident, preventive measures often include rescue operations and emergency assistance. These response actions are intended to control, mitigate, and prevent damage. In a normal situation, such costs can be easily distinguished from other damages such as property damage. In the pollution cases in particular, however, such costs tend to be blurred with the costs of reinstatement and remediation. It may not be fair to attribute those ambiguous treaty terms on preventive measures and reinstatement entirely to technical failure on the part of the contracting parties, because such actions as clean-up operations may indeed fall within the scope of both terms. Besides, as far as damage is concerned, it may not be useful to distinguish them at all.

In an international context, where damage caused in one country spreads across the border into another country, the provision of rescue operations and emergency assistance, either taken by the injured State

[73] Lugano, June 21, 1993, 32 ILM 1228 (1993); A. Kiss and D. Shelton, *International Environmental Law*, 1994 Supplement (New York, Transnational Publishers, 1994), p. 226.

[74] See Article 2(7)(c) of the Lugano Convention. See also the definition of "damage" in Article 1(10)(c) of the 1989 CRTD.

[75] For instance, the definition of "pollution damage" in the 1969 Civil Liability Convention on Oil Pollution has been criticized for its lack of clarity. Such matters as the reasonableness of clean-up or restoration measures, and the assessment of environmental harm are not clearly defined: see Colin de la Rue, "Environmental Damage Assessment," in Kroner, *Transnational Environmental Liability*, p. 68.

or offered from outside, can complicate the issues. First, the author State cannot undertake unilateral rescue operations in the territory of the injured State without the latter's permission. Under normal circumstances, it is the injured State government which is in the best position to take immediate action to prevent and mitigate damage in its own land. For this reason, the costs of response actions incurred by the injured State are usually included in its claims for compensation from the author State.

In its claim against the former Soviet Union for injuries resulting from the crash of the Soviet nuclear-powered satellite Cosmos 954 in its territory, Canada sought compensation for its search, recovery, removal, testing, and clean-up costs. In its statement of claim, Canada justified its calculations as follows:[76]

> In calculating the compensations claimed, Canada has applied the relevant criteria established by general principles of international law according to which fair compensation is to be paid, by including in its claim *only those costs that are reasonable, proximately caused* by the intrusion of the satellite and deposit of debris and capable of being calculated with a reasonable degree of certainty.

In practice, the injured State tends to take any and all response and remediation actions it deems necessary. However, the author State may not agree with the actions taken, and consequently may reject any associated claims. Furthermore, if the author State offers to assist in preventive actions and the injured State refuses the offer, should the author State nevertheless have an unmitigated obligation to pay compensation, or should this factor be taken into account when compensation is calculated? It is more certain that if the injured State accepts the offer of the author State to mitigate the damage, the compensation would be reduced accordingly. In bilateral relations, the case is sometimes not so clear, due to reasons beyond legal consideration. Assume State A, a nuclear country, has built a huge nuclear power plant near the border of a small non-nuclear country, State B. There is an accidental nuclear meltdown in the plant. As a result, a large area in State B is likely to be contaminated. At the request of State B, State A sends in rescue operations to evacuate the residents and assist in the clean-up. Under such circumstances, it would be unreasonable to allow State B to bear the costs of the rescue, because State A is the injurer and should therefore take responsibility for remedial action. Therefore, under the 1986 Convention on Assistance in the Case of a Nuclear Accident or Radiological

[76] 18 ILM 907 (1978), para. 23 (emphasis added).

Emergency,[77] when the assisting State considers whether to offer assistance without cost to the requesting State, it shall take several factors into account, including the State of origin of the nuclear accident, and the particular needs of developing countries and countries without nuclear facilities.[78]

However, if the injured State invites a third party to help with preventive operations without notification to or the consent of the author State, and agrees to pay for the operations, should the author State reimburse the expenses incurred, or should the expenses be left with the injured State as the author State has no control over the third party's operations? Further, if an offer of assistance from the author State has previously been turned down, can it, based on that fact, refuse to pay compensation for the operations carried out by the third party? After all, if the author State were required to reimburse all claims submitted by the injured State for operations carried out by the third party, this might be tantamount to requiring the author State to issue a blank check.

The issue here is two-fold. On the one hand, whether the injured State requires any outside assistance for response and remediation operations touches on the sovereign rights of the injured State. It is up to the injured State to determine the scope and type of assistance required.[79] On the other hand, although the author State may eventually be requested to bear response and remediation costs, the extent of such costs is entirely at the discretion of the assisting party. Even with the agreement between the injured State and the assisting party on the scope and type of the assistance to be provided, response and remediation actions deemed unnecessary by the author State might be regarded as

[77] Vienna, September 26, 1986, 1457 UNTS 133.

[78] Article 7(1) of the Convention provides:

> An assisting party may offer assistance without costs to the requesting State. When considering whether to offer assistance on such a basis, the assisting party shall take into account: (a) the nature of the nuclear accident or radiological emergency; (b) the place of origin of the nuclear accident or radiological emergency; (c) the needs of developing countries; (d) the particular needs of countries without nuclear facilities; and (e) any other relevant factors.
>
> Nevertheless, it is up to the assisting State to decide whether or not reimbursement should be made pursuant to Article 7(2) and (3). However, in principle, if the assisting State is also the author/injuring State, it will retain responsibility for any damage in accordance with the ordinary rules of State responsibility.

[79] See Article 2(2) of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

excessive costs and therefore unacceptable to it. The 1986 Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency does not directly address the issue. During the negotiation process,[80] the priority consideration of the contracting parties was to establish an effective channel to provide timely assistance to the injured State in an emergency situation. Favorable terms on privileges, immunities, and facilities were laid down to encourage State parties to react positively to any request for assistance.[81] The financial implications of the assistance were spelt out only when there was an agreement between the parties that the assistance would be provided on a reimbursement basis.[82] The assisting party may, however, choose to waive the reimbursement or provide the assistance free of charge. This practical solution indicates that in principle the requesting party should bear the costs of assistance, but acknowledges that the practicalities of the situation may dictate otherwise.

In pollution accidents, one of the major costs is the clean-up and removal cost. The costs of clean-up operations are usually borne by the polluter in practice, but the extent of the operations varies, and sometimes such costs are not treated separately in lump sum compensation.[83] Usually, they are determined by the scale and nature of the damage and the measures taken to prevent damage. In the Eniwetok Atoll case, the United States reportedly spent nearly US$110 million to clean up several

[80] The author participated as a member of the Chinese delegation to both the Governmental Experts Meeting and the Diplomatic Conference, which negotiated and eventually adopted the Convention on Early Notification of a Nuclear Accident (1439 UNTS 275) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1457 UNTS 133) on September 26, 1986, in Vienna.

[81] See Article 8 of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. Some delegates thought, however, that the privileges and immunities granted to the assisting party and its personnel in Article 8(2) and (3) were too broad – in practice they may not encourage the assisting party to be reasonably responsible for its action. Pressed to finish the negotiations on schedule, the States parties finally reached a compromise in the form of paragraph 9 of Article 8, which reads: "When signing, ratifying, accepting, approving or acceding to this Convention, a State may declare that it does not consider itself bound in whole or in part by paragraphs 2 and 3."

[82] Article 7(2) of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

[83] For instance, in the *Juliana* case, a Liberian tanker ran aground and split apart off Niigata, on the west coast of the Japanese island of Honshu. Oil from the tanker washed ashore and extensively damaged local fisheries. The Liberian Government (the flag State) offered 200 million yen to the fishermen for damages without singling out the costs of the clean-up: see *The Times*, London, October 1, 1974; *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), pp. 100–101, para. 479.

of the islands where the nuclear tests took place.[84] Similarly, in the Palomares incident in 1966, when four US nuclear bombs were accidentally dropped in Spanish territory, the first action taken was retrieval of the bombs and removal of the contaminated soil from Spain.[85]

More recent events have involved large-scale pollution accidents, which have arisen frequently from oil spills, nuclear radiation, and chemical leakage. Under several conventions on civil liability, claims in respect of preventive measures taken by the operator or ship owner rank equally with other claims for damage. In other words, the costs of preventive measures taken by the operator or ship owner should be deducted from the amount of his liability. The clean-up costs comprise a major part of the damages. In oil pollution cases, clean-up and removal of crude oil from the sea cost oil companies millions of dollars.[86] Nuclear, chemical, and oil pollution damage is more complicated than other types of damage, because their adverse effects tend to be extensive, lingering, and devastating. As domestic experiences show, environmental standards bear on the costs of clean-up, reminding us of the ongoing tension between the question of how clean an environment we want, and how clean an environment we can afford.

Procedural aspects and problems

Another important aspect of international liability for transboundary damage lies in the procedural rules of law. When transboundary damage is caused by industrial or technical activities of private companies, legal redress through the courts may be the only means available for the victims if the affected States do not take up the matter and settle it at the diplomatic level. One of the reasons some jurists advocate absolute or strict liability for transboundary damage is that by imposing strict liability on the actor it relieves the undue burden on the plaintiff to prove the wrongfulness of the injurer. The burden of proof is, however, not the only barrier facing the plaintiffs in his claim for compensation.

In analyzing the concept of fault liability in international law, one author observed that:[87]

[84] *International Herald Tribune*, June 15, 1982, p. 5, col. 2.
[85] *New York Times*, April 12, 1966, p. 28, col. 3.
[86] *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 101, para. 485.
[87] Karl Zemanek, "Causes and Forms of International Liability," in B. Cheng and E. D. Brown (eds.), *Contemporary Problems of International Law: Essays in Honor of Georg Schwarzenberger on His Eightieth Birthday* (London, Stevens and Sons, 1988), p. 319, at p. 327.

Theoretically, each cause of liability may be combined with each form of liability. In practice, however, domestic legal systems usually require the proof of fault for establishing responsibility for unlawful acts (delicts). That, in turn, requires the existence of appropriate fora in which evidence is examined objectively . . . In the historical survey the role which General Principles of Law played in the development of the traditional law of State responsibility was stressed. Not surprisingly, therefore, fault as the prevailing form of responsibility for delictual acts in domestic laws entered through this device into international law, regardless of the fact that the necessary procedural requirements were missing.

As domestic practice shows, the necessity and importance of proper fora and procedural rules for the determination of liability are beyond question. Between States, when transboundary damage is caused by pollution, foreign victims have to seek redress either in their own courts or in the courts of the author State.[88] In both cases, issues such as sovereign immunity, classification, jurisdiction, applicable law, and the recognition and enforcement of foreign judgments could at various points impede the process of recourse.

Treaty provisions and general rules

As an essential part of the recovery of damages, the existing regimes on civil liability for accidental damage established the procedural rules pertinent to jurisdiction, applicable law, and the recognition and enforcement of foreign judgments. In the Oil Pollution Liability Convention, Article IX provides that the courts of the State where the pollution damage has been suffered or where preventive measures have been taken shall have jurisdiction. After the Fund for compensation is constituted

[88] While many border disputes, such as Bhopal and Chernobyl, could not be settled in court, some scholars are of the view that in respect of transboundary environmental damage, private litigations across borders may be the most effective way to redress the harm. For example, in 1974, residents of a small community near Windsor, Ontario, complained that air emissions from factories located across the Detroit River in the State of Michigan were causing damage to their properties in Canada and possibly injuring their health. Earlier attempts by state, provincial, national, and international authorities had failed to bring about a satisfactory resolution to the problem. Out of frustration, the residents crossed the border and successfully brought a lawsuit against the US polluters. A few years later, the State of Ohio sued a number of polluters in the US federal court for discharging mercury directly into Lake Erie. One polluter was an industry located in Canada, a fact that did not dissuade the US court from ordering a halt to the deleterious activities. The trend can be easily discerned among Western countries. Both cases are cited from Paul R. Muldoon, David A. Scriven and James M. Olson, *Cross Border Litigation: Environmental Rights in the Great Lakes Ecosystem* (Toronto, Carswell, 1986), p. 1. See also Willisch, *State Responsibility*, pp. 18–24.

as prescribed by the Convention, the courts of the State where the Fund is constituted shall be exclusively competent to determine all matters relating to the apportionment and distribution of the Fund. Subject to certain conditions, any judgment delivered by a competent court which is enforceable in the State of origin where it is no longer subject to ordinary forms of review, shall be recognized by and enforced in any contracting State.[89]

In the Paris and Vienna Conventions on civil liability for nuclear damage, jurisdiction over actions for compensation shall lie only with the courts of the contracting party within whose territory the nuclear incident occurred. If the place of incident is outside the territory of any contracting party or cannot be determined with certainty, the courts of the contracting States in whose territory the nuclear installation of the liable operator is located shall have jurisdiction. If the incident happens partly outside the territory of any contracting party, and partly in the territory of a single contracting party, the courts of that party shall have jurisdiction.[90] The nature, form and extent of the compensation, within the limits as fixed by the conventions, as well as the equitable distribution thereof, shall be governed by the national law of the competent court.[91]

In the other conventions on civil liability, jurisdiction is determined by the general rules of private international law on torts. Actions for compensation typically must be brought in the courts of the place where the damage was suffered, the courts of the place where the dangerous activity was conducted, or the courts of the place where the actor who caused the damage has his habitual residence.[92] By treaty provisions, the contracting parties undertake to establish jurisdiction in their national

[89] See Article X of the Oil Pollution Liability Convention. According to Article X(1), the exceptions are "(a) where the judgment was obtained by fraud; or (b) where the defendant was not given reasonable notice and a fair opportunity to present his case." Pursuant to Article X(2), a judgment recognized under Article X(1) is enforceable in each contracting State as soon as the formalities required in that State have been complied with, although such formalities shall not permit the re-opening of the merits of the case.

[90] Article XI of the Vienna Convention; and Article 13 of the Paris Convention.

[91] Article VIII of the Vienna Convention; and Article 11 of the Paris Convention.

[92] Article 19(1) of the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano, June 21, 1993), 32 ILM 1228 (1993); Kiss and Shelton, *International Environmental Law*, p. 223. Article 19 of the CRTD Convention is similar, with the addition of the courts of the place where preventive measures were taken to prevent or minimize damage: Kwiatkowska and Soons, *Basic Documents*, p. 836, at p. 847.

courts and afford recognition and enforcement to judgments rendered by the competent courts of the other contracting parties.[93]

The practice is quite different, however, when there are no treaty obligations on the part of the States concerned. The Bhopal disaster serves as a good illustration. In the light of the unsuccessful litigation for compensation arising from the Bhopal disaster in the US courts, Professor Stephen McCaffrey conducted a detailed analysis of the case from the perspective of private international law.[94]

The first obstacle to obtaining relief in the US courts was the lack of access to information and the problem of evidence. One of Union Carbide's arguments against the US courts as the appropriate forum was that all the evidence with regard to the design, safety standards, and management of the plant were in India.[95] The virtual unavailability of key evidence violated due process[96] requirements under the constitutional law of the United States. The court sustained the argument and referred the case back to the Indian court on the ground of *forum non conveniens*.[97] In most notorious cases of industrial accidents with large-scale damage spreading over the national border of the source State, the true extent of the damage is not easy to clarify without thorough investigation. Confined by territorial limits, the investigation is usually carried out within

[93] Article 23 of the Lugano Convention; and Articles 19(3) and 20 of the CRTD Convention.

[94] Stephen C. McCaffrey, "Expediting the Provision of Compensation to Accident Victims," in Handl and Lutz, *Transferring Hazardous Technologies*, pp. 199–239.

[95] For the details of the arguments on both sides, see Ved P. Nanda and Bruce C. Bailey, "Nature and Scope of the Problem," in Handl and Lutz, *Transferring Hazardous Technologies*, pp. 8–11.

[96] The doctrine of "due process" is unknown to many legal systems. While there are different technicalities in its application, the basic legal elements underlying it are generally shared, for instance, fairness to and proper service on the defendant. For a detailed analysis of the doctrine, see Ronald A. Brand, "Tort Jurisdiction in a Multilateral Convention: The Lessons of the Due Process Clause and the Brussels Convention," *Brooklyn Journal of International Law*, vol. 26 (1998), p. 125.

[97] On the conflict of law approaches in the United States, see Friedrich K. Juenger, *Choice of Law and Multistate Justice* (Dordrecht, Martinus Nijhoff, 1993), pp. 128–150. Practice shows that the US courts tend to exercise quite a discretion in conflict of law cases. As pointed out by Juenger after an exhaustive review of conflicts decisions from all fifty States and the District of Columbia, "the American courts follow, either singly or in combination, a 'center of gravity', 'governmental interests', 'comparative impairment', 'most significant relationship', 'better law', 'principles of preference', 'functional', 'lex fori', or 'traditional vested rights' approach to choice-of-law questions": *ibid*., p. 140. One of the obvious reasons for the New York court to refer the Bhopal case back to India is that damages compensable under US law are much higher than that under Indian law.

the national boundaries. Even with advanced telecommunications, access to information and to the results of accident investigations may not always be available to the foreign victims.

In practice, the reasons for the lack of access to such information can vary. The general political relations (and therefore cooperation) between the two countries is the primary factor.[98] Further, if the accident involves information that the source State deems inappropriate to disclose, it could block access on the grounds of, for example, national security, industrial secrecy, or public order. Also, if substantial economic stakes are involved, the source State could use onerous procedural requirements to effectively prevent any actions from being taken by foreign nationals, as was the case with the Bhopal disaster. Therefore, unless these practical barriers are removed, it would be impossible even to begin proceedings in foreign courts.

Additionally, the victims must become familiar with the legal system of the source State before they can make an assessment of the viability of initiating action in the foreign court. It may be preferable simply to refer the case to their government to make representations to the source State on their behalf for compensation. Even if they eventually decide to start the legal process in the source State, they still face practical difficulties. For instance, they must find legal counsel who is familiar with the law of the source State and who can best render them the necessary legal assistance, and, furthermore, they must be able to afford such services both in time and money. Again, these are examples of the practical difficulties the Indian nationals encountered in the Bhopal case.[99]

Jurisdiction is another common problem in seeking recourse for transboundary damage. The doctrine of sovereign immunity, the principle that a sovereign State should not be impleaded in the courts of another sovereign State against its will, is long-established in international law. Although under the restrictive theory of sovereign immunity upheld

[98] The political relations between the two relevant countries have a direct bearing on access to courts in the source State. In the US, one authority noted: "So long as the alien is the citizen of a country with which the United States is not at war, his right to sue in all federal and State courts in the United States on common law causes of action is assured": see Muldoon *et al*., *Cross Border Litigation*, p. 33. In theory, the right to sue is one thing; in practice, for the victim to get access to the foreign court is another. For instance, a foreign national from a country deemed hostile by the source State may not be able to obtain a visa to enter the country in the first place.

[99] In the Bhopal case, a mere eighteen months of litigation cost US$25 million in legal fees. See McCaffrey, "Expediting the Provision of Compensation to Accident Victims," in Handl and Lutz, *Transferring Hazardous Technologies*, pp. 204–206.

by some Western countries[100] a government's commercial activities no longer enjoy judicial immunity, governmental non-commercial activities and military activities still enjoy sovereign immunity, and accordingly no private action may be taken against the State in respect of these activities. Therefore, in the existing treaties on international liability, the contracting parties either expressly waive such a defence or undertake to pay compensation under the treaty without admitting liability.

In a transboundary damage case, where the accident takes place in one country but its adverse effects are suffered in another country, the normal problem of tort jurisdiction also exists. Under the rules of private international law, the courts of the place where the harmful event occurs – the *locus delicti* (*commissi*) – should have jurisdiction. However, in a transboundary situation, where the incident causing damage might take place in one country and the harmful effects be felt in another country, the place of the commission of the injurious act is not certain.[101] In *Handelskwekerij GJ Bier BV* v. *Mines de Potasse d'Alsace SA*,[102] a Dutch horticultural business (Bier) and the Reinwater Foundation sued a French defendant in the court of first instance at Rotterdam. The claim alleged that the French concern had polluted the waters of the Rhine by the discharge of saline waste from its operations in France, consequently damaging the plaintiff's business, which relied on irrigation from the river, and forcing expensive measures to prevent further damage. The Rotterdam court held that under Article 5(3) of the EC Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters (the "Brussels Convention"),[103] the claim did not come within its jurisdiction, but within the jurisdiction of the French court which was the court of the place where the relevant discharge took place.

[100] See, for example, the 1976 US Foreign Sovereign Immunities Act, 15 ILM 1388 (1976); the 1978 UK State Immunity Act, 17 ILM 1123 (1978) and its counterparts in Pakistan (1981), South Africa (1981), and Singapore (1979); the 1985 Australian Foreign States Immunities Act, 25 ILM 715 (1986); and the 1982 Canadian State Immunity Act, 21 ILM 798 (1982).

[101] For a comparative study of the jurisdiction of the courts as between the US and Mexico in a transboundary pollution damage case, see Stephen C. McCaffrey, *Pollution Suits Between Citizens of the Republic of Mexico and the United States: A Study in Private International Law* (Karlsruhe, Müller, 1976), pp. 8–20.

[102] Case 21/76, [1976] ECR 1735.

[103] European Communities Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters (Brussels, September 27, 1968); OJ C189/2, July 28, 1990; consolidated and updated version of the 1968 Convention and the Protocol of 1971, following the 1989 accession of Spain and Portugal, reprinted in 29 ILM 1413 (1990).

Bier and Reinwater appealed to the *Gerechtshof* in The Hague, which subsequently referred the following question to the European Court of Justice:[104]

> Are the words "the place where the harmful event occurred," appearing in the text of Article 5(3) of the [Brussels Convention] . . . to be understood as meaning "the place where the damage occurred (the place where the damage took place or became apparent)" or rather "the place where the event having the damage as its sequel occurred (the place where the act was or was not performed)"?

The European Court of Justice, in interpreting Article 5(3) of the Brussels Convention, held that:[105]

> the defendant may be sued, at the option of the plaintiff, either in the courts for the place where the damage occurred or in the courts for the place of the event which gives rise to and is at the origin of that damage.

This interpretation was apparently rather broad.[106] Even among European countries, where unification of private laws is relatively advanced, jurisdiction over transboundary damage cases can nevertheless be problematic.[107]

If the judgment rendered cannot be enforced in the place where the court is situated, perhaps because the defendant has no assets in the jurisdiction, the plaintiff must go to another contracting State to have the judgment enforced. The contracting parties are obliged to enforce any judgment rendered by the courts of other contracting parties under the terms of the relevant treaties. Without proper treaty arrangements between the States involved, however, the requested State may refuse to give legal effect to foreign judgments under its national laws and legal practice,[108] or may require reciprocity from the requesting State.[109] Or it may decline the request on the ground of public

[104] [1976] ECR 1735, at p. 1745. [105] *Ibid*., p. 1749.

[106] The Dutch Government asserted that, by the application of the choice of law analysis, the State which has the "most significant connection" with the harmful event should have jurisdiction. This position, however, did not meet with the approval of Advocate General Caportorti: *ibid*., p. 1755. The Court held that the only relevant connecting factors were "the place of the event giving rise to the damage, or the place where the damage occurred": *ibid*, p. 1746.

[107] For an analysis of the subject, see Willisch, *State Responsibility*, pp. 21–22.

[108] See generally D. McClean, *International Judicial Assistance* (Oxford, Clarendon Press, 1992).

[109] The national laws and practice on the recognition and enforcement of foreign judgments vary from one legal system to another. Some require a treaty basis while others exercise comity subject to certain procedural requirements, e.g. proper service on the defendant, proper jurisdiction, etc.

policy,[110] for example, rejecting non-compensatory and excessive damages as awarded by foreign courts.[111] On the whole, the treatment afforded by most States to foreign judgments is less favorable than that afforded to judgments of their own courts.

These procedural issues are of great importance. They often stand as effective barriers to the victims of the injured State in seeking recourse in the courts of the source State. When States are inclined to take more care of their rights than their obligations, these barriers can be used as legitimate grounds for rejecting claims for compensation by foreign victims. At a time when transboundary damage claims are few and far between, States may not feel the need to strengthen cooperation in this respect. But experiences in the industrial world demonstrate that, in the case of a transboundary disaster, when no single State's interests can be effectively protected without the co-operation of all other States, it becomes necessary to take common action and adopt uniform rules.

The principles of non-discrimination

The doctrine of territorial sovereignty is not merely a theoretical issue, but is practically embedded in the legal system of every nation. Aside

[110] For example, the US Uniform Foreign Money-Judgments Recognition Act of 1962 sets out certain conditions for recognition and enforcement. It requires that foreign judgments were rendered in a legal system providing impartial tribunals or procedures compatible with the requirements of due process. The foreign court must have jurisdiction over the person of the defendant and the subject-matter of the action. The judgment need not be recognized if, *inter alia*, it was obtained by fraud, or violates the public order of the forum in which recognition is sought. See section 4 of the Act, 13 ULA (master edn., 1975).

[111] If multiple damages are awarded and a request is made to enforce such a judgment in a country where non-compensatory damages and multiple damages are ordinarily not recoverable, the court of the requesting State may rule that such a judgment is not enforceable. In this respect, the US tendency to award huge amounts of damages in tort cases is exceptional, constituting one of the motivations for the plaintiffs' choice of the US as the forum in the Bhopal litigation. According to Schwartz, the US's "triple combination of ignoring the fact that the plaintiff has already been compensated by another source (the collateral source rule); damages for non-economic losses and awards for pain and suffering that are often nine to 10 times the value of economic losses; and damages that go beyond anything related to loss but focus solely on the wrongfulness of defendant's conduct (punitive damages) are regarded with awe and occasional amazement by foreign lawyers": see McCaffrey, "Expediting the Provision of Compensation to Accident Victims," in Handl and Lutz, *Transferring Hazardous Technologies*, p. 218, quoting Schwartz, "India Sues Union Carbide with Unique Complaint", *Legal Times*, 6 May 1985, p. 25, col. 1.

from the development of unified international rules to cope with these practical matters, one response to the existing problems has been for each State to provide equal access to foreign nationals to seek redress in its courts. The principle of non-discrimination and equal access has been adopted by some international instruments on transfrontier pollution.[112] The principle requires a country to give the same consideration to the impact that its pollution may have on other countries as it gives to the impact of pollution within its own borders. It obliges a country to apply the same rules and the same measures of compensation to persons injured outside its country as those available to persons injured within its territory.[113] This principle is gaining popularity in the environmental field.

In theory, the principle of non-discrimination denotes equal access of both foreign and national complainants to legal recourse. In practice, it has been tested to some extent in certain regions with positive results,[114] for example, between the North American States. The practice, however, has very little impact outside industrial areas. In a comprehensive study on cross-border litigation in the Great Lakes ecosystem done by the Canadian Environmental Law Research Foundation,[115] there were instances where cross-border litigation brought about faster and more efficient solutions to pollution problems caused by the neighboring country than administrative intervention. Given the geographical and hydrological conditions of the Great Lakes and the pollution problems experienced in the riparian States – the United States and Canada – the notion of equality of litigious rights has practical appeal. The success of some cross-border litigation in the Great Lakes area has prompted the local legal community to develop a legal mechanism that will, it is hoped, overcome national barriers to the remedial process. The Canadian side proposed that by the principle of non-discrimination every person *within the ecosystem* shall have equal rights to litigate in any of the judicial or administrative systems or jurisdictions within the ecosystem; that every person therein shall have equal rights to relief as a resident within the jurisdiction where the proceeding was commenced and may equally enforce those rights in that jurisdiction; and that each resident of the

[112] In accordance with Principle 22 of the Stockholm Declaration on the Human Environment, the OECD adopted the guiding principles on transfrontier pollution, from which two concepts were advocated: non-discrimination and equal access. See Recommendation of the Council on Principles Concerning Transfrontier Pollution, Annex para. 4, Doc. C (74) 224, reprinted in 14 ILM 242 (1975).

[113] Muldoon *et al.*, *Cross Border Litigation*, pp. 15–16. [114] *Ibid.* [115] *Ibid.*

ecosystem will have equal benefit of the law, *irrespective of citizenship* or residence requirements to the contrary, and the opportunity to pursue those rights to the same extent as residents within the jurisdiction.[116] It should be admitted that the Canadian argument is not unique. As State practice shows, there is a growing impetus towards the integration of various national systems in certain regions, the best example being the European Community. However, as the principle requires precise limits in order to ascertain what is meant by non-discrimination and how far this equality should extend, its general application to transboundary damage cases remains questionable. In pursuing an ecosystem-based approach to jurisdiction, the principle of non-discrimination touches on two basic issues of international law: nationality and territoriality. The first concerns the national linkage or identity of a person, natural or legal, with a State. The second pertains to the circumscription of national sovereignty. Within the national context, the law is built on a philosophy of equal treatment of all persons, but such equal treatment does not extend to foreign nationals unless otherwise specifically consented to by States either under treaties or by reciprocity.[117] There is no general rule of international law that requires a State to grant national treatment to all foreign nationals, regardless of their legal status in the territory. Damage recovery is not a matter merely concerning judicial justice, but an economic issue requiring resource allocation. When allocation of resources is based on a national economy, national interests in the protection of nationals tend to prevail over foreign interests. This is not a moral issue, but a position determined by the nature of the responsibility that a government owes to its people. Therefore, in most parts of the world today, reciprocity rather than non-discrimination appears to have achieved greater acceptance by States. Non-discrimination

[116] On the notion of equality of litigious rights proposed by the study, see Muldoon *et al.*, *Cross Border Litigation*, p. 19.

[117] On the standard of treatment of foreign nationals, some early treaty provisions did make it clear that there should be no discrimination on that basis. For example, in the Paris Convention, Article 14 reads:

> a. This Convention shall be applied without any discrimination based upon nationality, domicile, or residence.
>
> b. "National law" and "national legislation" mean the national law or the national legislation of the court having jurisdiction under this Convention over claims arising out of a nuclear incident, and that law or legislation shall apply to all matters both substantive and procedural not specifically governed by this Convention.
>
> c. That law and legislation shall be applied without any discrimination based upon nationality, domicile, or residence.

can be meaningful only in the sense of mutual benefits among States. It is not an absolute principle but subject to the condition of reciprocity.

If ecosystem boundaries are to serve as the basis for jurisdiction, in virtual disregard of national boundaries, there should first be a unified mechanism of administration over the ecosystem as a whole, whereby common standards for the protection of the resources can be established. Although it may be right to say that a State should afford due consideration to the interests of other States which might be adversely affected by its own activities, this does not imply that such activities should also be subject to the jurisdiction and control of the other States. Even within an ecological system, where each and every portion of the resources is physically interrelated, national boundaries cannot simply be overlooked, since different political, economic, and social systems exist within them. It is only when divergent interests of these States meet that calls for joint efforts to protect their shared resources, and the principle of non-discrimination can come into play as a basis for cooperation. Therefore, the principle of non-discrimination recognizes the legal barriers to remedies in international litigation, but does not suffice to address the issues raised.

In conclusion, reflecting upon the Bhopal disaster and the legal problems with the compensation process, various alternative approaches to dealing with the massive damage caused by industrial accidents have been suggested.[118] Between States, international liability is usually not a simple matter of recourse to damages, but more often a process of dispute settlement, where individual rights of the victims, as well as national interests, must be accommodated. The bottom line in formulating the rules is often a balance of interests identified with the particular activity. So far, in dealing with ultra-hazardous activities, the existing regimes have demonstrated a few common features that will be likely to affect the future legal actions in this regard:

1. By proper channeling, strict liability is imposed on the operator, with certain exculpating conditions. Thus there is a presumption of fault, and the burden of proof is shifted to the defendant. Unless he proves that the damage was caused by the plaintiff or a third party, or by *force majeure*, the operator will be liable.
2. Strict but limited liability is sustained by financial security. The level of liability dictates the stringency of the rules. The dilemma between

[118] McCaffrey, "Expediting the Provision of Compensation to Accident Victims," in Handl and Lutz, *Transferring Hazardous Technologies*, pp. 219–239.

limited insurability and unlimited liability that States will constantly face reflects the financial restraints on the political desire for full recovery.

3. Liability is generally channeled to the industry participant to be most effectively controlled, although upon a balance of interests the liability may be shared across the industry through the use of a fund mechanism.
4. Procedural rules on jurisdiction, applicable law, and the recognition and enforcement of foreign judgments are generally laid down in advance so as to ensure expeditious provision of compensation.

Apart from the above features, these regimes arise in different forms: State liability, civil liability with residual State responsibility, and civil liability only. The ways in which compensation may be obtained vary under the treaty provisions: diplomatic channels, third party settlement, and national courts.

The current state of the law indicates that the existing international liability regimes are still insufficient to meet the growing need for environmental protection and public security against sudden occurrence of transboundary damage arising from ultra-hazardous activities. Important as they are in the industrial process, both historically and contemporarily, these regimes based on international treaties have proved to be only part of the solution to such transboundary damage problems, as they are limited both in scope and in term. While general rules of State responsibility and international liability are relevant, the nature of liability rules, substantive and procedural, requires further thought and reflection.

PART II • NON-ACCIDENTAL DAMAGE

4 Liability for non-accidental damage

More common and yet more troublesome legal issues of international liability for transboundary damage arise from normal industrial and technical activities, generally characterized as chronic transfrontier pollution via air, water, or land use. In contrast to the types of damage studied in Part I, the type of damage considered in this part is usually caused by deliberate, occasional, or cumulative acts with harmful effects. This type of damage is conveniently referred to as non-accidental damage.

Before embarking on an analysis of the substantive rules and principles of international liability, this chapter will begin with the factual background to non-accidental damage cases, which will be divided into three parts: air pollution, water damage, and damage from land use. For the most part, cases from the two major industrial regions – North America and Western Europe – will be chosen for examination.

Emanating primarily from the normal uses of natural resources shared among States, the matter of transboundary damage is in the final analysis about balancing interests between the relevant States. In such cases, the traditional doctrine of sovereignty has played a fundamental role in maintaining the normal order of State relations. The notion of shared resources, the doctrine of due diligence, and the concept of significant damage, all of which have evolved along with the doctrine, have been increasingly adopted in various legal instruments as guidelines for the contemporaneous use of natural resources by more than one State. This indicates a general trend toward international standards for the management of natural resources and protection of the environment. The second section of this chapter will take these notions as the starting point for an inquiry into the current state of the law on international liability.

Apart from a few resounding principles enunciated by international courts and arbitral tribunals, State practice in this area for a long time remained fragmentary and inconsistent, largely determined by bilateral relations or regional practice. In recent years, changes have occurred, with the result that the environmental field has become one of the most dynamic areas of international law development. Such duties as assessment of harm, notification, consultation, and cooperation have been increasingly regulated by specific treaty provisions governing the activities that may give rise to transboundary damage, thus giving a certain precision and objectivity to the rules of prevention. And yet, these duties are primarily concerned with procedural measures to prevent damage, and failure to observe any of these duties does not necessarily entail liability for damage subsequently occurring, in particular through no fault of the source State. These procedural duties which impinge on the exercise of sovereignty over natural resources have enormous practical ramifications for national economic and social development. The extent to which States will accept them as international standards of conduct for activities that are primarily carried out within their national boundaries depends not only on their environmental consciousness and political will, but also, more importantly, on the pattern of economic and social development they pursue. Chapter 5 will explore the impact of these procedural duties on the rules of prevention and international liability for transboundary damage. When the pace of national legal development of environmental standards varies, one may wonder where the meeting ground would be at the international level. Developed countries have learned a difficult lesson on the relationship between environment and development. Whether the process of industrialization in developing countries must experience the same "growing pains" is a difficult question. As with the industrialized nations, transboundary damage is likely to occur from time to time in the developing States.

The factual setting

Non-accidental transboundary damage manifests itself in various forms and through diverse sources. Normally it takes the form of pollution to air, water resources, or land.

Air pollution

Air pollution exists side by side with industrial development. In the early days of industrial development, it was rarely an issue at the inter-State

level. However, one very prominent early case brought the issue to the fore – the *Trail Smelter* arbitration between the US and Canada.[1]

The case concerned transboundary pollution caused by industrial fumes from a Canadian smelter located near the international boundary with the United States. The problem persisted for about thirteen years from 1928 to 1941. At a place called Trail in British Columbia, the Columbia River, which has its source in Canada, flowed past a smelter located in a gorge. Zinc and lead were smelted in large quantities at the smelter. From Trail, the course of the river was easterly and then it curved southwards and crossed the international boundary. The distance from Trail to the boundary line is about seven miles in a straight line or eleven miles along the course of the river. Automatic sulphur dioxide recorders had been installed at various intervals along the river by both the Canadian and the US governments. In addition to intermittent smelting and mining operations in the area immediately south of the boundary line along the river, known as Stevens County, the region was noted for its lumber industry and farming. The Trail Smelter began operation in 1896 under US auspices but was later acquired by the Consolidated Mining and Smelting Company of Canada Ltd. and eventually became one of the largest and best-equipped smelting plants on the continent.

Increased production resulted in more sulphur dioxide fumes in higher concentrations being emitted into the air. By 1930, about 300 to 350 tons of sulphur were being emitted daily. Damage occurred in the State of Washington from 1925 to the end of 1931, resulting from the sulphur dioxide emitted from the Trail Smelter. Initially, various complaints were made by farmers in the northern part of Stevens County which were settled. Subsequently the US Government intervened through diplomatic channels. In 1928, the two governments agreed to refer the matter to the International Joint Commission, which had been set up under a 1909 Convention between the US and Canada.[2] Pursuant to Article IX of the 1909 Convention:[3]

[1] *United States* v. *Canada*, RIAA, vol. III (1938, 1941), p. 1905. It is interesting to note that, at the time of the case, Canada did not consider it a dispute between the two countries but merely a case of civil liability. Prime Minister R. B. Bennett expressed the view: "This is not a dispute between the two Governments, and it does not come within any of the ordinary well-known categories of international arbitration . . . *I have pointed out that it would have been open to the Canadian Government to disclaim international responsibility*." See the letter of November 17, 1934 to the United States Under-Secretary of State, W. Phillips, in *Foreign Relations of the United States* (1934), vol. I, p. 958, at p. 961 (emphasis added).

[2] Treaty Relating to Boundary Waters and Questions Arising Along the Boundary Between the US and Canada (Washington, January 11, 1909), TS No. 548.

[3] RIAA, vol. III (1938, 1941), p. 1905, at p. 1918.

any other question or matters of difference arising between them involving the rights, obligations or interests of either in relation to the other, or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada shall be referred from time to time to the International Joint Commission for examination and report... Such reports shall not be regarded as decisions of the question or matters so submitted either on the facts or on the law, and shall not, in any way, have the character of an arbitral award.

Five questions were presented to the Commission on the matter, among which were the extent of damage caused in the State of Washington by the smelter and the amount of indemnity which would compensate US interests for past damage. In 1931, the Commission issued its report to the relevant authorities, stating that serious damage was caused in the territory of the US and the indemnity Canada should pay to compensate US interests was US$350,000.

Pursuant to the Commission's recommendations, the Canadian company, with the intention of reducing the sulphur content in the smoke emissions, constructed a series of installations. Consequently, the output of sulphur was reduced to one-third of 1930 levels. However, sulphur emissions began to rise again immediately thereafter. In 1933, dissatisfied with the continuing damage, the US renewed the negotiations with Canada, which led to the conclusion of the 1935 Convention for the Settlement of Difficulties Arising from Operation of Smelter at Trail, BC (the "1935 Convention").[4] Under the 1935 Convention, the Canadian Government was required to pay to the US the sum of US$350,000 for damage occurring prior to January 1, 1932, echoing the recommendation of the International Joint Commission.[5] A tribunal was established,[6] and was requested to determine the following questions:[7]

1. Whether damage caused by the Trail Smelter in the State of Washington has occurred since the first day of January, 1932, and, if so, what indemnity should be paid therefor?

2. In the event of the answer to the first part of the preceding Question being in the affirmative, whether the Trail Smelter should be required to refrain from causing damage in the State of Washington in the future and, if so, to what extent?

3. In the light of the answer to the preceding Question, what measures or regime, if any, should be adopted or maintained by the Trail Smelter?

4. What indemnity or compensation, if any, should be paid on account of any decision or decisions rendered by the Tribunal pursuant to the next two preceding Questions?

[4] *Ibid.*, p. 1907. [5] Article I of the 1935 Convention.
[6] *Ibid.*, Article II. [7] *Ibid.*, Article III.

In the course of the proceedings, a large amount of evidence from data records produced by the automatic sulphur dioxide recorders, scientific experiments, and expert studies conducted by both sides was introduced to prove the damaging effects of sulphur dioxide fumes in the territory of the US. The Tribunal opined that "the gases emerging from the stacks of the Trail Smelter find their way into the upper air currents, and are carried by these currents in a fairly continuous stream down the valley so long as the prevailing wind at that level is in that direction."[8] On the basis of scientific evidence, the Tribunal held that "the velocity and persistence of the upper air currents is greater than that of the surface winds" and that the fumigations which occurred at various points along the valley were caused by this upper air stream mixing with the surface atmosphere.[9] After a rather detailed technical analysis of the meteorological conditions, the Tribunal concluded that they had a bearing both upon the cause and degree of damage, as well as the area of probable damage.[10]

In the first decision, reported on April 16, 1938, the Tribunal held that damage was caused by the Trail Smelter in the State of Washington between 1932 and 1937. Canada was to indemnify the US in the amount of US$78,000.[11] Canada paid this amount and the US accepted it without reservation.[12] Concerned that the information available did not enable it to determine a permanent regime for the operation of the Trail Smelter, the Tribunal decided to extend the period for a final decision until late in 1940 so as to allow three growing seasons for testing a temporary regime and for further scientific investigation.[13]

In its final decision, delivered on March 11, 1941,[14] the Tribunal affirmed the previous decision and prescribed a permanent regime to be established in order to prevent any damage of a material nature occurring in the territory of the US in the future.[15] In the event of any possible damage, nevertheless, it decided that indemnity as well as reasonable costs of investigation of up to US$7,500 in any one year should be paid to the US.[16]

[8] RIAA, vol. III (1938, 1941), p. 1905, at p. 1923.

[9] *Ibid.* The Tribunal further stated that this mixing followed well-recognized meteorological laws and was controlled mainly by two factors of major importance, namely, "(a) differences in temperature between the air near the surface and that at higher levels – in other words, the temperature gradient of the atmosphere of the region; and (b) differences in the velocity of the upper air currents and of those near the ground": *ibid.*

[10] *Ibid.*, p. 1924. [11] *Ibid.*, p. 1933. [12] *Ibid.*, p. 1949. [13] *Ibid.*, p. 1934–1937.

[14] *Ibid.*, p. 1938. [15] *Ibid.*, p. 1966–1980. [16] *Ibid.*, p. 1980.

On the question of whether the Trail Smelter should be required to refrain from causing future damage in the State of Washington, the Tribunal, on the basis of the applicable law, in accordance with the 1935 Convention,[17] expressed the following opinion, which is widely cited in the environmental field today:[18]

> under the principles of international law, as well as of the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.

For about seven years, both sides invested a great deal of effort to solve the matter and establish a mutually acceptable regime. It was one of the few cases where such thorough investigation and research of transboundary pollution damage was conducted with the close cooperation of both sides. The *Trail Smelter* arbitration remains one of the early cases frequently cited in support of the proposition that States are obliged under general principles of international law to compensate other countries for damage arising from air pollution caused by their activities.

More recently, air pollution has become a common issue between neighboring States.[19] At one time, so-called "acid rain" was a serious and contentious problem for most industrial areas. In the US and Canada, for instance, in the early 1980s, it was reported that 31 million tons of sulphur dioxide (26 million tons from the US and 2 million tons from Canada, the rest unidentifiable) and 24 million tons of nitrogen oxides (22 million tons from the US and 2 million tons from Canada) were released into the atmosphere each year. The resulting acid rain caused

[17] Article IV of the 1935 Convention reads: "The Tribunal shall apply the law and practice followed in dealing with cognate questions in the United States of America as well as international law and practice, and shall give consideration to the desire of the high contracting parties to reach a solution just to all parties concerned."

[18] RIAA, vol. III (1938, 1941), p. 1905, at p. 1965.

[19] For a study on issues of State responsibility arising from air pollution, see P. N. Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (Oxford, Oxford University Press, 2000). For a study on the border legal issues, including those associated with environmental problems in the industrial world, see S. Ercmann (ed.), *Transatlantic Colloquy on Cross-Border Relations: European and North American Perspectives* (Zurich, Schulthess Polygraphischer Verlag, 1987); Guillermo H. Davila, "Air Pollution Control on the United States–Mexico Border: International Considerations," in Albert E. Utton (ed.), *Pollution and International Boundaries: United States–Mexican Environmental Problems* (Albuquerque, University of New Mexico Press, 1973), p. 66; Stephen C. McCaffrey, "Transboundary Environmental Relations Between Mexico and the United States" in Ercmann, *Transatlantic Colloquy*.

serious damage to water resources in several provinces in Canada, traveling across the border and falling into the lakes and rivers.[20]

The problem was equally serious in Europe in the 1960s and 1970s, and led to the conclusion of the 1979 ECE Convention on Long-Range Transboundary Air Pollution,[21] subsequently supplemented by the 1998 Aarhus Protocol on Persistent Organic Pollutants.[22]

Pollution of water resources

Regarded as the "life-blood of the environment,"[23] water is a vital resource. By its nature, it knows no boundaries and yet political frontiers separate it into different legal fractions. This juxtaposition of the two realities – physical unity and political demarcation by sovereignty – gave rise to numerous international disputes. For example, to build a dam for irrigation and hydroelectric purposes in a downstream State may cause flooding in an upstream State. Likewise, natural erosion occurring in an upstream State may cause damage to channels, dams, and port installations in a downstream State. Groundwater located below the territories of different States is more problematic, because water tables lie at

[20] See Charles B. Bourne, "Protecting the Environment: Fresh Water Resources," in Edward McWhinney, Douglas Ross, Grigory Tunkin, and Vladlen Vereshchetin (eds.), *From Coexistence to Cooperation* (Dordrecht, Martinus Nijhoff, 1991), p. 128, at p. 130.

[21] 18 ILM 1442, Henkin *et al.*, *Basic Documents*, p. 713. See further Lother Gündling, "Multilateral Co-operation of States under the ECE Convention on Long-Range Transboundary Air Pollution," in C. Flinterman, B. Kwiatkowska and J. G. Lammers (eds.), *Transboundary Air Pollution: International Legal Aspects of the Co-operation of States* (Dordrecht, Martinus Nijhoff, 1986), p. 19.

[22] 1998 Aarhus Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants (POPs), 37 ILM 505 (1998). The Protocol deals with toxic organic substances which are persistent, bioaccumulative, and prone to long-range transboundary atmospheric transport and deposition and are likely to cause adverse human health or environmental effects: Article 1(7). See further K. Hillman, "International Control of Persistent Organic Pollutants: The UN Economic Commission for Europe Convention on Long-Range Transboundary Air Pollution, and Beyond," *Review of European Community and International Environmental Law*, vol. 8, No. 2 (1999), p. 105.

[23] Charles B. Bourne, "Protecting the Environment: Fresh Water Resources," in Edward McWhinney, Douglas Ross, Grigory Tunkin, and Vladlen Vereshchetin (eds.), *From Coexistence to Cooperation* (Dordrecht, Martinus Nijhoff, 1991), at p. 128, cited from "Water 2020, Sustainable Use for Water in the 21st Century" (Science Council of Canada Report 40, June 1988). To give a sense of the limited supply of usable fresh water, Professor Bourne presented an interesting group of figures. The volume of the earth's water supply is said to be some 326 million cubic miles. Of this amount, 97.5 percent is salt water and 2.5 percent is fresh water (8 million cubic miles). And of this fresh water, 0.4 percent is on the surface, 12.3 percent is underground and 87.3 percent is in the polar ice caps and in glaciers.

different depths and may also extend in a way that is not symmetrical to the political demarcation line.[24]

In the more recent practice of States, pollution damage to water resources by the dumping of industrial wastes and sewage constitutes a major form of environmental damage to international waters. The fresh water problem has a global dimension: a shortage of fresh water is prevalent everywhere, and water pollution is common in most actively used rivers. Nevertheless, the problems with each watercourse are primarily dealt with on a local basis among the riparian States concerned. However, compared with air pollution cases, there is a much richer source of State practice pertinent to international disputes over shared water resources.

One of the oft-cited cases with regard to the use of international watercourses is the *Lake Lanoux* arbitration.[25] Lake Lanoux is situated in France on the southern slopes of the Pyrenees. It is fed by streams, all of which have their source in French territory and traverse only that territory. The lake waters flow out through a single stream, which is one of the sources of the Carol River. The latter crosses the Spanish border 25 kilometers from Lake Lanoux and continues its course through Spain for about six kilometers before joining the Sègre River, which in turn flows into the Ebro. France and Spain delimited their frontier in three treaties of 1856, 1862, and 1866. These three treaties were completed by the Additional Act of May 26, 1866 which regulated the control and enjoyment of waters of common use. In 1950, Electricité de France applied to the French Ministry for Industry for permission to divert the waters of Lake Lanoux to the River Ariege. All of the water thus diverted would then be returned by means of a tunnel connecting the Rivers Ariege and Carol. Upon the objection of Spain, and after protracted negotiations between the two governments, the matter was submitted to arbitration. The Tribunal was faced with the following questions:[26]

(A) Do the works for utilizing the waters of Lake Lanoux in the conditions laid down in the French scheme and proposals mentioned in the Preamble of the *Compromis* constitute an infringement of the rights of Spain recognized by the principal provisions of the Treaty of Bayonne of May 26, 1866, and the Additional Act of the same date?

[24] For example, ground water is a serious problem between the US and Mexico. The State of New Mexico has a law prohibiting the export of ground water outside the State, but the water extends to Mexico, which certainly has an interest in it: James T. Peach, "Some Comments on the Current Status of US–Mexican Cross-Border Relations," in Ercmann, *Transatlantic Colloquy*, p. 80.

[25] 24 ILR (1957), p. 101. [26] *Ibid.*, p. 121.

(B) If the reply to the preceding question be negative, does the execution of the said works constitute an infringement of the provisions of the Treaty of Bayonne of May 26, 1866, and of the Additional Act of the same date, because those provisions would in any event make such execution subject to a prior agreement between the two Governments or because other rules of Article II of the Additional Act concerning dealings between the two Governments have not been observed?

In 1957, the Tribunal rendered its award, sustaining the French position. It said that, as the public works envisaged in the French scheme were wholly situated in France, the most important part, if not the whole, of the effects of such work would be felt in French territory.[27] The Tribunal continued: "Territorial sovereignty plays the part of a presumption. It must bend before all international obligations, whatever their origin, but only before such obligations."[28] In determining the obligations on the part of France, the Tribunal stated that the Spanish argument was twofold, relating, on the one hand, to the prohibition, in the absence of agreement, of compensation between two basins, each constituting "a unit," despite the equivalence between the amount of water diverted and the amount restored; and, on the other hand, to the prohibition, in the absence of agreement, of any act which would create by a *de facto* inequality the physical possibility of a violation of rights.[29] The Tribunal expressed the opinion that:[30]

The unity of a basin is sanctioned at the juridical level only to the extent that it corresponds to human realities. The water which by nature constitutes a fungible item may be the object of a restitution which does not change its qualities with regard to human needs. A diversion with restitution, such as that envisaged by the French project, does not change a state of affairs organized for the working of the requirements of social life.

The Tribunal took the view that the French project did not violate the provisions of the relevant agreements between France and Spain.[31] However, the Tribunal stated that Spain may have had a stronger claim if it had been alleged and proven that the French works would cause pollution or a detrimental change in chemical composition, temperature, or some other characteristic which may injure Spanish interests.[32] The Tribunal did not recognize a customary principle or general principle of law requiring prior agreement between interested States before utilizing the hydraulic power of international watercourses.[33] Nonetheless, it did

[27] *Ibid.*, p. 119. [28] *Ibid.*, p. 120. [29] *Ibid.*, p. 124. [30] *Ibid.*, p. 125.
[31] *Ibid.*, p. 142. [32] *Ibid.*, p. 123. [33] *Ibid.*, p. 130.

state that riparian States were obliged at least to consider the interests of downstream States which may be affected by their activities.[34]

More problematic is the quality of water resources, a question more closely connected with industrial and technological activities. In Europe, the River Rhine was for years used as an open sewer by the riparian States. In spite of early efforts to curb the increasing pollution resulting from the high concentration of industry in the Rhine basin, the situation was not improved for many years. During the period 1973 to 1975, at the point where the Rhine flows into the Netherlands, "the river carried yearly an average of 47 tons of mercury, 400 tons of arsenic, 130 tons of cadmium, 1,600 tons of lead, 1,500 tons of copper, 1,200 tons of zinc, 2,600 tons of chromium, and 12 million tons of chlorides."[35] Through the efforts of various organizations, including the Organization for Economic Cooperation and Development (OECD), the Council of Europe, and the European Economic Community (EEC), an array of legal documents and recommendations were adopted to control the pollution.[36] Among other things, the EEC Council Directive of May 4, 1976 on Pollution Caused by Certain Dangerous Substances Discharged into the Aquatic Environment of the Community established two lists of substances and groups of substances which were selected on the basis of their toxicity, persistence, and bio-accumulation. The most dangerous are contained in the "black list," and those with deleterious effects on the aquatic environment are contained in the "grey list."[37]

The situation in North America, another highly industrialized region, is equally illustrative of the problem. As early as the beginning of the twentieth century, international treaties were concluded by the US with its northern[38] and southern[39] neighbors, which established the international mechanisms to coordinate the uses of the water resources shared

[34] *Ibid.*, p. 140.

[35] A. Kiss, "The Protection of the Rhine Against Pollution," *Natural Resources Journal*, vol. 25 (1985), p. 614, at p. 615.

[36] *Ibid.*, pp. 615–619.

[37] 76/464/EEC, OJ L129/23, May 18, 1976. The 1976 EEC Directive is considered a step taken by the EEC in parallel with the Convention for the Prevention of Marine Pollution from Land-Based Sources (Paris, June 4, 1974), 1546 UNTS 119. In practice, however, problems of implementation at the national level remain obstacles to progress. See A. Kiss, "The Protection of the Rhine Against Pollution," *Natural Resources Journal*, vol. 25 (1985), p. 614, at pp. 617–619.

[38] Treaty Relating to the Boundary Waters and Questions Arising Along the Boundary Between the United States and Canada (Washington, January 11, 1909), 36 Stat. 2448; TS No. 548; III Redmond 2609.

[39] The Boundary Waters: Rio Grande and Rio Colorado Convention Between the United States and Mexico of March 1, 1889, 26 Stat. 1512, US Treaty Series 232, 9 Bevans 877. Under the Treaty, an International Boundary Commission was established to resolve

by them. Nevertheless, transfrontier water pollution and other problems remained persistent legal issues in their relations. The *Colorado River Salinity* case between the US and Mexico and the *Gut Dam* case between the US and Canada are typical examples.

The Colorado River is the mainstay of the agricultural activity in southwestern United States and northwestern Mexico, both of which depend upon its waters for irrigation. The salinity dispute arose from the 1944 Water Treaty between the United States and Mexico.[40] The 1944 Water Treaty was adopted at a time when the political relations between the two countries were tense as a result of a protracted period of confrontation over a number of problems, such as the expropriation of US oil properties in Mexico.[41] During a severe drought in 1943, Mexico, the downstream State, suffered a great deal from shortage of water and as a result it entered into the treaty with the US to secure the apportionment of water from the Colorado River for its agriculture. Due to unequal bargaining power between the two parties, the treaty nowhere expressly stipulated the quality of the water to be delivered to Mexico, but instead stated that Mexico should accept as part of her allotment waters of the River "from any and all sources."[42] The United States unilaterally interpreted the provision and the issue of water quality was precluded. As a result, Mexico should supposedly have accepted whatever water was delivered to it.

Beginning in 1961, due to upstream diversion projects, the water delivered to Mexico became so saline that Mexican agriculture suffered serious damage as a result.[43] For years, with enormous interests involved on both sides, the dispute could not be resolved at the local level. Finally, on June 17, 1972, President Nixon of the United States and President Luis

all questions relating to changes in the beds of the Rio Grande and the Colorado River, which irrigate two million acres of agricultural land along the border, as well as questions relating to works constructed in those rivers. See also the Boundary Waters: Rio Grande and Rio Colorado Convention of November 12, 1884, US Treaty Series 226, 24 Stat. 1011.

[40] Treaty Relating to the Utilization of the Waters of the Colorado and Tijuana Rivers, and of the Rio Grande (Rio Bravo), from Fort Quitman, Texas, to the Gulf of Mexico (Washington, February 3, 1944), and Supplementary Protocol (Washington, November 14, 1944), 3 UNTS 313. Article 2 ensured the continuation of the International Boundary Commission established in the 1889 Treaty, and renamed it the International Boundary and Water Commission.

[41] "A History and Interpretation of the Water Treaty of 1944," in Utton, *Pollution and International Boundaries*, p. 122.

[42] Article 10 of the 1944 Water Treaty.

[43] Some Mexicans claimed that the case was the first to highlight problems of the water quality of international watercourses and of the pollution of non-maritime waters. Utton, *Pollution and International Boundaries*, p. 8.

Echeverria Alvarez of Mexico settled the matter on a permanent basis: the International Boundary and Water Commission was instructed to devise a plan that would reduce the salinity level of the water delivered to a usable level.[44]

The *Gut Dam* arbitration[45] concerned a dam built in 1903 by Canada in the St. Lawrence River between Adams Island in Canadian territory and Les Galops Island in US territory in order to improve navigation on the river. The US gave its consent to the project, but on two conditions: first, any material effects on the water levels of Lake Ontario or the St. Lawrence River must be remedied by Canada; secondly, any damage caused to the property of US citizens must be compensated by Canada. In 1951–1952, the water level of Lake Ontario and the St. Lawrence River reached an unprecedented height, causing flooding and erosion damage to the property of US citizens living in the area. These citizens, believing that the damage was caused at least in part by the Gut Dam, attempted unsuccessfully to negotiate a settlement with the Canadian Government. In 1953, Canada removed the Gut Dam. In 1965, the Lake Ontario Claims Tribunal was set up by the two countries to adjudicate claims by US nationals against the Government of Canada for damage caused by the Gut Dam. The US claimed a total of US$653,386.02 from Canada. In the wake of the Tribunal's finding that Canada was potentially liable for damage to the property of any citizen of the US caused by the construction and operation of the Gut Dam (rather than simply damage to property located on Les Galops Island as Canada had argued),[46] Canada agreed to pay to the US a lump sum of US$350,000 in full and final settlement of all claims relating to damage "allegedly caused by Gut Dam."[47] Although the settlement was expressed to be "without prejudice to the legal and factual positions maintained by the parties,"[48] the case is significant in light of the fact that Canada agreed to compensate the US for the damage it caused by the construction and operation of the Gut Dam.

For some years, water pollution from industrial activities carried out on both sides of the boundary waters was one of the serious issues

[44] *Ibid.*, p. 99. Several international agreements emerged from the dispute and the subsequent negotiations between the United States and Mexico: see, for example, Agreement Effected by Minute No. 241 of the International Boundary and Water Commission, United States and Mexico – Recommendations to Improve Immediately the Quality of Colorado River Waters Going to Mexico (El Paso, July 14, 1972), 898 UNTS 151.

[45] 8 ILM 118 (1969). [46] *Ibid.*, p. 135. [47] *Ibid.*, pp. 141–142. [48] *Ibid.*, p. 142.

between the US and Canada. According to a study done in 1989 under the auspices of the Canada–United States International Joint Commission, each day thousands of kilograms of oil, grease, cyanide, and lead are dumped into the Detroit River and the St. Mary's River.[49] It is reported that the Detroit waste-water treatment plant itself each day dumped up to 14,042 kilograms of oil and grease, 106 kilograms of cyanide, and 137 kilograms of lead into the River; that Algoma Steel Corporation Ltd daily dumped 72.9 kilograms of cyanide and up to 9,441 kilograms of oil and grease into the St. Mary's River; and that the Ford Motor Co. of Canada Ltd daily dumped 30.3 kilograms of lead into the Detroit River. Despite the great efforts made by both sides under the Agreement Between the United States of America and Canada on Great Lakes Water Quality,[50] the Great Lakes system is not yet free from pollution problems.

The above cases are illustrative of the global issues in this field. In other regions of the world, international water resources face equally serious problems both in terms of water use and pollution. Water development requires significant investment, the benefits of which may take several years to become apparent. Among developing countries, whose economic and social interests are so much tied up with the use of water resources – e.g. agricultural irrigation, navigation, and power generation – the conflict of interests can be even more acute. International water management and allotment can cause lasting conflict between the States concerned.[51] Moreover, with industrialization and urbanization in these countries, watercourses are used more readily for waste disposal and dumping, due to short-term cost-effectiveness. Therefore, transboundary damage may affect both water quantity and water quality. During the UN Conference on Environment and Development held in 1992, conservation and protection of fresh water was listed as

[49] *Globe and Mail* (Toronto), April 4, 1989. According to US statistics, in 1987 US industry released over 10 billion kilograms of toxic pollutants, including 4.4 billion kilograms into streams and other waters.

[50] 837 UNTS 213; Can. TS 1972/12. The Agreement first entered into force in 1972 and was revised in 1978 (see Agreement Between the United States of America and Canada on Great Lakes Water Quality, 1153 UNTS 187; Can. TS 1978/20; 30 UST 1383; TIAS No. 9257), and slightly revised again in 1987. See Charles B. Bourne, "Protecting the Environment: Fresh Water Resources," in Edward McWhinney, Douglas Ross, Grigory Tunkin, and Vladlen Vereshchetin (eds.), *From Coexistence to Cooperation* (Dordrecht, Martinus Nijhoff, 1991), p. 128, at p. 130.

[51] For an analytical study and the relevant diplomatic documents and statements of certain developing countries in relation to the pollution of international watercourses, see J. G. Lammers, *Pollution of International Watercourses: A Search for Substantive Rules and Principles of Law* (Boston, Martinus Nijhoff, 1984), pp. 288–319.

one of the crucial areas for international action.[52] More recently the International Court of Justice has delivered its judgment on another water project dispute between Hungary and Slovakia.[53]

After years of research and negotiations, Czechoslovakia entered into a Treaty with Hungary in 1977 ("the 1977 Treaty")[54] to construct the Gabcikovo-Nagymaros barrage system of locks on the Bratislava–Budapest sector of the Danube for the development and broad utilization of its water resources, particularly for the production of energy, and for purposes connected with transport, agriculture, and other sectors of the national economy.[55] Under the 1977 Treaty, the parties undertook to ensure that the quality of water in the Danube was not impaired as a result of the project and that the environment would be protected during the construction and operation of the system of locks. The project was to have taken the form of an integrated joint project with both parties on an equal footing in respect of the financing, construction, and operation of the works. The project was of a single and indivisible nature – thus while the Dunakiliti dam, the bypass canal, and the two series of locks at Gabcikovo and Nagymaros would be jointly owned, with ownership of the other works vested in the State on whose territory they were constructed, Hungary would have control of the sluices at Dunakiliti and the works at Nagymaros, and Czechoslovakia would have control of the works at Gabcikovo. Work on the project began in 1978. Due to intense criticism generated by the project, the Hungarian Government decided to suspend the works at Nagymaros on May 13, 1989. Two months later, it also suspended the works at Dunakiliti. By the end of the year, Hungary had abandoned the works at Nagymaros and decided to maintain the *status quo* at Dunakiliti. While pursuing further negotiations with Hungary with a view to the joint completion of the project, Czechoslovakia investigated alternative solutions. One such solution, the so-called "Variant C," involved the unilateral diversion of the Danube to Czechoslovak territory. Work on Variant C began in November 1991, followed on May 25, 1992 by Hungary's termination of the 1977 Treaty on the basis of a "state of ecological necessity." In 1992, the parties agreed to submit

[52] See Section II (Conservation and Management of Resources for Development) of Agenda 21, Report of the UN Conference on Environment and Development, Rio de Janeiro, June 3–14, 1992, A/CONF.151/26 (vol. II), (August 13, 1992) Chapter 18.

[53] *Case Concerning the Gabcikovo-Nagymaros Project* (*Hungary/Slovakia*) (Merits), September 25, 1997, ICJ Reports (1997), p. 7; 116 ILR (1997), p. 1.

[54] Treaty Concerning the Construction and Operation of the Gabcikovo-Nagymaros System of Locks (Budapest, September 16, 1977), 1109 UNTS 235.

[55] See the Preamble to the 1977 Treaty.

the dispute to the International Court of Justice. On January 1, 1993, Slovakia became an independent State. On April 7, 1993, the two sides signed the Special Agreement to submit the dispute to the ICJ.[56] A tripartite group of independent experts set up by Hungary and Slovakia submitted recommendations as to emergency measures to be taken on a temporary basis. However, the parties were unable to agree on the recommendations. On April 19, 1995, the parties entered an Agreement on "Certain Temporary Technical Measures and Discharges in the Danube and Mosoni branch of the Danube" with a view to raising the discharge of water into the Mosoni Danube and to improving the water supply to the Hungarian side-arms of the Danube. This Agreement was specified to terminate 14 days after the Court's judgment.

In accordance with the terms of the Special Agreement, the Court was requested to decide, first, whether Hungary "was entitled to suspend and subsequently abandon, in 1989, the works on the Nagymaros Project and on the part of the Gabcikovo Project for which the Treaty attributed responsibility to the Republic of Hungary,"[57] and, secondly, whether Slovakia was entitled to put into effect its "provisional solution" (Variant C).[58] After a thorough review of the 1977 Treaty and an analysis of the profound political and economic changes which brought about the final termination of the Treaty by Hungary, the Court discussed at length the notion of a state of ecological necessity. In so doing, it referred to Article 33 of the Draft Articles on the International Responsibility of States adopted by the ILC on first reading (now Article 25 of the final Articles).[59] The Court stated that the "uncertainties" expressed by Hungary as to the ecological impact of the Gabcikovo-Nagymaros barrage system "could not, alone, establish the objective existence of a 'peril' in the sense of a component element of a state of necessity."[60] The Court continued:

> The word "peril" certainly evokes the idea of "risk"; that is precisely what distinguishes "peril" from material damage. But a state of necessity could not exist without a "peril" duly established at the relevant point in time; the mere apprehension of a possible "peril" could not suffice in that respect.[61]

[56] See the Special Agreement for Submission to the International Court of Justice of the Differences Concerning the Gabcikovo-Nagymaros Project (Brussels, April 7, 1993), 1725 UNTS 225.

[57] ICJ Reports (1997), p. 7, at p. 29, para. 27, citing Article 2(1)(a) of the Special Agreement.

[58] *Ibid.*, pp. 46–47, para. 60, citing Article 2(1)(b) of the Special Agreement.

[59] See *Yearbook of the ILC* (1980), vol. II (Part Two), p. 34.

[60] ICJ Reports (1997), p. 7, at p. 42, para. 54.

[61] *Ibid.*, p. 142.

Furthermore, the peril must have been "grave and imminent" when Hungary suspended the project. The Court was not convinced of the existence of such a peril. It held that Hungary was not entitled to suspend and subsequently abandon the works in violation of the 1977 Treaty. In relation to the second question before the Court, the Court ruled that Slovakia was entitled to proceed with Variant C "in so far as it then confined itself to undertaking works which did not predetermine the final decision to be taken by it," but not to put it into operation.[62] The Court concluded that both parties had committed "internationally wrongful acts" and should therefore compensate each other for the damage caused thereby.[63] It decided that the parties must negotiate in good faith and take all necessary measures to ensure the achievement of the objectives of the 1977 Treaty. As one of the most important cases on the environment adjudicated by the ICJ in recent years, the 1997 judgment in the *Gabcikovo-Nagymaros Project* case raised a number of important issues of international law on treaties, State responsibility, and environmental law, which are discussed in greater detail below.

Damage caused by land use

The last category of transboundary non-accidental damage comprises those cases where damage is caused by activities conducted in the vicinity of the border with another State. The placement of dangerous substances (e.g. the dumping of chemical wastes that may enter the waterways and be carried into the territory of another State), or the conducting of hazardous activities (e.g. the establishment of nuclear plants in the border area),[64] often give rise to concerns in neighboring countries. They may demand either the removal of the substances or cessation of the dangerous activities. In case of damage, the injured State would likely request reparation from the source State.

One early case recorded by Whiteman is relevant in this context.[65] In connection with the construction of a highway in Mexico close to the United States border in 1957, the US observed that the associated

[62] *Ibid.*, p. 57, para. 88. [63] *Ibid.*, p. 81, para. 152.

[64] For example, in order to avoid thermal pollution to the Rhine, France was urged by other riparian States to change its plan to build nuclear power plants that would utilise the water of the Rhine for the cooling system: Lammers, *Pollution of International Watercourses*, p. 174; J. Lammers, "New International Legal Development Concerning the Pollution of the Rhine," *Netherlands International Law Review*, vol. 27 (1980), p. 171, at p. 186.

[65] Whiteman, *Digest*, vol. 6, p. 260.

embankment would not withstand torrential rains, thus posing a serious threat of damage to residents and property in US territory near the highway. The US Government urged Mexico to take appropriate steps to prevent damage to property and injury to persons likely to result from the improper construction of the highway. Mexico accordingly made some corrective modifications. Still unsatisfied with the improvement, the US Ambassador to Mexico stated the following in a diplomatic note:[66]

> I am instructed to reserve all the rights that the United States may have under international law in the event that damage in the United States results from the construction of the highway.

Another example is the Salzburg Airport case in 1969.[67] Residents of the German town of Freilassing near the Austrian border brought a formal complaint before the Austrian administrative courts against a decision of January 21, 1969, by the Austrian Federal Ministry of Transport and State-Owned Enterprises authorizing the expansion of the Salzburg Airport for jet traffic. The complaint arose because of the Ministry's failure to include neighboring West German municipalities and interested parties in the public hearing proceedings required by the 1957 Austrian Aviation Act in matters relating to airport safety and aircraft noise.

The court held that the complainants had no standing on the ground of the territorial application of the Austrian Aviation Act. It did not take into account that a treaty was signed in 1967 between the two governments concerning the airport, as it had not yet been ratified. After the treaty was ratified by West Germany, the adjoining landowners in West Germany brought an action in their local court, which, among other things, refused to grant a noise injunction against the operation of the airport. Instead, the court referred the complainants to the provisions of the 1967 Treaty regarding compensation for damage. In the formal declaration accompanying the instrument of ratification, the West German Government had stated that the future operation of the treaty would

[66] *Ibid.*, p. 262.

[67] *Township of Freilassing and Max Aicher* v. *Federal Republic of Austria*, Decision of the Austrian Supreme Administrative Court of May 30, 1969, reported in *Erkenntnisse und Beschlusse des Verwaltungsgerichtshofs* No. 7582(A) 264 (1969); see also Peter H. Sand, "The Role of Domestic Procedures in Transnational Environmental Disputes," in OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977), p. 46, at pp. 149–151; Alexandre Kiss, "The International Protection of the Environment," in R. St. J. Macdonald and D. M. Johnston (eds.), *The Structure and Process of International Law: Essays in Legal Philosophy Doctrine and Theory* (Dordrecht, Martinus Nijhoff, 1983), p. 1069, at p. 1078.

depend on its effectiveness in protecting the environmental interests of the airport's neighbors.

Increasing industrial and chemical land uses in border regions have given rise to States' concerns for the protection of the environment and possible transboundary damage.[68] With more and more stringent national standards and controls on environmental protection, States have become more sensitive to environmental impact caused from outside.[69] At the same time, however, self-interest has also driven them to move polluting industries out of their own territory.[70] Regarding the demand for dumpsites to dispose of dangerous wastes produced by industry, one author observed:[71]

> It is possible that in the future, new industries, particularly those that are unwanted throughout the rest of the country, will be hard-pressed to find new locations and the tendency might be to locate them in the frontier regions, especially if they enable pollution to be passed on to the neighboring State or dispose waste in an international waterway.

The licensing of the Eastport Oil Refinery demonstrates the problem of damage caused by land use.[72] In 1973, a US oil company applied to the State of Maine for permission to build a marine terminal and

[68] In 1973, when the Belgian Government announced its intention to construct a refinery at Lanaye, near its frontier with the Netherlands, the Netherlands Government voiced its concern over the project for the potential threat to the nearby national parks and other neighboring countries. As a result, the Belgian Government postponed the plan and entered negotiations with the Netherlands Government. See *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 26, para. 113.

[69] For example, decisions of States permitting industrial facilities such as chemical plants and liquefied natural gas tanker terminals to be set up near international border areas, on the choice of routes for sea and pipeline transportation of oil, and on the designation of disposal areas for highly toxic industrial waste materials may well give rise to environmental concerns in neighboring countries: Ercmann, *Transatlantic Colloquy*, p. 182.

[70] The dispute over toxic waste dumpsites in the border area between the US and Canada is an example. Dangerous chemicals from the dumpsite, abandoned by the Hooker Chemical Company many years previously, found their way into the Great Lakes water basin. The US Government, which had sued the company to take immediate remedial action, was unable to persuade the Canadian Government to participate in the court-authorized settlement negotiations as the Canadian Government was not satisfied that Canadian interests would be adequately safeguarded in the agreement and wanted to reserve its position when an agreement was reached with the defendant company. See M. A. Prabhu, "Environmental Relations Between Canada and the United States," in Ercmann, *Transatlantic Colloquy*, p. 181.

[71] *Ibid.*

[72] For a descriptive analysis, see Allen L. Springer, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States* (Westport, Quorum Books, 1983), pp. 185–200.

oil-refinery complex with a 250,000-barrel-per-day capacity. The site selected was Eastport, Maine, on the border between the United States and Canada. Under this proposal, crude oil from the Middle East would be shipped to the refinery by supertanker, refined into heating oil and gasoline, and then transported by barge and tanker to distribution centers. The deep water port of Eastport was chosen because of its proximity to oil-dependent markets, and its direct accessibility to supertankers. Moreover, according to Springer, the region's "isolated location and serious unemployment problems provided a site where cheap land and strong local support for the project could be found."[73]

Objections to the project from the Canadian side related to environmental concerns: for instance, the possibility that airborne pollutants would damage the nearby national parks and, more importantly, the threat of a major oil spill. Tankers would travel to and from Eastport through Head Harbor Passage, a narrow, seven-mile waterway lying between two Canadian islands, prone to strong currents and frequently adverse weather conditions. Thus the route presented significant navigational problems. Both sides agreed that, in the event of a major oil spill, the effects could be serious. However, the two parties differed over the legal status of the passage, namely, whether it comprised an international strait or Canadian waters. For years the project could not proceed, owing to opposition from various environmental groups in the US and in Canada.

Although the current practice of environmental protection in industrial regions has greatly improved in the period that has elapsed since the cases discussed above, the international legal issues they raise nevertheless remain fundamentally unchanged. They are illustrative of the disputes that may arise in the context of border activities.

The doctrine of sovereignty and balance of interests

In the 1960s and 1970s, when nuclear, space, and other hazardous industries gave rise to increasing fear of transboundary damage, the issue of international responsibility for damage resulting from these otherwise "lawful acts" was placed on the agenda of the ILC. The ILC agreed that responsibility for internationally illicit acts and the so-called responsibility for risk arising out of the performance of certain lawful activities are of such sharply different hypotheses, that confusion

[73] *Ibid.*, p. 186.

between them might have an adverse effect on the understanding of the main subject of State responsibility.[74] As a result, in 1974, the ILC was entrusted with an additional item entitled "international liability for injurious consequences arising from acts not prohibited by international law" and later appointed Mr. Robert Q. Quentin-Baxter as Special Rapporteur for the topic.[75] During the initial stage of the deliberations, the Special Rapporteur advanced an instructive theory,[76] based on a scheme of balance of interests derived from the dual nature of the activities.[77] On the one hand, such industries and activities are of great value for mankind, and, in spite of their potential negative impact on the safety and health of the international community and the environment, there is no alternative means available thus far to substitute for them. On the other hand, however, the hazardous and harmful effects from such activities not only to the author State itself, but, no less significantly, to neighboring States are often catastrophic and devastating, and must be addressed by international law. In maintaining the balance, the Special Rapporteur advocated that the author State should be obliged to accept

[74] On this matter, the ILC, in its report to the General Assembly on the work of its twenty-first session, concluded: "The Commission also agreed in recognizing the importance, alongside that of responsibility for internationally illicit acts, of the so-called responsibility for risk arising out of the performance of certain lawful activities, such as spatial and nuclear activities. However, questions in this latter category will not be dealt with simultaneously with those in the former category, mainly in order to avoid any confusion between two such *sharply different* hypotheses, which might have an adverse effect on the understanding of the main subject. Any examination of such questions will therefore be deferred until a later stage in the Commission's work." See Report of the ILC on the Work of its Twenty-First Session, June 2–August 8, 1969, *Yearbook of the ILC* (1969), vol. II, p. 203, at p. 233 (emphasis added). In the ILC's Report on its Thirtieth Session, the Commission again took the view that the two questions cannot be treated jointly, stating: "A joint examination of the two subjects could only make both of them more difficult to grasp. To be obliged to bear any injurious consequences of an activity that is in itself lawful, and to be obliged to face the consequences (not necessarily limited to compensation) of the breach of a legal obligation, are not comparable situations. It is only because of the relative poverty of legal language that the same term is sometimes used to designate both." See *Yearbook of the ILC* (1978), vol. II (Part Two), p. 75.

[75] Report of the ILC on the Work of its Thirty-Second Session, GAOR, Thirty-Fifth Session, Supp. No. 10 (A/35/10), Chapter VII. See also *Yearbook of the ILC* (1978), vol. II (Part Two), pp. 6 and 149–152; General Assembly Resolution 32/151 of December 19, 1977, para. 7, reproduced in *Yearbook of the ILC* (1980), vol. II (Part Two), p. 158.

[76] Five reports were prepared by the first Special Rapporteur, Mr. Robert Q. Quentin-Baxter, during the thirty-third to thirty-sixth sessions: see *Yearbook of the ILC* (1986), vol. II (Part One), p. 145, n. 2.

[77] R. Q. Quentin-Baxter, Third Report, in *Yearbook of the ILC* (1982), vol. II (Part One), p. 51 (Doc. A/CN.4/360).

international liability for damage to the extent that its activity would survive the legal consequences thereof. This approach, though sound, was not well received by States, because it was not based on established international practice with respect to hazardous activities.

The ILC gradually changed its approach, shifting its focus from "pure liability rules" to preventive, regulatory principles and rules of reparation.[78] The schematic outline of Quentin-Baxter's Fourth Report contained a "compound 'primary' obligation" comprising four duties: to prevent, inform, negotiate, and repair.[79] In other words, the source State has the duty to take preventive measures; the duty to inform the potentially affected State party of the possible damage; the duty to consult with it on proper actions to be taken; and the duty to mitigate and repair any damage. Should it fail to fulfill these duties, its international responsibility would be invoked.[80]

Undoubtedly, this change in approach, taken up by the succeeding Special Rapporteur, Mr. J. Barboza, represented a significant step forward. In imposing duties such as the duty to inform the affected parties, and the duty to assess transboundary damage and consult neighboring States before conducting any activity that might cause transborder harm, the rules of prevention and the rules of reparation are thus coherently linked.[81] These duties are increasingly reflected in the institutional

[78] See J. Barboza, Second Report, in *Yearbook of the ILC* (1986), vol. II (Part One), p. 145, at pp. 146–147.

[79] R. Q. Quentin-Baxter, Fourth Report, in *Yearbook of the ILC* (1983), vol. II (Part One), p. 201, at p. 213, para. 40, and pp. 223–225. See also D. Magraw, "Transboundary Harm: The International Law Commission Study of 'International Liability'," *American Journal of International Law*, vol. 80 (1986), p. 305, at p. 311.

[80] Report of the ILC on its Forty-Second Session, *Yearbook of the ILC* (1990), vol. II (Part Two).

[81] In the terminology of the Commission, these rules are "primary rules" of conduct. According to Special Rapporteur, Mr. Julio Barboza: there would appear to be a conceptual difference between the rules of prevention and the rules of reparation only when the latter emanate from the wrongfulness of an act, in other words when they are secondary rules. In his fourth report, the previous Special Rapporteur stated that, from a formal stand-point, the subject-matter of the present topic "must be expressed as a compound 'primary' obligation that covers the whole field of preventing, minimizing and providing reparation for the occurrence of physical transboundary harm" . . . [A]s prevention and reparation fall within the domain of primary rules, it follows that, if injury is done which subsequently gives rise to the obligation to make reparation, that reparation is imposed by the primary rule in terms of the lawfulness of the activity in question; only if the source State fails in its primary obligation to make reparation does the question become one of secondary rules, with the notion of responsibility for the wrongful act which the State's violation of that primary obligation constitutes. Thus the present topic can be dealt with entirely within the context of primary rules.

arrangements and international agreements on environmental impact assessment and early warning mechanisms. They are commonly regarded as "soft" law – composed of principles and standards of conduct not yet accepted as mandatory.[82] A broad application of these duties, however, would indicate a positive trend: from policy commitments, State governments would adopt certain standards of conduct. As practice goes, these duties would eventually gain force and harden into patterns of behavior.[83]

The final version of the Articles on State Responsibility annexed to General Assembly Resolution 56/83 maintains the distinction between primary rules and secondary rules. The commentaries to the Draft Articles explain that "[t]he articles do not attempt to define the content of the international obligations breach of which gives rise to responsibility."[84] Further, "[i]n determining whether given conduct attributable to a State constitutes a breach of its international obligations, the principal focus will be on the primary obligation concerned."[85] In other words, as far as transboundary damage cases are concerned, rules of prevention such as duties to inform, to consult, and to cooperate, and the rules of liability, must be determined according to customary or conventional international law. Rules of State responsibility will not come into play until there is a breach of any of such duties, or as provided for by the primary rules. Further, if the States parties choose to set up special

See J. Barboza, Second Report on International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law, in *Yearbook of the ILC* (1986), vol. II (Part One), p. 145, at p. 146, citing R. Q. Quentin-Baxter, Fourth Report, in *Yearbook of the ILC* (1983), vol. II (Part One), p. 201, at p. 213, para. 40. This approach also met with criticism. In the view of the critics, liability should arise only for non-compliance with "primary rules" of conduct specifying the action (or lack of action) required by international law. Brownlie considers the quest for rules governing liability for lawful activities to be "fundamentally misconceived": I. Brownlie, *System of the Law of Nations: State Responsibility (Part I)* (Oxford, Clarendon Press, 1983), p. 50. See also D. Magraw, "Transboundary Harm: The International Law Commission Study of 'International Liability'," *American Journal of International Law*, vol. 80 (1986), p. 305, at p. 316.

[82] Schachter, *International Law*, pp. 373–375; Schachter, "The Emergence of International Environmental Law," in Henkin *et al.*, *International Law*, p. 1377.

[83] *Ibid.*

[84] Para. 1 of the Commentaries to the Articles on Responsibility of States for Internationally Wrongful Acts: Report of the ILC Fifty-Third Session, April 23–June 1 and July 2–August 10, 2001, GAOR, Fifty-Sixth Session, Supplement No. 10 (A/56/10), p. 59; Crawford, *Articles on State Responsibility*, p. 74.

[85] Para. 2 of the Commentaries to Chapter III of Part One of the ILC's Draft Articles on Responsibility of States for Internationally Wrongful Acts, A/56/10, p. 123; Crawford, *Articles on State Responsibility*, p. 124.

rules by agreement to govern the legal consequences of a breach of obligations, general rules of State responsibility will not apply by virtue of the *lex specialis* principle.[86] Rules of State responsibility are distinctively separated from the rules of international liability for "lawful acts."

When the issue of international liability for injurious consequences arising from acts not prohibited by international law was separated from the traditional regime of State responsibility for the ILC's study, the policy goal was simple and clear: while the injurer is to be held liable for damage caused by its conduct, the activity *per se* will not be declared unlawful simply by virtue of the injury. The matter of non-accidental damage in the present context differs from the existing legal regimes on civil liability, where the primary policy objective is to provide expeditious compensation to individual victims as well as to their State in the event of the unexpected occurrence of damage. The liability regime for non-accidental damage is mainly concerned with distributive justice and standards of conduct because for the most part these normal activities are conducted by a State within its own territory. The extent to which the acting State is restricted in its use of its natural resources touches on the sovereign rights of the State to development. The crux of the issue lies in the fact that States are often reluctant to restrict their sovereignty over natural resources for the benefit of other States.

That the principle of permanent sovereignty over natural resources[87] is balanced with environmental concerns indicates a shifting emphasis from an absolute right to use and dispose, to a relative duty to protect. In this regard, the practice in the two industrialized regions of North America and Western Europe has spearheaded the general development of international law in this field. In the post-Cold War era, there are two distinct tendencies. On the one hand, interdependency is no longer a simple catchword but represents a substantive change in international relations. States have in general accepted that environmental protection requires more global action and closer international cooperation. No State can single-handedly cope with such environmental crises as a shortage of fresh water, pollution, and land degradation, even if they fall

[86] In the general provisions of the Articles on State Responsibility, Article 55 provides: "These articles do not apply where and to the extent that the conditions for the existence of an internationally wrongful act or the content or implementation of the international responsibility of a State are governed by special rules of international law."

[87] A notion enshrined in several General Assembly resolutions including Resolutions 3201 and 3202 of May 1, 1974, and the Charter of Economic Rights and Duties of States contained in Resolution 3281 of December 12, 1974.

entirely within national jurisdiction or control. On the other hand, national interests in global actions remain the dominant factor dictating the extent of any State's participation in the process of international cooperation in the field of environment and development. After the Cold War, social and economic development has become a prevailing issue worldwide, although priority afforded by the north and the south respectively to the development agenda may differ. In the world economy, where States are ever more conscious of their finite resources and fragile ecological environment, possession and sustainable uses of natural resources are vital for any State to maintain its economic competitiveness. Protection of national interests over natural resources bears more strategic importance than ever. In the trend towards economic globalization, conflicting individual interests of States are competed over, bargained for, and compromised. In practice, States recognize ecological links and interaction among various resources; in law, however, they give limited and restrictive interpretations to the concept of shared resources, reserving as much freedom of action as possible for their national development. This telling fact shows that the traditional doctrine of sovereignty is indeed undergoing gradual modification, but the basic structure of international relations founded on sovereign States is unchanged.[88]

The national domain and the concept of shared resources

Transboundary damage arising from the normal utilization of natural resources within the territory of a State entails a consideration of one of the basic issues of international law – the limits of national sovereignty. Once it is accepted that not every loss or injury caused beyond national frontiers to another State or to its nationals is considered wrongful under international law, it becomes necessary to demarcate the boundaries of application of the law.[89] As in the accidental damage cases discussed in the previous two chapters, these daily industrial, agricultural, and technical activities are not prohibited by international law and the risk of harm is inherent in their operations.

[88] See K. Zemanek, "The Legal Foundations of the International System," *Recueil des Cours*, vol. 266 (1997), p. 12, at pp. 43–44.

[89] As Schachter observes, "Renouncing the absolutist conception of sovereignty, while helpful, is not a complete solution to the basic problem. Relativity still leaves the questions as to where the lines should be drawn and what process should be used for such demarcation." This is especially true when the element of interdependence is at the core, in situations such as the control and management of natural resources. See O. Schachter, "Sovereignty – Then and Now," in Macdonald, *Essays*, p. 676.

The territorial principle is the fundamental basis for the exercise of State jurisdiction and one of the basic components of State sovereignty. Traditionally, the territorial sovereignty of a State was subject in theory to no limitations unless otherwise provided for by international law. Any restriction on such a right must be specific and certain as prescribed by international obligations. This principle was manifested and reaffirmed in several international court decisions. In the *Lotus* case (*France* v. *Turkey*),[90] the Permanent Court of International Justice held that limitations upon the sovereignty of States depend on the existence of primary rules of obligation, and these obligations must be proved, not presumed. "International law cannot be presumed to reduce a right such as territorial sovereignty."[91]

For a long time there were only a few general principles of law governing the conduct of States on the uses of natural resources. In a case concerning transboundary effects on resources shared by more than one State, the affected State had to prove that material and actual damage, which was prohibited by international law, had occurred or would result. In examining such a claim, international courts and tribunals favoured strict interpretations of the general rules so as to avoid unduly restraining a State from carrying out such activities within its own territory. In the *Lake Lanoux* case, in rejecting the Spanish request to suspend the French project, the Tribunal considered that the Spanish claim did not establish that its rights and interests would be impaired by the project.[92] Instead, the Tribunal stated that Spain might have attacked the project in several ways: "It could have been argued that the works would bring about an ultimate pollution of the waters of the Carol or that the returned waters would have a chemical composition or a temperature or some other characteristic which could injure Spanish interests. Spain could then have claimed that her rights had been impaired in violation of the Additional Act."[93]

When the *Lake Lanoux* Tribunal emphasized the fact that the public works envisaged in the French scheme were wholly situated and carried out in France,[94] the implication was explicit: provided there was no detrimental effect on the downstream riparian State, Spain, no objection could be made as to the water's use. The Tribunal continued:

[90] Judgment No. 9 (1927), PCIJ, Series A, No. 10, at p. 18. [91] *Ibid.*

[92] The Tribunal said: "Territorial sovereignty plays the part of a presumption. It must bend before all international obligations, whatever their origin, but only before such obligations": 24 ILR (1957), p. 101, at p. 120.

[93] *Ibid.*, p. 123. [94] *Ibid.*, pp. 119 and 140.

"[i]f, despite the precautions that have been taken, the restitution of waters were to suffer from an accident, such an accident would be only occasional and, according to the two Parties, would not constitute a violation of Article 9 [of the Additional Act]".[95] In the Tribunal's view, unless material and permanent damage was anticipated, France should not be restrained from going ahead with the project, considering that it had provided satisfactory technical guarantees for the restitution of the waters to Spain.[96]

In the protection of national interests, State governments are inclined to give a stricter interpretation to the notion of "sharing" and restrict any over-broad scope of international regulation on the uses of resources under their control. The early position taken by the Latin American countries to distinguish between contiguous rivers and successive international rivers is a good example.[97] In the Act of Asunción on the use of international rivers adopted by the Ministers of Foreign Affairs of the River Plate Basin States (Argentina, Bolivia, Brazil, Paraguay, and Uruguay) in June 1971, the following distinction was made:[98]

1. In contiguous international rivers, which are under *dual sovereignty*, there must be a prior bilateral agreement between the riparian States before any use is made of the waters;
2. In successive international rivers, where there is *no dual sovereignty*, each State may use the waters in accordance with its needs provided that it causes no appreciable damage to any other State of the Basin.

The effect of this provision was that, apart from the case of boundary rivers, States owed minimal obligations to each other, because each fragment of an international river successively flowing through several States constituted a part of the territory of the State, no different from any other part of the territory of that State.[99] Although the theory from its very beginning was questioned by States from other regions, and was

[95] *Ibid.*, pp. 123–124. [96] *Ibid.*, p. 123.
[97] Report of the ILC on the Work of its Forty-Sixth Session, May 2–July 22, 1994, GAOR, Forty-Ninth Session, Supp. No. 10 (A/49/10), p. 226.
[98] *Ibid.* (emphasis added).
[99] Among the Latin American countries, boundary waters are treated differently from successive rivers; the former are regarded as shared resources while the latter come under the purview of international law only when they cross an international border and affect the interests of other States. On the concept of shared resources, see Andre Nollkaemper, *The Legal Regime for Transboundary Water Pollution: Between Discretion and Constraint* (Dordrecht, Martinus Nijhoff, 1993), pp. 26–28.

not generally endorsed in international water law, it illustrated the extent to which States prefer to exercise jurisdiction over their resources.

The long-standing divergence among States also bears on the issue of the definition of an international watercourse for the purposes of the drafting of the law on the non-navigational uses of international watercourses by the ILC.[100] When the notion of shared resources was first introduced before the ILC, it was opposed by some States.[101] In practice, various terms, such as "international river," "international drainage basin," "international watercourse," or "international water system," have been adopted by various international instruments concluded by States.[102] While the terms may refer to the watercourse as a whole, few of them actually approached the concept from the ecological perspective of the watercourse. The objectives of the treaties were not aimed at international management, but at reconciling conflicting interests in the uses of resources between the riparian States. Therefore, when the ILC was drafting the articles on the non-navigational uses of international watercourses, views were expressed that the scope of the topic should be restricted to the "watercourse" approach rather than the "drainage basin" approach, for fear that the latter might lend itself to an overly broad application, possibly involving the regulation of matters not directly related to water use within that hydrographic boundary.[103] Due to this divergence of opinion among States, definition of the term "international watercourse" was repeatedly deferred for consideration. The controversy

[100] In 1970, the General Assembly recommended that the ILC "take up the study of the law of the non-navigational uses of international watercourses with a view to its progressive development and codification": GA Resolution 2669, GAOR, Twenty-Fifth Session, Supp. No. 28, at p. 127 (UN Doc. A/8202). The Commission took up the topic in its general program of work in the following year: Report of the ILC on the Work of its Twenty-Third Session, 26 April–30 July 1971, GAOR, Twenty-Sixth Session, Supp. No. 10 (UN Doc. A/8410/Rev.1).

[101] The concept was included in Article 5 of the Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, proposed by Special Rapporteur Schwebel in 1982 (see *Yearbook of the ILC* (1982), vol. II (Part One), p. 65, at pp. 68–69), but was rejected by States. For a summary of the discussion in the ILC, see *ibid.*, pp. 72–73; *Yearbook of the ILC* (1983), vol. II (Part Two), pp. 70–71, paras. 236–241.

[102] See the Third Report by Mr. Schwebel, Special Rapporteur, *Yearbook of the ILC* (1982), vol. II (Part One), p. 65.

[103] For example, matters such as land-use controls, underground waters, stream regulation, water-related disease, water and hydraulic installation safety, etc. See Robert D. Hayton, "Observations on the International Law Commission's Draft Rules on the Non-Navigational Uses of International Watercourses: Articles 1–4," *Colorado Journal of International Environmental Law and Policy*, vol. 3 (1992), p. 31, at p. 34.

over the term in the final analysis boiled down to the question of the extent of the reserved national domain. Eventually the ILC adopted the watercourse system concept. A "watercourse" was defined to mean "a system of surface and underground waters constituting by virtue of their physical relationship a unitary whole and flowing into a common terminus." "International watercourse" was then defined as "a watercourse, parts of which are situated in different States."[104]

Since 1970, States' knowledge of the behavior of water and the interrelationship between different components of watercourses based on hydrology, hydrogeology, and related sciences has greatly advanced, and so too has the concept of an international watercourse.[105] From the original "basin" notion to the eventual "system" approach, from purely "uses" regulation to a comprehensive framework agreement on uses, protection, and preservation, international water law has undergone a marked change, further challenging national jurisdiction in this area.

Historically, there were four divergent theories applying to watercourses that traverse more than one country. In the early days some jurists as well as some States were strong advocates for the first such theory, the principle of absolute territorial sovereignty. Among them, H. W. Briggs ventured that: "No general principle of international law prevents a riparian State from excluding foreign ships from the navigation of such a river or from diverting or polluting its waters."[106] As State practice evolved, some States gradually changed their position, recognizing the interests shared by other riparian States, while others still believed in the absolute right to their portion of an international river, a manifestation of the so-called "Harmon doctrine" originally advocated

[104] See Draft Articles on the Law of the Non-Navigational Uses of International Watercourses provisionally adopted by the ILC on first reading, Report of the ILC on the Work of its Forty-Third Session, April 29–July 19, 1991, GAOR, Forty-Sixth Session, Supp. No. 10 (A/46/10), at p. 161, UN Doc. A/CN.4/L.463/Add.4 (1991), Article 2. On 27 May 1997, the United Nations adopted the Convention on the Law of the Non-Navigational Uses of International Watercourses (see General Assembly Resolution 51/229; UN Doc. A/51/869), Article 2 of which adopted the same definitions (hereinafter the "UN International Watercourse Convention").

[105] For the background to the work of the Commission on the topic, see Stephen C. McCaffrey, "Background and Overview of the International Law Commission's Study of the Non-Navigational Uses of International Watercourses," *Colorado Journal of International Environmental Law and Policy*, vol. 3 (1992), p. 17, at pp. 18–22. For a discussion of current issues concerning the UN International Watercourse Convention, see Stephen C. McCaffrey, *The Law of International Watercourses: Non-Navigational Uses* (Oxford, Oxford University Press, 2001).

[106] H. W. Briggs (ed.), *Law of Nations: Cases, Documents and Notes* (2nd edn., London, Stevens and Sons, 1953), p. 274.

by US Attorney General Harmon in 1895.[107] The attitude that "the river is mine" is still common and persistently upheld.[108]

In the *India/Pakistan* dispute over the Indus waters, Mr. K. Krishna Rao, former Legal Advisor of the Ministry of External Affairs of India, expressed the following opinion:[109]

> As far as I can see there are no generally accepted rules of international law which would be applicable to all situations arising with regard to the diversion of international rivers. In the absence of these rules, the principle of territorial sovereignty assumes importance. The Harmon doctrine is nothing but a form of that principle.

A similar attitude was also taken in the dispute between Chile and Bolivia over the diversion of water of the Lauca River by Chile.[110] The two sides differed over the interpretation of the 1933 Montevideo Declaration on the Industrial and Agricultural Use of International Rivers[111] as to whether the upstream State should obtain the consent of the downstream State prior to any project to divert the waters from an international river shared by both. Chile took the view that Bolivia's consent was not required for works in Chile's territory.

[107] The views expressed in the opinion of US Attorney-General Harmon in 1895, on the right of the US to divert water from the Rio Grande that eventually ran into Mexico, were tainted by his nationalistic attitude. They reflected his conviction that the fundamental principle of international law was the absolute sovereignty of every nation, as against all others, within its own territory; the rules, principles, and precedents of international law impose no liability or obligation upon a State with regard to the impact its activities may have upon others when using its resources within its own territory. However, he reserved his position to apply to the case of the diversion of the water of the Rio Grande. See *21 Opinions of Attorney-General* (1895), p. 274, cited in Moore, *A Digest of International Law* (8 vols., Washington, US Government Printing Office, 1906), vol. I, p. 654. The State Department accepted the legal opinion and expressed it in its diplomatic note to Mexico. It denied that diversion of shared waters was a violation of any established principle of international law. See Lammers, *Pollution of International Watercourses*, p. 268, n. 3. The matter was ultimately resolved by the 1906 Convention Concerning the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes. The US later completely abandoned the so-called "Harmon doctrine" of absolute sovereignty. See the Report of the ILC on the Work of its Forty-Sixth Session, May 2–July 22, 1994, GAOR, Forty-Ninth Session, Supp. No. 10 (A/49/10), p. 225, n. 105.

[108] Robert D. Hayton, "Observations on the International Law Commission's Draft Rules on the Non-Navigational Uses of International Watercourses: Articles 1–4," *Colorado Journal of International Environmental Law and Policy*, vol. 3 (1992), p. 31, at p. 35.

[109] *Indian Journal of International Law*, vol. 1 (1960–1961), at p. 50; also Lammers, *Pollution of International Watercourses*, p. 310.

[110] See Whiteman, *Digest*, vol. 3, pp. 1038–1039.

[111] *Ibid.*, pp. 936–937; UN Doc. A/5409, vol. III, Annex I, pp. 2–4.

The second theory, in opposition to the absolute principle of territorial sovereignty, is the principle of territorial integrity and sovereign equality.[112] For practical reasons, this theory was mostly held by downstream States against any excessive and unreasonable uses by their upstream riparian States.

The third theory is the prevailing view manifested in the emerging international water law as embraced in the UN Convention on the Law of the Non-Navigational Uses of International Watercourses (the "UN International Watercourse Convention"),[113] namely, the restrictive theory of territorial sovereignty and integrity as applied to international watercourses, based on mutual respect and mutual benefits for all States concerned.[114]

The fourth and final theory is the theory of international management in the common interest.[115] This community approach so far enjoys little support from States.[116]

What has been said, of course, does not deny the fact that one of the reasons why the principle of sovereignty has encountered increasing criticism, particularly with regard to the uses of natural resources, is that in practice the principle was often used as a guise to pursue the national interest of the acting State without due regard to the interests of the neighboring State which were likely to be adversely affected by such uses. The growing awareness of such potential conflicts over the uses of natural resources essential for the industrial, agricultural, and

[112] Hersch Lauterpacht took the view that "a State is not only forbidden to stop or divert the flow of a river which runs from its own to a neighboring State, but likewise to make such use of the water of the river as either causes danger to the neighboring State or prevents it from making proper use of the flow of the river on its part": L. Oppenheim (H. Lauterpacht, ed.), *International Law: A Treatise* (8th edn., London, Longmans, Green and Co., 1955), vol. I, p. 475.

[113] Adopted by the UN General Assembly by Resolution 51/229 of May 21, 1997 (UN Doc. A/51/869).

[114] For a study on the first three theories, see C.A. Colliard, "Legal Aspects of Transfrontier Pollution of Fresh Water," in OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977), p. 263.

[115] Smith formulated this theory as follows: "The first principle is that every river system is naturally an indivisible physical unit, and that as such it should be so developed as to render the greatest possible service to the whole human community which it serves, whether or not that community is divided into two or more political jurisdictions": Herbert Smith, *The Economic Uses of International Rivers* (London, P. S. King and Son, 1931), pp. 150–151.

[116] See Robert D. Hayton, "Observations on the International Law Commission's Draft Rules on the Non-Navigational Uses of International Watercourses: Articles 1–4," *Colorado Journal of International Environmental Law and Policy*, vol. 3 (1992), p. 31, at p. 33.

urban development of States led to the adoption of a number of international instruments by United Nations organs in the 1970s and 1980s, stressing cooperation in the field of natural resources shared by two or more States.[117] The 1990s brought a further remarkable proliferation of international instruments on the protection of the environment, which in turn further affect States' sovereign rights within their national domain. States must be more conscious of the extra-territorial effects of their activities, even if carried out entirely within their own territory.

International environmental law places more emphasis on the interdependence of States in the uses of their natural resources. Such resources as international watercourses, atmosphere, enclosed or semi-enclosed seas, and adjacent coastal waters, etc. are indeed to varying degrees "shared" by States, no matter how the physical boundaries are delineated.[118] The principle of "give and take, live and let live," as described by Handl,[119] is operative in this situation to the extent that serious extra-territorial effects caused by one State would deprive another State of the right to the enjoyment of its own resources. In the "global village,"[120] isolationist sovereign States are disappearing with the changed perceptions of the world community shaped by trade,

[117] Apart from the 1972 Stockholm Declaration on the Human Environment, there was the UN General Assembly Resolution on the World Charter for Nature of 1982; General Assembly Resolution 3129 of December 13, 1973; and the Report on Cooperation in the Field of the Environment Concerning Natural Resources Shared by Two or More States presented in consequence of that resolution to the Governing Council of the UNEP in April 1975 (UNEP/GC/44 and Corr.1, 2 and Add.1). The UNEP Intergovernmental Working Group of experts on shared natural resources adopted some draft principles for the guidance of States in the conservation and harmonious utilization of natural resources shared by two or more States, which States were requested to use as guidelines and recommendations by UN General Assembly Resolution 34/186 of 1979.

[118] See the 1978 draft UNEP Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States. The following examples were given of shared resources: (a) an international water system, including both surface and groundwater; (b) an air-shed or air mass above the territories of a limited number of States; (c) an enclosed or semi-enclosed sea and adjacent coastal waters; (d) migratory species which move between the waters or territories of several States; (e) a special ecosystem spanning the frontiers between two or more States, such as a series of mountains, forests, or areas of a special nature conservation: Andronico O. Adede, *International Environmental Law Digest: Instruments for International Responses to Problems of Environment and Development, 1972–1992* (Amsterdam, Nueva York Elsevier, 1993), p. 212.

[119] Günther Handl, "Balancing of Interests and International Liability for the Pollution of International Watercourses: Customary Principles of Law Revisited," *Canadian Yearbook of International Law*, vol. 13 (1975), p. 156, at p. 176.

[120] O. Schachter, "Sovereignty – Then and Now," in Macdonald, *Essays*, p. 671.

economics, communications, and cultural exchange among States and peoples. However, to say that these developments have actually changed the basic structure of international relations, and that the concept of sovereignty should therefore be declared obsolete, is perhaps too hasty.[121] The reality is that wars are still fought, on the basis of national boundaries, for a share of water, or a piece of land to which the State or its peoples claim to be entitled. People still depend for their well-being upon the economic, social, and cultural development of their own country. On the uses of shared resources, the balancing of national interests remains the final and decisive factor in the establishment of international standards.[122]

The balancing of interests

The balancing of interests is a very complicated matter, entailing determination of whether the activity in question is beneficial, what limitations it can sustain, and the relevant priorities involved. From a legal point of view, the balancing of interests serves to achieve justice for all parties. It may be determined on the basis of equitable considerations, or it may take the form of hard and fast rules. It is manifested in treaty provisions as well as in international judicial decisions.[123] The balancing of interests is a common feature of the relevant cases in this area.

For instance, in the *Lake Lanoux* case, the Tribunal stated that the interests of both parties must be taken into account:[124]

> France is entitled to exercise her rights; she cannot ignore Spanish interests. Spain is entitled to demand that her rights be respected and that her interests be taken into consideration.

This is the principle in a nutshell. However, in practice, the balancing of interests is seldom a straightforward exercise. The legal process as

[121] Professor Louis Henkin holds an opposing view on the concept of sovereignty in modern international law, arguing that it should be "cut ... down to size," reconceived and renamed. He advocates replacing it with the notion of a system of "States." Henkin disagrees with the use of the term "sovereignty" (which had its historical origins in the exercise of ultimate authority by "sovereign" princes) in its modern-day context, referring to national States. See L. Henkin, "The Mythology of Sovereignty," in Macdonald, *Essays*, p. 351, at pp. 352–353.

[122] See Mr. Riphagen's comment on the topic of international liability in the ILC deliberations, in *Yearbook of the ILC* (1981), vol. I, p. 221.

[123] For a useful survey conducted by the ILC Secretariat on the subject, see *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), pp. 46–56 and 86–87.

[124] 24 ILR (1957), p. 101, at p. 140, para. 23.

well as political bargaining will together determine the outcome of the balancing. The sovereign right to the use of shared resources, as a two-edged sword, can both fortify the position of each party and strengthen the claim of each adversary. The principle of equality of sovereign States offers the opportunity for the parties to negotiate and accommodate. Balancing of interests as a principle guides the process and dictates the result to ensure a continuing stable relationship between the relevant States.

The *Trail Smelter* case[125] provides a unique perspective on the balancing process. The matter was in essence a tort case between a private company of one country and the private citizens of another country. On the one hand, the Constitution of the State of Washington prohibited aliens from holding interests in land in the State, thereby preventing the Canadian company from obtaining smoke easements from the owners of land affected by the fumes. On the other hand, the victims of the nuisance located in the State of Washington, hundreds in number, were unable to seek redress in the British Columbia courts for damage to land located outside the province.[126] Further, British Columbia insisted that under general international law the US claimants exhaust their local remedies first. Thus the national governments took up the matter in the interests of the two countries.[127]

Canada was apprehensive about the possible shutdown of the smelter, given its economic importance to southeastern British Columbia. At the same time, its national interests of foreign policy obviously weighed in favour of a proper settlement of the matter. Therefore, its goal became an equitable and reasonable solution which balanced both of these considerations.[128] These sentiments were expressed by R. B. Bennet, the

[125] RIAA, vol. III (1938, 1941), p. 1905.

[126] One commentator described this issue as follows: "It was the general opinion of the lawyers concerned at the time that the British Columbia courts would be compelled to refuse to accept jurisdiction in suits based on damage to land situated outside of the province. Apart, therefore, from the practical difficulty confronting some hundreds of claimants in bringing suits in a foreign forum, there was the moral certainty that they would lose. The Stevens County farmer [in the State of Washington] with very limited means could not fairly be expected to carry a lawsuit through the hierarchy of courts to the Privy Council in the faint hope that it would reject the rule laid down by the House of Lords in *British South Africa Company* v. *Companhia de Mocambique* [[1893] AC 602]." See John E. Read, "The Trail Smelter Dispute," *Canadian Yearbook of International Law*, vol. I (1963), p. 213, at p. 222.

[127] See *ibid.*, pp. 213–214; RIAA, vol. III (1938, 1941), p. 1905, at p. 1918.

[128] Read, "Trail Smelter Dispute," p. 224.

then Canadian Prime Minister, in his note addressed to the US Minister in Canada:[129]

> A rule which would make the Company a guarantor that under no conditions would pockets of gas be carried across the border, under penalty of a shut-down of the plant, would be impossible. It would involve a far more rigid regime than has been imposed upon any smelter in either of the two Countries. It would be particularly unjust in the present instance, in which the Company has already expended more than ten million dollars upon projects designed to bring about a substantial and practical elimination of injury to United States interests. No Court in either country would impose such a harsh and oppressive rule. I have no doubt that your Government will agree that the practical elimination of damage is a satisfactory solution to the problem, and that no rule should be adopted which would involve the destruction of the industry. A principle should not be established in this case which would potentially involve a shutting down of existing industries of various types in industrial communities and sterilizing future development within a broad zone in the Dominion of Canada and the United States of America, stretching from coast to coast along the international boundary-line.

While evidently hoping to maintain good relations with its neighbor, Canada argued against further actions which might lead to the destruction of the industry. As far as the Canadian side was concerned, the Canadian company had already taken steps to reduce the fumigation damage resulting from the smelter, and had paid a large sum to indemnify past damage caused to the other side; any rule requiring shutdown of the smelter in the event of further damage would impose an undue burden on the industry. Thus Canada argued that the large sums spent on smoke abatement at that point and the lump sum of US$350,000 recommended by the International Joint Commission in respect of damage incurred before 1931 were sufficient to satisfy all Canadian obligations. This illustrates a practical concern which is still at the heart of the issue of liability for environmental damage today. Suppose in the *Trail Smelter* case, the scientific studies ordered by the Tribunal had indicated that the proposed regime to control the residual damage was unlikely to succeed. Should the smelter be shut down or should the damage rest where it fell?[130] In other words, should the smelter be allowed to continue its

[129] Note No. 13 of February 17, 1934, from the Prime Minister and Secretary of State for External Affairs of Canada, R. B. Bennett, to the American Minister in Canada, W. D. Robbins, *Foreign Relations of the United States* (1934) vol. I, p. 906, cited from the *Yearbook of the ILC* (1981), vol. II (Part One), p. 113, n. 71.

[130] Dupuy states that international liability would not arise unless there is a failure of due care on the part of the actor. "The various limits generally placed on the legal

operations, despite further damage to the environment, under an arrangement where Canada simply compensated any such damage? The Tribunal itself shared this concern with the US which took the steadfast position that "States are not required, against their wishes, to suffer substantial harm if compensation is tendered."[131] Indeed, Read points out:

> Bearing in mind that the Tribunal was required to reach "a solution just to all parties concerned," the Questions were so drafted that the Tribunal could, if it deemed it just and necessary, establish a regime of control which would legalize future damage in the State of Washington, and provide for indemnity or compensation. Actually, the regime of control prescribed by the Tribunal has brought about a position in which effective operation of the smelter is possible and in which there has been cessation of damage; but such a result did not seem to be certain at the time of negotiation.[132]

Apparently insistence on absolute cessation of damage is often not feasible. As the Canadian Prime Minister argued, to do so may involve destruction of the industry and consequent degradation of the regional economy – if the costs of adopting the regime and the amount of compensation or indemnification for damage are too high, it may render the industry virtually paralyzed. Thus delicate balancing is required between the objectives of sustaining the industry and protecting the environment. The Tribunal stated the situation succinctly as follows:[133]

> It would not be to the advantage of the two countries concerned that industrial effort should be prevented by exaggerating the interests of the agricultural community. Equally, it would not be to the advantage of the two countries that the agricultural community should be oppressed to advance the interest of industry.

Obviously, it was the general, long-term interests of the two countries that the Tribunal was mostly concerned with, as it was fully aware of the fact that the matter had wide repercussions on both sides in view of the obvious geographical connection between the two countries, and particularly the concentration of industrial activity along the border

exercise of these powers have the effect *not of protecting third parties against any infringements of their subjective rights* resulting from the conduct of these activities, but rather of making it an obligation for the States engaging in them to *take the greatest care* to prevent any possible damage" (emphasis added). See P.-M. Dupuy, *La Responsabilité Internationale des Etats pour les Dommages d'Origine Technologique et Industrielle* (Paris, Pedone, 1976), p. 225.

131 *Yearbook of the ILC* (1981), vol. II (Part One), at p. 111.

132 Read, "Trail Smelter Dispute," p. 224.

133 RIAA, vol. III (1938, 1941), p. 1905, at p. 1939.

region. Further, the Tribunal had to consider the prospect that "while the United States' interests may now be claimed to be injured by the operations of a Canadian corporation, it is equally possible that at some time in the future Canadian interests might be claimed to be injured by an American corporation."[134]

The standard of the regime set up by the Tribunal in the *Trail Smelter* case was much higher than that generally practiced by the industry, on both sides of the border. The capital cost of complying with the regime set up by the Tribunal was in the order of US$20 million, a huge cost for the industry at that time. To comply with the regime, "the company was compelled to remove from the smoke cloud at the stacks more sulphur dioxide than was taken from the stacks of all the other smelters of the North American continent combined."[135] Fortunately, the company was able to sell the products of its smoke abatement programs for a substantial profit. If it were not for this factor, it would be hard to imagine how an industry could ever bear such a cost.

In its award delivered in 1941,[136] the Tribunal touched on the standard of conduct. In the *State of Missouri* v. *State of Illinois* case,[137] cited by the Tribunal, the US Supreme Court found that "the practice complained of was general along the shores of the Mississippi River at that time, that it was followed by Missouri itself and that thus a standard was set up by the defendant which the claimant was entitled to invoke."[138] As is commonly conceived, the standard of conduct should be determined by reference to the current state of technological development, and the balance of costs and benefits for the industry. In reaching its conclusion in the *Trail Smelter* case, nevertheless, the Tribunal took little notice of the current practice by both countries for the industry's conduct but focused exclusively on setting up a workable regime that in itself would ensure the prevention of damage by fumes to the United States in the future. This is because the smelter posed a special source of extra-territorial hazard to the State of Washington for geographical and meteorological reasons. Moreover, as explained above, private legal recourse was virtually out of the question. Taken together, these factors placed damage at the focus of attention, as a matter of justice between the two countries.

Some scholars doubt that any normative claim can be made about the case since the Tribunal based its award not on the principles of

[134] *Ibid.*, pp. 1938–1939. [135] Read, "Trail Smelter Dispute," p. 221.
[136] RIAA, vol. III (1941), p. 1938.
[137] 200 US 496, at p. 521, cited by the Tribunal, in RIAA, vol. III (1941), p. 1964.
[138] *Ibid.*

international law on transboundary air pollution, but on rules established by the US court decisions on water disputes.[139] However, the choice of applicable law laid down in Article IV of the 1935 Convention between the US and Canada,[140] the *compromis*, was a crucial factor in achieving a solution that was just to all interested parties, including the victims and the industry. An historical review by an insider shed some light on the political considerations behind the matter. Mr. John E. Read,[141] then Legal Advisor to the Prime Minister of Canada, who was directly involved in the case, gave the following account. It is an interesting comment from the defendant party:[142]

The negotiators, both the United States and Canada, were determined to avoid the possibility of a finding *non liquet*. The problem was one of an alleged international tort and there was not much international law available dealing with international nuisance. Further, the Canadian negotiators were somewhat apprehensive lest the Tribunal might be impressed by the law of nuisance as set forth in precedents binding on Canadian courts. Those precedents were unfavorable to industrial enterprise, and, if applied, might be disastrous to the Smelter and to the economy of an important part of British Columbia. On the other hand, the decisions in the courts of the United States, including the Supreme

[139] In his comment on this case, Mr. Ushakov, a member of the ILC, pointed out that "it was impossible to derive any general legal rule from the *Trail Smelter* case . . . That case had been a special one, and it could not be inferred from it that all transboundary harm caused by smoke emissions must be repaired . . . [I]t had been because of local geographical conditions and, in particular, weather conditions, that smoke from the territory of one State had concentrated in the territory of a neighboring State. Moreover, the court which had settled the case had not done so on the basis of any generally applicable rule." See *Yearbook of the ILC* (1981), vol. I, p. 225. Dupuy is also of the view that the *Trail Smelter* Tribunal drew on precedents from the US Supreme Court, which cannot be regarded as exercising international authority: P. Dupuy, "International Liability of States for Damage Caused by Transfrontier Pollution," in OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977), p. 345, at p. 358.

[140] Convention for the Settlement of Difficulties Arising from Operation of Smelter at Trail, BC (Ottawa, April 15, 1935), US Treaty Series No. 893; reproduced in RIAA, vol. III (1938, 1941), p. 1907. Article IV provided that "[t]he Tribunal shall apply the law and practice followed in dealing with cognate questions in the United States of America as well as international law and practice, and shall give consideration to the desire of the high contracting parties to reach a solution just to all parties concerned."

[141] Mr. John E. Read was a former member of the International Court of Justice. He was directly concerned with the *Trail Smelter* dispute at all stages: the settlement of the terms of reference to the International Joint Commission; as counsel before the Commission; the negotiation and drafting of the Trail Smelter Convention; and the special problems which arose and the way in which they were dealt with; and he was in a position to discuss some of the matters which did not emerge from examination of the decisions and the records. See Read, "Trail Smelter Dispute," p. 213.

[142] *Ibid.*, p. 227.

Court cases, were much more evenly balanced in their effect on industrial and agricultural enterprise. The drafting of Article IV gave effect to both of these considerations.

The choice of US law as the applicable law for the arbitration was intended to ensure a fair solution for both parties. Given the time of the case, it is understandable that the Tribunal simply took a market value approach and balanced the industrial and agricultural interests of both sides without considering any loss of environmental amenity.[143]

Compared with the corrective measures imposed on the industry, the damages were marginal. In order to fulfill the task set up by the *compromis*, the efforts taken by the Tribunal to establish the future regime for the industry were painstaking. The Trail Smelter problem is not unique, given the scale of industrial pollution all over the world, but the way in which the issue of transboundary damage was dealt with is indeed unique.[144] However, the dictum of the Tribunal on the general principle of international law must be understood within the context of the political process surrounding the resolution of the dispute, lest it be misconstrued as purporting to lay down a hard rule of international liability for result rather than conduct in the field of transboundary damage.

The *Trail Smelter* case is an old case arising in a special context, but its process of settlement still merits study, particularly for developing countries. It illustrates that transboundary damage is not solely about compensation, but can involve complicated economic, political, and social ramifications. The resolution of transboundary damage disputes among States can be a heavily political process, where other important factors such as territorial disputes, security issues, economic and trade frictions, etc. may influence or even block the outcome of the negotiations. In this regard, the political will of the parties to resolve the problem is essential, but the mutual understanding of what is at stake is even more important for reaching a proper solution. When a crucial economic interest of a country is at stake, mingled with a strong foreign affairs concern, the State in question will likely be very keen to engage in

[143] As the Tribunal assessed damage under US law, the quantum of damage would be significantly higher if the case were decided today, as US law now treats loss of environmental amenity or resources as a separate measure of damage: Philippe Sands, *Principles of International Environmental Law*, vol. I, *Frameworks, Standards and Implementation* (Manchester, Manchester University Press, 1995), p. 642.

[144] Apart from the two governments, the victims and the smelter's owners also presented evidence and argument to the Tribunal in accordance with Article VIII of the Convention: see Read, "Trail Smelter Dispute," p. 223.

serious negotiations with a view to finding a mutually acceptable solution. In considering indemnity for damage, the interests of both parties have to be balanced so that not only will the immediate dispute be properly settled but long-term peaceful relations will also be maintained. With such policy goals, therefore, many factors other than legal rules can greatly influence the ultimate result of the process. When Canada and the US agreed on the US court rulings on inter-State waters as the law applicable to the *Trail Smelter* arbitration instead of Canadian or international law, their purpose was to achieve a balance between the interests of the agricultural community on the US side and the interests of the industrial community on the Canadian side.[145] Likewise, the US refusal to yield to Canadian suggestions that the settlement in the *Trail Smelter* dispute would govern other boundary situations in the future "where the tables might be turned" equally indicates the reluctance of States to accept "hard and fast" rules to resolve such complicated matters as transboundary damage.[146] While scholarly writings on the case often describe it as evidence of a general principle of international law imposing strict liability for transboundary damage, neither of the parties actually agreed to apply the rule on a general basis in their relations regarding transboundary damage.

Since the *Trail Smelter* case, many changes have taken place in international law. Particularly in the last twenty years, numerous norms and standards have been developed on the protection of the environment. The obligation of States to prevent and mitigate transboundary damage has been greatly reinforced. With the newly established principle of sustainable development, conflicting interests between economic development and environmental protection have to be reconciled.[147] Maintaining the balance between these two interests is an essential consideration in determining the uses of shared resources.

In the *Gabcikovo-Nagymaros Project* case (*Hungary/Slovakia*),[148] a balancing of interests was also evident. Hungary justified its conduct

[145] On this point, the Tribunal said: "The decisions of the Supreme Court of the United States which are the basis of these conclusions are decisions in equity and a solution inspired by them, together with the regime hereinafter prescribed, will, in the opinion of the Tribunal, be 'just to all parties concerned,' as long, at least, as the present conditions in the Columbia River Valley continue to prevail." See RIAA, vol. III (1941), at p. 1965.

[146] See *Yearbook of the ILC* (1981), vol. II (Part One), p. 111.

[147] See, for instance, the Preamble to the Marrakesh Agreement Establishing the World Trade Organization of 1994, which, for the first time, introduced the objective of sustainable development to GATT/WTO practice.

[148] *Case Concerning the Gabcikovo-Nagymaros Project* (*Hungary/Slovakia*) (Merits), September 25, 1997, ICJ Reports (1997), p. 7.

suspending the works under the 1977 Treaty with Czechoslovakia as its response to a "state of ecological necessity." It argued, *inter alia*, that the construction of the Gabcikovo-Nagymaros Project would have significantly changed that section of the Danube with which the Project was concerned; that as a result of the operation in peak mode and the resulting changes in water level, the flora and fauna on the banks of the river would have been harmed, and the water quality impaired. Hungary also contended that the completion of the Project would have had a number of other adverse effects, in that the living conditions for the biota of the banks would have been drastically changed by peak-mode operation, the soil structure ruined and its yield diminished. It further stated that the construction might have resulted in the water-logging of several thousand hectares of soil and that the groundwater in the area might have become over-salinated. As far as the drinking water of Budapest was concerned, Hungary contended that the Project would have necessitated further dredging; this would have damaged the existing filter layer, allowing pollutants to enter nearby water supplies.[149]

Slovakia argued at length that the state of necessity upon which Hungary relied did not justify the suspension of a treaty obligation recognized by the law of treaties. Indeed, it denied that there had been any type of "ecological state of necessity" in this case and, furthermore, doubted whether "ecological necessity" or "ecological risk" could constitute a circumstance precluding the wrongfulness of an act. It adverted to various scientific studies in support of its allegation that Hungary's description of the situation was overly pessimistic. Slovakia did not deny that ecological problems could have arisen, but asserted that they could have been largely remedied. Thus it argued that Hungary's apprehensions related only to extreme operating conditions. It also contended that, in the same way that the original project had undergone various modifications since 1977, it would have been possible to modify it even further to reduce environmental impact.[150]

On the protection of the environment, the ICJ cited its advisory opinion on the legality of the threat or use of nuclear weapons:[151]

> the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn. The existence of the general obligation of States to ensure that activities within

[149] *Ibid.*, pp. 35–36, para. 40. [150] *Ibid.*, p. 37, para. 44.
[151] *Ibid.*, p. 41, para. 53, citing *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, ICJ Reports (1996), p. 65, at pp. 241–242, para. 29.

their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.

On the environmental impact of the project, the Court examined the evidence presented by the two parties and concluded that the peril to the environment invoked by Hungary was not sufficiently established. Furthermore, the Court suggested that Hungary had to prove that the suspension and abandonment of the project was the only feasible option available to it under the circumstances, which in the Court's view was not the case.[152] The Court ruled that it was wrongful for Hungary to suspend and abandon the project, and that it was also wrongful for Slovakia to put into operation the "provisional solution" (Variant C). While upholding the effects of the 1977 Treaty, the Court made the following decision on compensation:[153]

> unless the Parties otherwise agree, Hungary shall compensate Slovakia for the damage sustained by Czechoslovakia and by Slovakia on account of the suspension and abandonment by Hungary of works for which it was responsible; and Slovakia shall compensate Hungary for the damage it has sustained on account of the putting into operation of the "provisional solution" by Czechoslovakia and its maintenance in service by Slovakia.

The Court upheld the treaty obligations undertaken by the parties[154] on the basis that the project was planned, decided on, and implemented jointly by the parties. Under the Treaty provisions, the parties undertook to address environmental issues through consultation and negotiation. Therefore, even if the Hungarian anxiety over environmental damage was sound, termination of the project was not the proper solution, given the amount of work that had already been done and the huge amounts of money already invested.[155] The geographical and hydrological

[152] *Ibid.*, pp. 42–43, paras. 54–55. [153] *Ibid.*, p. 83, operative para. (2)D.

[154] In his Separate Opinion, Vice-President Weeramantry considers that the Court did not give enough weight to the principle of sustainable development. He states that "no action should be permissible which is today considered environmentally unsound, even though it is taken under an instrument of more than 20 years ago": Separate Opinion of Vice-President Weeramantry, *ibid.*, pp. 114–115.

[155] By 1991, the construction at Gabcikovo was all but finished, the bypass canal was completed, and Hungary's work on the tailrace canal was completed in accordance with the 1977 Treaty. Huge investments of some US$2.5 billion had been spent on the project. This led Judge Koroma to disagree with the Court's finding that Czechoslovakia was not entitled to put Variant C into operation, on the basis that "a State party to a treaty, when confronted with a refusal by the other party to perform its part of an agreed project, is free to act on its own territory and within its own

conditions of the project did not justify either of the parties taking unilateral actions in derogation from the 1977 Treaty.

In this regard, it is interesting to note that the Court was much divided over the legality of the "provisional solution" taken by Czechoslovakia in the face of non-performance by Hungary. The majority ruling was that Czechoslovakia was entitled to proceed to the "provisional solution" but was not entitled to put it into operation as the situation later eventuated.[156] The reason given by the Court for precluding the legality of the operation in question was that it involved the diversion by Czechoslovakia of a disproportionate amount of water from the Danube,[157] thus violating the principle of equitable utilization. From a legal point of view, however, it is equally arguable that there would have been no such "operation" if it had not been for the suspension and abandonment of the works by Hungary. Indeed, Slovakia submitted that Variant C simply represented what Hungary had already agreed to with modifications only to the extent "necessary by virtue of Hungary's decision not to implement its treaty obligations."[158] Judge Koroma, in his Separate Opinion, was of the view that Variant C was a "genuine attempt by an injured party to secure the achievement of the agreed objectives of the 1977 Treaty, in ways not only consistent with that Treaty but with international law and equity."[159]

jurisdiction so as to realize the original object and purpose of the treaty, thereby limiting for itself the damage sustained, and, ultimately, the compensatory damages to be paid by the other party": Separate Opinion of Judge Koroma, *ibid.*, p. 145.

156 The Court, by nine votes to six, found that Czechoslovakia was entitled to proceed, in November 1991, to the "provisional solution" as described in the terms of the Special Agreement; and, by ten votes to five, that Czechoslovakia was not entitled to put into operation, from October 1992, this "provisional solution." See *ibid.*, p. 82, operative paras. (2)B and C. The Court drew the distinction on the legal basis stated by the ILC that "[a] wrongful act or offence is frequently preceded by preparatory actions which are not to be confused with the act or offence itself. It is as well to distinguish between the actual commission of a wrongful act (whether instantaneous or continuous) and the conduct prior to that act which is of a preparatory character and which 'does not qualify as a wrongful act'." See *ibid.*, p. 54, para. 79, citing the Commentary on Article 14 of the Draft Articles on State Responsibility, Report of the ILC on the Work of its Forty-Eighth Session, May 6–July 26, 1996, GAOR, Fifty-First Session, Supp. No. 10 (A/51/10), p. 141; and *Yearbook of the ILC* (1993), vol. II (Part Two), p. 57, para. 14.

157 As stated by the Court, the operation of Variant C would lead Czechoslovakia "to appropriate, essentially for its use and benefit, between 80 and 90 per cent of the waters of the Danube before returning them to the main bed of the river": *ibid.*, p. 54, para. 78.

158 *Ibid.* 159 *Ibid.*, p. 151.

While the Court's decision certainly has its critics,[160] it provides a quite balanced solution to the dispute between Hungary and Slovakia resulting from the Gabcikovo-Nagymaros Project. In the first place, the Court upheld the validity of the 1977 Treaty in order to ensure that, unless otherwise agreed by the parties, the Project was completed as expected under the Treaty, emphasizing the centrality of the *pacta sunt servanda* rule. This is of great importance for the stability of economic and social development in the two countries, especially for the areas along the river. By disallowing the unilateral operation of Variant C by Slovakia, and by obliging the Parties to conduct further negotiations, the Court ultimately ensured a cooperative relationship between the two countries in sharing the boundary water resources. In the long run, the objects and purposes of the Treaty will be served.

In the final analysis, the *Gabcikovo-Nagymaros Project* case is about balancing the interests of economic development and environmental protection. Two fundamental principles of international water law were concerned – the principle of equitable and reasonable utilization, and the principle of avoiding significant harm. For a long time, the first principle served as the basis of the law, from which other principles were derived. However, the latter principle has become more important in recent times. For instance, under the UN International Watercourses Convention,[161] the obligation not to cause significant harm is provided as a general principle under Article 7.

[160] For instance, Fitzmaurice muses that "many would no doubt have preferred a more general and intellectually more elegant *erga omnes* approach, through a clear declaration of the primacy of environmental norms ... A second line of critical analysis would consist in examining how far the judgment has been able to provide an effective framework for the negotiations that it called for." See J. Fitzmaurice, "The Ruling of the International Court of Justice in the Gabcikovo-Nagymaros Case: A Critical Analysis," *European Environmental Law Review*, vol. 9 (2000), p. 80, at p. 87. For further analyses of the case, see F. N. Botchway, "The Gabcikovo-Nagymaros Case: A Step Forward for Environmental Considerations in the Joint Development of Transboundary Resources?," *European Environmental Law Review*, vol. 8 (1999), p. 76; J. G. Lammers, "The Gabcikovo-Nagymaros Case Seen in Particular from the Perspective of the Law of International Watercourses and the Protection of the Environment," *Leiden Journal of International Law*, vol. 11 (1998), p. 287; M. Fitzmaurice, "The Gabcikovo-Nagymaros Case: The Law of Treaties," *Leiden Journal of International Law*, vol. 11 (1998), p. 321; and R. Lefeber, "The Gabcikovo-Nagymaros Project and the Law of State Responsibility," *Leiden Journal of International Law*, vol. 11 (1998), p. 609.

[161] Convention on the Law of the Non-Navigational Uses of International Watercourses, adopted by the UN General Assembly by Resolution 51/229 of May 21, 1997 (UN Doc. A/51/869). The ILC adopted on first reading an entire set of draft articles on the topic at its forty-third session, which was submitted to governments for comments and

A number of legal instruments have enumerated a list of factors relevant to the application of the principle of equitable and reasonable utilization of international watercourses. A few important elements are singled out as benchmarks for determining the balance of interests between the riparian States. For instance, the Helsinki Rules adopted by the International Law Association on the uses of international rivers[162] provided a list of factors relevant for the determination of a reasonable and equitable share in the beneficial uses of waters of an international drainage basin. These factors take into account the physical conditions of the river, the existing uses and current need of each riparian State, the comparative costs of alternative means to satisfy each basin State, and the possible injury from the uses.[163]

observations in 1991. After its second reading at the forty-sixth session in 1994, the General Assembly adopted the Convention in May 1997.

[162] The Helsinki Rules on the Uses of the Waters of International Rivers, adopted by the International Law Association at the fifty-second conference, held at Helsinki in August 1966: see International Law Association, Report of the Fifty-Second Conference, Helsinki, August 14–20, 1966, pp. 484–533. Note that the International Law Association is an unofficial organization and accordingly the Helsinki Rules are not legally binding in international law until such time as they are adopted in a multilateral treaty, or State practice enshrines them as a rule of customary international law.

[163] Article V(2) of the Helsinki Rules states that the following factors are to be considered when determining a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin:

> (2) Relevant factors which are to be considered include, but are not limited to:
> (a) the geography of the basin, including in particular the extent of the drainage area in the territory of each basin State;
> (b) the hydrology of the basin, including in particular the contribution of water by each basin State;
> (c) the climate affecting the basin;
> (d) the past utilization of the waters of the basin, including in particular existing utilization;
> (e) the economic and social needs of each basin State;
> (f) the population dependent on the waters of the basin in each basin State;
> (g) the comparative costs of alternative means of satisfying the economic and social needs of each basin State;
> (h) the availability of other resources;
> (i) the avoidance of unnecessary waste in the utilization of waters of the basin;
> (j) the practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among uses; and
> (k) the degree to which the needs of a basin State may be satisfied, without causing substantial injury to a co-basin State.

Article V(3) indicates the way in which these factors are to be balanced:

> (3) The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable

In the UN International Watercourses Convention, a similar non-exhaustive list of factors is enumerated to assist the balancing of interests in the application of the principle of equitable and reasonable utilization of resources.[164] In accordance with the basic principle, the notion of "equitable and reasonable" utilization does not mean "maximum" use or what is financially most efficient, nor does it imply that the State which is capable of making the most efficient use should have a prevailing claim over the others. Under the Convention, the optimal utilization means "the maximum possible benefits for all watercourse States and the greatest possible satisfaction of all their needs, while minimizing the detriment to, or unmet needs of, each."[165] Among different uses, however, special consideration is given to the requirements of vital human needs, including both drinking water and water required for the production of food in order to prevent starvation, as it is realized that the supply of fresh water to meet human needs for the growing urban, industrial, and agricultural development will be a "daunting" challenge for States.[166]

and equitable share, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.

[164] Article 6 of the UN International Watercourses Convention provides that:

> 1. Utilization of an international watercourse in an equitable and reasonable manner . . . requires taking into account all relevant factors and circumstances, including:
>
> (a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
> (b) The social and economic needs of the watercourse States concerned;
> (c) The population dependent on the watercourse in each watercourse State;
> (d) The effects of the use or uses of the watercourses in one watercourse State on other watercourse States;
> (e) Existing and potential uses of the watercourse;
> (f) Conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect;
> (g) The availability of alternatives, of comparable value, to a particular planned or existing use . . .
>
> 3. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.

[165] Commentary on Article 6 of the Draft Law on the Non-Navigational Uses of International Watercourses, Report of the ILC on the Work of its Thirty-Ninth Session, May 4–July 27, 1987, GAOR, Forty-Second Session, Supp. No. 10 (A/42/10), pp. 69–71.

[166] Commentary on Article 10 of the Draft Law on the Non-Navigational Uses of International Watercourses, Report of the ILC on the Work of its Forty-Third Session, April 29–July 19, 1991, GAOR, Forty-Sixth Session, Supp. No. 10 (A/46/10), pp. 180–182.

Pertinent to the balance of interests, the core of the issue remains the limits on the sovereign right of States to the uses of their natural resources. Environmental interests, as an additional factor, further complicate the process of balancing the diverse goals and priorities of different States.

The criterion of harm

Transboundary pollution damage, a direct target of international environmental law, is under increasingly strict control through the rules of conduct. To invoke international liability, there must be a degree of seriousness of the transboundary damage. Non-accidental damage cases, by and large, arise in the normal course of industrial, agricultural and other types of economic activities. Before any meaningful contemplation of legal issues can be carried out there has to be a threshold; damage has to be measured in quantifiable terms. Nationally as well as internationally, the criterion of damage, like a moving yardstick, indicates the rigor of the law.

In the normal course of events, damage is often characterized as injury to human life, damage to property, detrimental change of air or water quality, diversion of an undue amount of shared water, etc. For example, in the Colorado River salinity dispute, Mexico suffered serious damage to its agricultural industry due to the increased salinity of the water delivered from the US. In the early cases, the threshold of damage for invoking international liability was quite strict. In the *Trail Smelter* case, the Tribunal made it clear that a State should be held responsible for "serious consequences."[167] When the Tribunal established the temporary regime, a minimum residual damage was considered tolerable, particularly in the light of the investment in effecting a reduction in fumigation damage. In the *Lake Lanoux* case, the Tribunal also insisted that the damage claimed should be serious and real; a mere formal change in the natural condition of the resources should not constitute a claimable damage, because:[168]

> [t]he water which by nature constitutes a fungible item may be the object of a restitution which does not change its qualities with regard to human needs. A diversion with restitution, such as that envisaged by the French project, does not change a state of affairs organized for the working of the requirements of social life.

[167] RIAA, vol. III (1941), at p. 1965. [168] 24 ILR (1957), p. 101, at p. 125.

Spain had never claimed that:[169]

> the works would bring about an ultimate pollution of the waters of the Carol or that the returned waters would have a chemical composition or a temperature or some other characteristic which could injure Spanish interests . . . [or that] . . . by their technical character, the works envisaged by the French project could not in effect ensure the restitution of a volume of water corresponding to the natural contribution of the Lanoux to the Carol, either because of defects in measuring instruments or in mechanical devices to be used in making the restitution . . . It has not been clearly affirmed that the proposed works would entail *an abnormal risk* in neighborly relations or in the utilization of the waters.

The failure on the part of Spain to prove the existence of real and serious damage, in the Tribunal's view, meant that it was not entitled to claim a remedy.

In this regard, one important academic study is also illustrative. In the 1966 Helsinki Rules on the uses of the waters of international rivers, the International Law Association took the position that in considering equitable and reasonable utilization, "substantial injury" should be prevented.[170] The policy intention behind the term was candidly presented in the commentary on the articles: "Not every injury is substantial. Generally, an injury is considered 'substantial' if it materially interferes with or prevents a reasonable use of the water."[171] Twenty years later, in its Complementary Rules Applicable to International Water Resources, adopted in 1986, the ILA reaffirmed its position on the criterion as set forth in the Helsinki Rules.[172]

[169] *Ibid.*, p. 123 (emphasis added). See also Survey of State Practice Relevant to International Liability for Injurious Consequences Arising out of Acts Not Prohibited by International Law, prepared by the Secretariat, *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 37, para. 156.

[170] In Article V of the Helsinki Rules, among the factors which must be considered when determining what constitutes equitable and reasonable utilization, para. (2)(k) reads: "the degree to which the needs of a basin State may be satisfied, without causing *substantial injury* to a co-basin State" (emphasis added). Article X(1)(a) provides that a State "must prevent any new form of water pollution or any increase in the degree of existing water pollution in an international drainage basin which would cause substantial injury in the territory of a co-basin State."

[171] International Law Association, Report of the Fifty-Second Conference (Helsinki, 1966), p. 500.

[172] The 1986 Complementary Rules somewhat altered the relationship between the principle of equitable and reasonable utilization and the principle of prevention of substantial harm. Article I of the Complementary Rules reads: "A basin State shall refrain from and prevent acts or omissions within its territory that will cause *substantial injury* to any co-basin State, provided that the application of the principle of equitable utilization as set forth in Article IV of the Helsinki Rules does not justify

During the deliberations of the ILC on the subject, however, several terms have been used to describe the criterion of damage: "serious," "appreciable," and "significant."[173] The underlying reason for the change of terminology was the growing concern over environmental protection of international waters. The Commission lowered the threshold from "serious" to "appreciable,"[174] in order to speed up the process of co-operation between the watercourse States. The eventual choice of the term "significant" indicates that the Commission raised the standard to a more realistic level.[175] Prevention of harm need not be absolute and has to be weighed against equitable and reasonable utilization. Therefore, transboundary harmful effects must reach a certain threshold before any international obligations can be imposed on a watercourse State.

an exception in a particular case. Such an exception shall be determined in accordance with Article V of the Helsinki Rules." See the Complementary Rules Applicable to International Water Resources, Report of the Committee on International Water Resource Law, International Law Association, Report of the Sixty-Second Conference (Seoul, 1986), p. 278.

[173] The early draft of the Convention on the Law of the Non-Navigational Uses of International Watercourses adopted the term "serious" as used by the *Trail Smelter* Tribunal. Later, it was changed to "appreciable," but eventually the Commission used the term "significant" and it was adopted under the Convention. See Reports of the ILC respectively in 1983, 1986 and 1994.

[174] Some scholars assert that the term "appreciable" should be defined as "a real impairment of use" that is capable of being established by objective evidence, and that to be regarded as "appreciable," the adverse effect need not rise to the level of being substantial. See Ved P. Nanda, "The Law of the Non-Navigational Uses of International Watercourses: Draft Articles on Protection and Preservation of Ecosystems," *Colorado Journal of International Environmental Law and Policy*, vol. 3, No. 1 (1992), pp. 190–193.

[175] The Commission concluded that, first, Article 5 (entitled "Equitable and Reasonable Utilization and Participation") alone

did not provide sufficient guidance for States in cases where harm was a factor; second, that States must exercise due diligence to utilize a watercourse in such a way as not to cause significant harm, third, that the fact that an activity involves significant harm, would not of itself necessarily constitute a basis for barring it. In certain circumstances, "equitable and reasonable utilization" of an international watercourse may still involve significant harm to another watercourse State. Generally, in such instances, the principle of equitable and reasonable utilization remains the guiding criterion in balancing the interests at stake.

See the commentary on Article 7 of the Draft Articles by the ILC: Draft Articles on the Law of the Non-Navigational Uses of International Watercourses and Resolution on Confined Transboundary Groundwater, Report of the ILC on the Work of its Forty-Sixth Session, May 2–July 22, 1994, GAOR, Forty-Ninth Session, Supp. No. 10 (A/49/10), p. 195, at p. 236.

It should be pointed out that, under the UN International Watercourse Convention, the principle of prevention of significant harm is not limited to bilateral relations between watercourse States.[176] In the first place, each and every watercourse State has the obligation to protect and preserve the ecosystem of an international watercourse.[177] They undertake to prevent, reduce, and control pollution that may cause significant harm either to human health and safety, to any beneficial use, or to the living resources of the watercourse.[178] Therefore, any watercourse State has the right to intervene if it considers that a use by a watercourse State may cause significant damage to the overall ecological condition of the watercourse even when that State itself does not directly suffer any such damage. The obligation not to cause harm is owed to all watercourse States. Under the Convention even when a watercourse State is not a party to a watercourse agreement concluded by other watercourse States, its rights and interests are still entitled to protection. For instance, every watercourse State, whether or not a party to a particular watercourse agreement, has the right to participate in consultations relating to that watercourse agreement.[179] This provision has reflected the general policy of States on the protection of water resources, but, as a progressive development of the law, it still needs State practice to validate the rule. The criterion of damage has a direct bearing on both substantive and procedural rules with regard to preventing transboundary damage. Procedurally it triggers the process of notification, consultation, and negotiation among States who have an interest in the shared resource. Substantively it invokes a new legal relationship between the injured and the injurer under the regime of State responsibility. In general, the criterion of damage indicates the standards of conduct, draws the line between the national domain and international cooperation, and maintains the balance between development and environment.

[176] Article 7 of the UN International Watercourses Convention sets out the obligation not to cause significant harm.
[177] *Ibid.*, Article 20. [178] *Ibid.*, Article 21(2). [179] *Ibid.*, Articles 3 and 4.

5 The doctrine of due diligence and standards of conduct

While it is generally agreed that international liability should not arise unless there is a breach of duty, further inquiry is necessary in relation to the specific duties on the part of States to prevent, control, and reduce transboundary damage.[1] In this regard, the most important such duties are encapsulated by the doctrine of due diligence.

The doctrine of due diligence

The doctrine of due diligence is often said to have originated in English common law tort actions for negligence, although as a general concept it cannot be characterized as belonging to any one legal system or tradition. It is occasionally invoked by analogy in international jurisprudence.[2] In the *Alabama Arbitration* of 1872 between the United States and the United Kingdom over the alleged failure of the United Kingdom to fulfill its duty of neutrality during the American Civil War, the notion of due diligence was considered by the Tribunal, which stated:

[1] With regard to the maxim *sic utere tuo alienum non laedas*, one author commented: "this maxim does not contain a principle of unambiguous content generally recognized at the national level and/or by States in their mutual relations and should, for the sake of clarity of legal argument, therefore be avoided in discussions about the rights and duties of States" concerning shared resources: J. G. Lammers, "Commentary on Papers Presented by Charles Bourne and Alberto Szekely," *Colorado Journal of International Environmental Law and Policy* (1992), vol. 3, p. 103, at p. 104.

[2] For example, in consideration of State responsibility for the protection of aliens or foreign interests, Eagleton said: "the duty of prevention is not of course, an absolute one. Whether the State has fulfilled its obligations in this regard is measured by the rule of due diligence": Clyde Eagleton, *The Responsibility of States in International Law* (New York, New York University Press, 1928), p. 88.

> The rules of the treaty . . . imposed upon neutrals the obligation to use *due diligence* to prevent certain acts . . . a diligence proportioned to the magnitude of the subject and to the dignity and strength of the power which is to exercise it; a diligence which shall, by the use of active vigilance, and of all the other means in the power of the neutral, through all stages of the transaction, prevent its soil from being violated . . . No diligence short of this would be "due"; that is, *commensurate with the emergency or with the magnitude of the results of negligence*.[3]

The UK Government argued that the standard of due diligence should be that ordinarily employed in their domestic concerns. They contended that it was necessary to show that there had been

> a failure to use, for the prevention of an act which the government was bound to endeavor to prevent, such care as governments ordinarily employ in their domestic concerns, and may reasonably be expected to exert in matters of international interest and obligation.[4]

Although the Tribunal took a stricter view of what constituted "due diligence" in the conduct of a State than the UK contended, the doctrine, during the course of legal development, has been defined to mean what a responsible government should do under normal conditions in a situation with its best practicable and available means, with a view to fulfilling its international obligation.[5]

Under the principle of territorial sovereignty, a State is held internationally responsible for acts conducted within its territory. The doctrine of due diligence with respect to the obligations of a State applies primarily to the functions of a government to exercise management and control of activities carried out in its territory. With regard to transboundary damage, the doctrine requires the conduct of "good government," evincing responsibility for its international obligation to exercise proper care so as not to cause such effects or to prevent others in its territory from causing such effects. In other words, the obligation of due diligence sets forth the threshold for States' lawful activities.[6] When an activity bears a significant risk of transboundary damage the government must take all necessary measures to prevent such damage.

[3] The *Alabama Arbitration*, reported in Moore, *International Arbitrations*, vol. I, p. 495, at pp. 572–573 (emphasis added).

[4] *Ibid*., p. 610.

[5] Pierre Dupuy, "Due Diligence in the International Law of Liability," in OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977), p. 369.

[6] Commentary on Article 7 of the Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, Report of the ILC on the Work of its Forty-Sixth Session, May 2–July 22, 1994, GAOR, Forty-Ninth Session, Supp. No. 10 (A/49/10), p. 195, at p. 237.

Some scholars opine that due diligence refers only to unlawful omissions by a State. This theory facilitates measurement of the extent to which the passive (or insufficiently active) behavior of a State in a given circumstance falls short of the obligation "to act" as imposed on it by the rules (customary or conventional) of international law. Therefore, a State may be responsible for failure to enact necessary legislation, enforce its laws, prevent or terminate an illegal activity, or punish the person responsible for it.[7] Dupuy wrote:[8]

> [t]he minimum rules . . . covering the possession and operation by states of a legal and material infrastructure sufficient to ensure the fulfillment of their obligations under normal conditions cannot be the subject of any compromise. They constitute the minimum standard below which the survival of a State would be incompatible with its co-existence within the international community.

In his view, there are two basic conditions that have to be met for any State to fulfill its international obligations: a proper legal infrastructure and a material infrastructure. With respect to the former, there are numerous international legal instruments that require States to take necessary and appropriate measures to prevent, control, and reduce damage to the environment and to other States.[9] These measures are mainly of a legislative and regulatory nature, reflecting the character of governmental functions. Obviously due diligence does not lay down specific rules of conduct; rather, it leaves room for States to determine which measures are necessary and appropriate and which are feasible and available within their capacities to achieve the given objective. It emphasizes the legal control by the State government of the activities within its territory and its actual capacities in exercising such power.

[7] The American Law Institute, *Restatement of the Law (Third), The Foreign Relations Law of the United States* (St. Paul, American Law Institute Publishers, 1987), vol. 2, § 601, comment (d), p. 105.

[8] Pierre Dupuy, "Due Diligence in the International Law of Liability," in OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977), at p. 376.

[9] Examples are Article 194 of the 1982 UN Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396; Article 1 of the 1972 London Dumping Convention; Article 2 of the 1985 Vienna Convention for the Protection of the Ozone Layer (Vienna, March 22, 1985), 1513 UNTS 323; Article 7 of the 1988 Wellington Convention on the Regulation of Antarctic Mineral Resource Activities (not in force), Doc. AMR/SCM/88/78 (Wellington, June 2, 1988); Article 2 of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, February 25, 1991), 30 ILM 800 (1991), Doc. E/ECE/1250 (February 25, 1991); Article 2 of the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, March 17, 1992), 31 ILM 1312 (1992).

By definition, due diligence is an obligation of conduct, not an obligation of result.[10] It is posited that reasonable care should be measured by the minimum standard of conduct accepted by States in the operation of a certain activity under normal circumstances.[11] With transboundary damage arising from industrial and technical activities, the minimum standard of conduct is usually measured by an emerging set of procedural rules on the conduct of States.

The procedural duties

The duty of assessment of harm

Environmental impact assessment is gaining increasing importance as an established procedural duty in various international instruments.[12] The acting State is required to make an environmental impact assessment in order to prevent, reduce, and control significant adverse transboundary effects. More international efforts are being made to enhance international cooperation in relation to shared resources and environment. For instance, the ASEAN Agreement on the Conservation of Nature and Natural Resources provides in Article 14:[13]

1. The Contracting Parties undertake that proposals for any activity which may significantly affect the natural environment shall as far as possible be subjected to an assessment of their consequences before they are adopted, and they shall

[10] Commentary on Article 7 of the Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, Report of the ILC on the Work of its Forty-Sixth Session, May 2–July 22, 1994, GAOR, Forty-Ninth Session, Supp. No. 10 (A/49/10), p. 195, at p. 237.

[11] In the *Lake Lanoux* case, the Tribunal invoked the doctrine as to the "duty of care," in carrying out the activity: 24 ILR (1957), p. 101; RIAA, vol. XII (1957), p. 281.

[12] For example, the various conventions on the protection of the marine environment: the Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution (Kuwait, April 24, 1978), 1140 UNTS 154; Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (Jeddah, February 14, 1982), in Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 144; Lima Convention for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific (Lima, November 12, 1981), UNEP/CPPS/IG/32/4; ASEAN Agreement on the Conservation of Nature and Natural Resources (Kuala Lumpur, July 9, 1985), in Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 343. For a convenient source, see Andronico O. Adede, *International Environmental Law Digest: Instruments for International Responses to Problems of Environment and Development, 1972–1992* (Amsterdam, Nueva York Elsevier, 1993), pp. 118–119.

[13] The treaty was adopted at Kuala Lumpur on July 9, 1985, but has not yet entered into force. The text is reproduced in Rummel-Bulska and Osafo, *Selected Multilateral Treaties*, p. 343.

take into consideration the results of this assessment in their decision-making process.

2. In those cases where any such activities are undertaken, the Contracting Parties shall plan and carry them out so as to overcome or minimize any assessed adverse effects and shall monitor such effects with a view to taking remedial action as appropriate.

Thus, when a particular activity carries with it the risk of significant harm to the environment or shared resources, decision-making must take the potential harm into account. Furthermore, the Agreement demands remedial action in the case of damage.

The Convention on Environmental Impact Assessment in a Transboundary Context[14] was concluded by the European countries. Under the Convention, the States parties undertake to make environmental impact assessments for the conduct of certain activities listed in the Convention. This procedural duty of assessment of harm is also advocated in many other legal instruments as an obligation of States in the conduct of an activity that bears a significant risk of transboundary adverse effects to the interests of other States.[15]

An environmental impact assessment in practice may be carried out in several stages, from designing, planning, and construction, up until operation, where various factors and interests have to be assessed and evaluated in order to influence decision-making. A number of countries have adopted domestic laws and regulations on impact assessment for various forms of industrial, agricultural, and business activities to ensure that development activities are not carried out at a social cost. Such a requirement has extended to international business as well.[16]

[14] 30 ILM 800 (1991), concluded at Espoo, Finland, February 25, 1991.

[15] The requirement of risk assessment has formed an important part of the drafting work on the topic of international liability for injurious consequences arising out of acts not prohibited by international law. In the text of the Draft Articles provisionally adopted by the ILC on first reading at its fiftieth session, Article 8 reads: "Any decision in respect of the authorization of an activity within the scope of the present draft articles shall be based on an evaluation of the possible transboundary harm caused by that activity." See the Report of the ILC on the Work of its Fiftieth Session, April 20–June 12, July 27–August 14, 1998, GAOR, Fifty-Third Session, Supp. No. 10 (A/53/10), at p. 20. See also Richard B. Bilder, "The Settlement of Disputes in the Field of the International Law of the Environment," *Recueil des Cours*, vol. 144 (1975), p. 139.

[16] Apart from domestic environmental pressure, environmental assessment now also constitutes an important aspect in international aid efforts, in which the bilateral, regional, and global impact of the planned project must be assessed. See, for example, World Bank Environment Department, *Environmental Assessment Sourcebook* (3 vols., Washington DC, World Bank, 1991).

In planning the use of shared natural resources (e.g. boundary waters), the source State is in principle obliged to assess the potential impact of the planned activity which would certainly include the direct impact on the uses of other riparian States and the overall condition of the relevant resources. In such a case, some general standards among States are required if a meaningful assessment of the potential effects is to be made.

The purpose of assessment of damage is to enhance the vigilance of the acting State in the interests of other countries. Whether the source State conducts the assessment on its own initiative or is called upon to do so, in principle it should be carried out in good faith. The process of assessment involves technical, financial, and institutional implications.[17] In reality, to what extent the acting State will carry out such an assessment depends largely on the existing legal requirements and practical capacities of the State concerned. Frequently it is the State whose interests are at stake that brings the matter of potential harm to the attention of the source State. Where there is a treaty obligation on the source State to make an impact assessment, its international obligation is clear. In the absence of such a treaty obligation, however, it is questionable whether such a duty can be claimed on the basis of customary law. If an environmental impact assessment is not required at a national level,[18] it will be difficult to argue that the obligation of due diligence, or any other rule of customary international law, demands that the source State fulfill such a duty.

The duty of assessment of transboundary damage with respect to international watercourses is gaining acceptance, due to the global recognition of the scarcity of fresh water and the importance of its optimal and sustainable utilization for the riparian States. In the UN International

[17] For example, in Chapter 18 of UNCED's Agenda 21, financing and cost evaluation, scientific and technological means, human resource development, and capacity-building are recommended as necessary means to implement the programs on water resources assessment. See "Agenda 21, Chapter 18: Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources" in the Report of the United Nations Conference on Environment and Development, Rio de Janeiro, June 1992, Annex II, Agenda 21, A/CONF.151/26 (vol. II), paras. 18.13–18.22.

[18] In the Rio Declaration on Environment and Development, environmental impact assessment is required for activities that may cause environmental damage, but such assessment is subject to national control. Principle 17 states: "Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority": A/CONF.151/26 (vol. I), at p. 11.

Watercourse Convention,[19] this duty, however, is not specifically provided for. But through the cooperative exchange of information and data required under the Convention, riparian States are actually required to a certain extent to assess their planned uses.

In making an impact assessment, the source State is limited by its technical and financial resources. As a general practice, States are expected to use their best available and practical means as circumstances require. Such assessment may not necessarily be determinative of the potential risk, but, provided the assessment is conducted in good faith by the source State, it should be regarded as having discharged its international obligation.

The duty of notification and the right to be notified

Logically, once an assessment reveals a risk of transboundary damage, the acting State should notify the potentially affected State of the planned activity in a timely manner. Generally speaking, there are two aspects to the requirement for such notification. The first is that the acting State is expected to inform potentially affected States in a timely manner of projects utilizing shared natural resources which might have an impact on those riparian States. For example, the 1971 Act of Santiago concerning hydrological basins, signed by Argentina and Chile, provides that the acting State must notify the other State within a certain period of time of any aspects of planned operations which might cause that other State appreciable damage.[20] The second aspect is that, when damage is foreseeable or occurs to the territory of another State as a result of the activity of the acting State, the acting State should notify the affected State of the potential or actual injurious consequences so as to prevent or minimize any damage to the greatest extent possible. This latter situation may include both activities in connection with shared

[19] Convention on the Law of the Non-Navigational Uses of International Watercourses adopted by the UN General Assembly by Resolution 51/229 of May 21, 1997 (UN Doc. A/51/869).

[20] Article 6 of the Act of Santiago provides: "Within a reasonable period of time, which in any case shall not exceed five months, the requested Party must indicate whether there are any aspects of the plans or plan of operations which might cause it appreciable damage. If so, it shall indicate the technical reasons and calculations substantiating that claim and shall suggest changes in the plans or plan of operations in question which would avoid such damage": reproduced in *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 69.

resources and those carried out wholly within the territory of the acting State using only its own resources.[21]

When there is a real danger of harm in a planned activity, State practice tends more and more to favor accepting the duty to notify other States that may be affected. Paragraph (b)(i) of Recommendation 51 of the Action Plan for the Human Environment adopted by the United Nations Conference on the Human Environment in 1972[22] contains the following principle:

> Nations agree that when major water resource activities are contemplated that may have a significant environmental effect on another country, the other country should be notified well in advance of the activity envisaged.

In the UN International Watercourse Convention, Article 12 provides:[23]

> Before a watercourse State implements or permits the implementation of planned measures which may have a significant adverse effect upon other watercourse States, it shall provide those States with timely notification thereof. Such notification shall be accompanied by available technical data and information, including the results of any environmental impact assessment, in order to enable the notified States to evaluate the possible effects of the planned measures.

The hydrological cycle of watercourses, as modern science reveals, is an interconnected physical unity. Although each segment of an international watercourse that successively traverses several States is a part of State territory, no different from other parts of the territory, the physical phenomenon of the shared natural resource dictates the interconnection of the riparian States. Therefore, in recent years, the integrated development and management of water resources has been called for.[24]

[21] The 1956 Treaty Between Czechoslovakia and Hungary Concerning the Regime of State Frontiers (Prague, October 13, 1956) provides in para. 3 of Article 24: "If there is danger of a forest fire spreading across the State frontier, the Party on whose territory the danger originated shall immediately warn the other Party, so that action may be taken to prevent the fire from spreading across the State frontier": 300 UNTS 125.

[22] UN Doc. A/CONF.48/14/rev.1.

[23] Convention on the Law of the Non-Navigational Uses of International Watercourses adopted by the UN General Assembly by Resolution 51/229 of May 21, 1997 (UN Doc. A/51/869).

[24] Report of the UN Conference on Environment and Development, Agenda 21, points out: "Water demands are increasing rapidly, with 70–80 per cent required for irrigation, less than 20 per cent for industry and a mere 6 per cent for domestic

Unlike in the situation of an accident, where transboundary damage is imminent and apparent and the duty to notify is therefore clear, there is greater uncertainty as to when and to what extent the acting State should notify in the case of activities that may cause transboundary damage in a cumulative fashion. In the 1991 Convention on Environmental Impact Assessment,[25] the States parties are required to "notify any Party which it considers may be an affected Party as early as possible and no later than when informing its own public about that proposed activity."[26] The affected party, on the other hand, shall cooperate by responding to the source State in a timely manner, acknowledging receipt of the notification.[27] There is then the opportunity for an exchange of information. Should the affected State wish to participate in the environmental impact assessment procedure, the acting State shall provide information relevant to the assessment procedure and the project.[28] Likewise, upon request, the affected State shall provide reasonably obtainable information, "where such information is necessary for the preparation of the environmental impact assessment documentation. The information shall be furnished promptly and, as appropriate, through a joint body where one exists."[29]

Under general principles of international law, the duty of notification is conceived to strengthen international cooperation between States. By paying due regard to the interests of other countries, the acting State is obliged to take reasonable preventive measures to avoid the occurrence of transboundary harm. The requirement of notification and response ensures that both the source State and the affected State will be in a better position to make their respective assessments of the situation and therefore facilitate preventive measures, if necessary. However, so far, State practice indicates that the proposed activity is not subject to the consent of the affected State.

Notification as a legal duty can prove problematic in practice. First, there is the question of the precise point at which the obligation to notify is triggered. The duty of notification serves to maintain the equilibrium between freedom of action by the source State and the protection of the legitimate interests of other countries. In the situation of shared

consumption. The holistic management of fresh water as a finite and vulnerable resource, and the integration of sectoral water plans and programmes within the framework of national economic and social policy, are of paramount importance for action in the 1990s and beyond": UN Doc. A/CONF.151/26 (vol. II), para. 18.6.

[25] Espoo, February 25, 1991, 30 ILM 800 (1991).

[26] *Ibid*., Article 3(1). [27] *Ibid*., Article 3(3).

[28] *Ibid*., Article 3(5). [29] *Ibid*., Article 3(6).

natural resources such as boundary rivers, contiguous international watercourses, or the atmosphere, should the acting State be required to notify the other riparian States whenever an activity is planned or only when a certain degree of damage is envisaged? It is proper and desirable to provide timely notification when damage is envisaged, but to require at all times notification prior to any use may be too onerous. In practice, when a major project is planned, concern for its potential adverse effects on the neighboring State or States, particularly in the uses of international watercourses, can easily give rise to differences of opinion over the project as between the acting State and the affected State. Consequently, implementation of the project may be delayed or disputed as a result of the procedural requirement of notification. Therefore, an essential condition for notification is the determination of a certain degree of transboundary damage. The Convention on Environmental Impact Assessment provides a list of activities in Appendix I requiring mandatory notification pursuant to Article 3(1). Thus the point at which notification should be given becomes concrete.

In the UN International Watercourse Convention, procedural rules of notification are spelled out with regard to planned measures.[30] The acting State is required to notify the other riparian States if the planned measures are deemed likely to produce a "significant adverse effect."[31] The notified State is given a period of six months to respond to the notification of the planned measures, during which time the acting State takes no concrete action.[32] In the absence of a reply or an objection from the notified State within six months, the acting State may proceed as originally planned, subject to the general principles of the Convention.[33] By setting a time limit for a reply, the Convention intends to maintain a balance between the interests of the acting State and the affected State. From the legal point of view, the absence of a reply does not necessarily constitute consent of the affected State to the planned measures; it may nevertheless raise objections later at any stage. However, if the notified State fails to reply within the time limit, any claim to compensation raised by it may be offset by the costs incurred by the notifying State for action undertaken which could have been avoided if the former had objected in time.[34] The rules do not intend to affect the right of the

[30] See Part III, Articles 11–19 of the UN Convention on the Law of the Non-Navigational Uses of International Watercourses.

[31] *Ibid*., Article 12. [32] *Ibid*., Articles 13 and 14. [33] *Ibid*., Article 16(1).

[34] *Ibid*., Article 16(2). This paragraph was added during the second reading of the Draft Articles for the purpose of balancing the duties of the notifying State and the notified

acting State to proceed with its plan. In a situation of urgency, where public health, public safety, or other equally important interests require the immediate implementation of a water project, the acting State can proceed with the project while promptly declaring the urgency to the States concerned.[35]

The second issue is the extent of the duty of notification. In connection with the issue of when the duty of notification is triggered, questions may arise as to which States the acting State should notify of its planned action. This is particularly relevant in the case of use of international watercourses and air pollution. If an international watercourse is physically interconnected as a unity, should the possible effects be presumed to take place on the whole watercourse, thereby requiring the acting State to inform all other riparian States? The situation can become even more perplexing in the case of underground waters, enclosed aquifers, and inner lakes, as well as canals physically connected by an international watercourse. Likewise, air pollution caused by the emission of sulphur dioxide by industry is noted for its long-distance effects. As a general principle for the prevention of environmental damage, the Experts Group on Environmental Law established by the World Commission on Environment and Development in its final report provides the following:[36]

> States shall inform all persons in a timely manner of activities which may significantly affect their use of a natural resource or their environment ...

Here, the duty of notification extends to the individual level.

Furthermore, the content of notification, namely, the provision of data and information to the affected State, is not a simple matter. Distribution of information is often subject to legal control. The acting State may refuse to provide any information it deems inappropriate, for example, information concerning its national security, national defense, or commercial secrecy. The duty of notification serves to prevent and control possible damage. Data and information are consequently limited to the situation under assessment. In certain situations, information and

State: Report of the ILC on the Work of its Forty-Sixth Session, May 2–July 22, 1994, GAOR, Forty-Ninth Session, Supp. No. 10 (A/49/10), pp. 272–273.

[35] Article 19 of the UN International Watercourse Convention.

[36] Article 6 of the Legal Principles for Environmental Protection and Sustainable Development, in Experts Group on Environmental Law of the World Commission on Environment and Development, *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (London, Graham & Trotman, 1987).

data collection at the request of the affected State can prove difficult and controversial, not only in terms of extra expenses incurred by the acting State, but also in terms of the accessibility of the information requested. On the other hand, the affected State should bear the duty to give a timely reply to the notification, as provided in the UN International Watercourse Convention, but the legal effects of the affected State's response remain questionable. While the obligation to notify is gaining acceptance by States,[37] the nature and scope of the duty needs to be more concretely and precisely defined in further treaty provisions.

The duty of consultation and negotiation

In the *Lake Lanoux* case, the Tribunal called on the parties concerned to pursue consultation as far as possible, with a view to reaching an agreement.[38] The same obligation has been laid down in an increasing number of international treaties with regard to transboundary adverse effects.[39] For example, the 1979 Convention on Long-Range Transboundary Air Pollution,[40] provides:[41]

> Consultations shall be held, upon request, at an early stage between, on the one hand, Contracting Parties which are actually affected by or exposed to a significant risk of long-range transboundary air pollution and, on the other hand, Contracting Parties within which and subject to whose jurisdiction a significant contribution to long-range transboundary air pollution originates, or could originate, in connexion with activities carried on or contemplated therein.

Apart from notifying the affected State of the possible harm, the acting State has the obligation to consult with the affected State about the planned project. Obviously, the greater the risk of adverse effects, the greater the likelihood that States will enter into consultation.

Consultation can be a continuous process as transboundary effects are developing. The parties should in good faith pay due regard to each other's rights and legitimate interests. In the case of conflict of interests,

[37] G. Handl, "Internationalization of Hazard Management in Recipient Countries: Accident Preparedness and Response," in Handl and Lutz, *Transferring Hazardous Technologies*, pp. 120–121.

[38] 24 ILR (1957), p. 101, at p. 133.

[39] Among others, Article 142(2) of the 1982 UN Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396; Article 9 of the 1974 Convention for the Prevention of Marine Pollution from Land-Based Sources (Paris, June 4, 1974), 1546 UNTS 119.

[40] Geneva, November 13, 1979, 1302 UNTS 207; 18 ILM 1442 (1979).

[41] *Ibid*., Article 5.

under general principles of international law the States parties are to hold consultations and negotiations with a view to reaching an equitable solution.[42] However, the requirement for consultation and negotiation does not imply that the acting State has to obtain the prior agreement of the notified State before proceeding with its project. Otherwise, in the case of inability to reach agreement,[43]

> the State which is normally competent has lost its right to act alone as a result of the unconditional and arbitrary opposition of another State. This amounts to admitting a "right of assent," a "right of veto," which at the discretion of one State paralyses the exercise of the territorial jurisdiction of another. That is why international practice prefers to resort to less extreme solutions by confining itself to obliging the States to seek, by preliminary negotiations, terms for an agreement, without subordinating the exercise of their competences to the conclusion of such an agreement.

As traditional distinctions between local, national, and international issues tend to blur, the need to enhance international cooperation becomes paramount. But the effects of the procedural rules of cooperation on the substantive rights of the acting State to act within its own territory should be carefully considered. Unquestionably, the acting State has the legal duty to take into account the legitimate interests of potentially affected States in its planned project, to enter into consultation at the request of the affected State, and to settle any conflict of interests through negotiation. But to conclude that the source State must cooperate and agree on terms with the affected State before any action can be taken is inconsistent with international reality, because it would amount to an internationalization of the acting State's decision-making process. No State would ever voluntarily subject its territorial rights to such a restriction. However, the duty of consultation has become a legal obligation, as evidenced by its frequent appearance in international treaties and international jurisprudence.[44] In the *Gabcikovo-Nagymaros*

[42] In the case of conflict of interests, a number of international cases refer to the obligation to enter into good faith negotiations with a view to arriving at an agreement. See, for example, the judgments of the ICJ in the *North Sea Continental Shelf Cases (Federal Republic of Germany* v. *Denmark; Federal Republic of Germany* v. *Netherlands)*, ICJ Reports (1969), p. 2; and the *Case Concerning the Gabcikovo-Nagymaros Project (Hungary/Slovakia)*, ICJ Reports (1997), p. 7.

[43] *Lake Lanoux* case, 24 ILR (1957), p. 101, at p. 128.

[44] Numerous treaties contain a provision on consultation and cooperation between contracting parties with a view to resolving disputes over activities that may cause environmental harm either to other States or to areas beyond national jurisdiction or control. This position is also maintained by international courts and tribunals.

Project case, the ICJ neither gave legal effect to the unilateral act of termination by Hungary, nor recognized the right of Slovakia to take provisional measures in derogation from its treaty obligations. Rather, the court urged the two parties to negotiate in good faith and to take all necessary measures to ensure the achievement of the objectives of the 1977 Treaty, thereby reaffirming the integrity of the principle of *pacta sunt servanda*.[45]

Procedural duties and substantive rights and obligations

The issue of the interaction of the procedural duties discussed above with the substantive rights and obligations of States relating to the uses of shared natural resources is problematic.

If a State fails to exercise due diligence in observing the procedural duties as spelled out above, should its substantive rights be affected as a result? For example, suppose a riparian State plans a water project on a boundary river. If it fails in its obligation to cooperate with the other riparian State in providing necessary information and data, and in pursuing in good faith consultations for the purpose of controlling and reducing environmental damage which might occur as a result of the project, should its right to carry on the project be affected? In other words, should the acting State be held absolutely responsible and liable for any damage caused by the project?[46] Conversely, if the

[45] ICJ Reports (1997), p. 7.

[46] In his Third Report on the Law of the Non-Navigational Uses of International Watercourses, Mr. S. McCaffrey, Special Rapporteur to the ILC, proposed to the ILC the following Draft Article: "If a State fails to provide notification . . . it shall incur liability for any harm caused to other States by the new use, whether or not such harm is in violation of [the article prohibiting appreciable harm to other watercourse States]": Draft Article 14(3), *Yearbook of the ILC* (1987), vol. II (Part One), p. 39. The proposal was eventually rejected by the ILC which deemed it unnecessary in light of the fact that "the notifying State would, in any event, be responsible for a breach of its international obligations": *Yearbook of the ILC* (1987), vol. II (Part Two), p. 25. In Article XXIX(4) of the 1966 Helsinki Rules, the ILA recommended a sanction for failing to give notice of a utilization, namely, that the utilization "shall not be given the weight normally accorded to temporal priority in use in the event of a determination of what is a reasonable and equitable share of the waters of the basin": International Law Association, Report of the Fifty-Second Conference, Helsinki, August 14–20, 1966, p. 484, at pp. 518–522. One prominent jurist in this field comments that this provision of the Helsinki Rules cannot be regarded as an existing rule of international law as it diminishes the substantive rights of the erring State without making the giving of notice mandatory, and even in circumstances where other riparian users have not suffered any damage attributable to the failure to give notice: see C. B. Bourne,

notified State refuses to cooperate in responding to the notification of the acting State in a timely manner, should such failure affect its right to claim compensation should damage subsequently occur? This issue was discussed at length by the ILC in its deliberations on the Draft Articles on the Non-Navigational Uses of International Watercourses.

On first reading, Article 16 of the Draft Articles provided that the source State, after notification, may proceed with the implementation of its planned project in the absence of a response from the notified States within the prescribed period, provided it pursued the project in accordance with the notification and any other information provided to the notified States.[47] Some commentators pointed out that there was a lack of balance in this provision's relative treatment of the notifying State and the notified State, because, while the former remains legally bound by all provisions of the law, the latter may ignore the procedural rules with impunity.[48] They submitted that failing to reply to the notification in the limited time may be taken as a tacit consent to the implementation of the planned measures, and the notified State should be estopped from raising claims if damage occurs at a later stage.[49] In Handl's words, "[a]t law, the risk of harm will shift towards the unresponsive impact State."[50] Their opponents, on the other hand, contended that procedural rules have no effect on the substantive rights and duties of the States concerned, and that non-observance of such rules leads to a sanction only in the procedural sphere.[51] After the time limit has expired, the notifying State may proceed with the planned project. The position of the notified State, however, remains unaffected. In other words, the non-response does not constitute consent to the planned project by the notified State. Otherwise, such presumed consent would preclude the wrongfulness of the acting State under the rules of State responsibility if damage subsequently occurs.[52]

During the second reading of the Draft Articles, a second paragraph was added to Article 16, which reads:

"Procedure in the Development of International Drainage Basins," *University of Toronto Law Journal*, vol. 22 (1972), p. 172, at pp. 190–191 and 206.

47 Draft Articles on the Law of the Non-Navigational Uses of International Watercourses, Report of the ILC on the Work of its Fortieth Session, May 9–July 29, 1988, GAOR, Forty-Third Session, Supp. No. 10 (A/43/10), at pp. 129–130.

48 See the comments by Charles B. Bourne and Günther Handl on Article 16, in *Colorado Journal of International Environmental Law and Policy*, vol. 3, No. 1 (1991), pp. 68–70 and 124–127.

49 *Ibid*., p. 69. 50 *Ibid*., p. 126.

51 Lammers' commentary, *ibid*., p. 109. 52 *Ibid*., p. 110.

Any claim to compensation by a notified State which has failed to reply within the period applicable pursuant to article 13 may be offset by the costs incurred by the notifying State for action undertaken after the expiration of the time for a reply which would not have been undertaken if the notified State had objected within that period.[53]

Obviously, this provision tightens the obligation on States to enter into cooperative relations.

Notwithstanding the fact that international watercourse law has special features, often described by some scholars as a "self-contained regime,"[54] the legal issues it poses regarding procedural duties are of a general nature. In the final analysis, uses of shared natural resources first and foremost bear on the rights and interests of individual States. The resistance to any "veto power" of a neighboring country over domestic activities is not a purely theoretical debate on the doctrine of sovereignty, but a more practical concern about the recognition of the right to development. Likewise, the demand for the protection from such damage by the affected State is equally important for social and economic development. As is rightly pointed out:[55]

> In reality, all States are conscious of and accept that the pursuit of individual interests is the foremost and legitimate objective of States. Only when, in a momentary constellation, individual interests coincide with objectives dictated by international solidarity is the latter ostensibly honored.

Halting the planned project in order to collect information and data can involve huge expense. As discussed above, notification is a complex process as far as its timing and content are concerned. To link the duty to notify with substantive rights sends a strong message to States to cooperate with each other. On the other hand, it does not avoid the possibility of an undue delay caused by procedural requirements.[56] As

[53] Article 16(2) of the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, adopted by the General Assembly by Resolution 51/229 of May 21, 1997 (UN Doc. A/51/869). See also Report of the ILC on the Work of its Forty-Sixth Session, May 2–July 22, 1994, GAOR, Forty-Ninth Session, Supp. No. 10 (A/49/10), pp. 272–273.

[54] In other words, it is understood to be a legal regime in its own right, which lays down its own sanctions for non-compliance, and is thus detached from the general principles of State responsibility. For further discussion of the notion of self-contained regimes, see B. Simma, "Self-Contained Regimes," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 111.

[55] K. Zemanek, "The Legal Foundations of the International System," *Recueil des Cours*, vol. 266 (1997), p. 12, at p. 40.

[56] Pierre Dupuy, "Due Diligence in the International Law of Liability," in OECD, *Legal Aspects of Transfrontier Pollution* (Paris, OECD, 1977), at pp. 362 *et seq*.

the *Gabcikovo-Nagymaros Project* case demonstrates, the process can be prolonged and costly.[57]

The emphasis on the procedural rules underlines the importance of international cooperation in the prevention and reduction of transboundary damage. Ultimately it is up to each State to take measures to fulfill its international obligations to prevent transboundary harm, and it is up to each State to decide what specific measures should be chosen in light of the existing infrastructure and legal system in which it functions. When the procedural duties are applied on a general basis, they will obtain a graduated normativity.

Legal issues relating to non-accidental damage

With regard to non-accidental damage caused by normal industrial and technical activities, there are some intrinsic difficulties with the requirement of causation and evidentiary proof for legal remedy. The following section will once again analyze the *Trail Smelter* case, as it is so often acknowledged as one of the best examples of the imposition of international liability in this field.

Proof of actual injury and evidence of causation

In order to establish its claim for damage, the affected State must prove actual damage and its causation. In the *Trail Smelter* case, the Tribunal stated that the injury should be "established by clear and convincing evidence."[58] Similarly, the *Lake Lanoux* Tribunal required that Spain must prove that the French project caused actual adverse effects on the quality of the water detrimental to its interests. It is frequently rather difficult to prove the sources and the extent of pollution damage. In common law practice, the rule of approximate causation is applied to determine damage in tort cases. The same rule was adopted in the *Trail Smelter* case, in which the Tribunal endorsed the approach of the US Supreme Court as follows:[59]

Where the tort itself is of such a nature as to preclude the ascertainment of the amount of damages with certainty, it would be a perversion of fundamental

[57] For the facts of the case, see ICJ Reports (1997), p. 7, at pp. 18–28, paras. 16–25.
[58] *United States* v. *Canada*, RIAA, vol. III (1938, 1941), p. 1905.
[59] *Story Parchment Company* v. *Paterson Parchment Paper Company*, 282 US 555 (1931), cited from RIAA, vol. III (1938), at p. 1920.

principles of justice to deny all relief to the injured person, and thereby relieve the wrongdoer from making any amend for his acts. In such case, while the damages may not be determined by mere speculation or guess, it will be enough if the evidence show the extent of the damages as a matter of just and reasonable inference, although the result be only approximate.[60]

The process of evidence-gathering to prove the extent of the damage caused by the Smelter by "just and reasonable inference" turned out to be painstaking. The Tribunal first gathered the evidence from five sources: (1) the automatic sulphur dioxide recorders installed by both Canada and the US in the area of the Smelter, covering large portions of each year from 1931 to 1937; (2) the experiments conducted by both sides on the effects of sulphur dioxide fumigations on plant life and on crop yields; (3) expert and non-expert opinions and evidence as to the actual condition of crops in the field; (4) tests conducted by experts on the effects of sulphur dioxide fumigations upon the forest trees; and (5) experimental tests of the sulphur contents of the soils and of the waters in the area.[61] The numerous experiments and tests were generally carried out thoroughly by each side. Some of the data proved to be very useful, throwing light on the nature, duration, and concentration of the fumigations involved. Nonetheless, the Tribunal felt that they were insufficient to determine causation. The experiments, although extensive, were still too limited to warrant such positive conclusions as witnesses were inclined to draw from them. Besides, the number of experiments devoted to establishing each type of result was in most cases rather small. Therefore, they did not afford a satisfactory basis from which to draw absolutely positive conclusions.

On the one-sidedness of the evidence produced by each side, the Tribunal cited the following remarks by a US judge in a cognate case, which is to a large extent exemplary of the problem with evidence-gathering by parties:[62]

Plaintiff's witnesses give it as their opinion and best judgment that SO_2 was the cause of the injuries appearing upon the plants in the field; defendants' witnesses in like manner express the opinion and give it as their best judgment

[60] Here the Tribunal cited a case of the Supreme Court of Michigan, *Allison* v. *Chandler*, 11 Michigan 542, quoted with approval by the US Supreme Court as follows: "Juries are allowed to act upon probable and inferential, as well as direct and positive proof": *ibid*.

[61] RIAA, vol. III (1938), pp. 1921–1922.

[62] The Tribunal cited the opinion of Judge Johnson in the United States District Court in *Anderson* v. *American Smelting and Refining Co*., 265 *Federal Reporter* 928 (1919), cited in RIAA, vol. III (1938), p. 1922.

that the injury observed was caused by something else other than SO_2. It must not be overlooked that witnesses who give opinion evidence are sometimes unconsciously influenced by their environment, and their evidence colored, if not determined, by their point of view . . . The real value I find in the testimony of these opinion witnesses of the parties lies in their description of appearances and statement of the surrounding circumstances, rather than in their ultimate expressed opinions. I have no doubt of the accuracy of the experiments made by the expert and scientific witnesses called by the parties.

Instead of relying on the conclusions drawn by the parties, the Tribunal analyzed the weather conditions in the Columbia River Valley, and arrived at its own opinion as to the real cause of the damage.[63]

[63] The following extract gives an idea of the detailed study that the Tribunal carried out on the weather conditions in order to determine the cause of the damage:

> A careful study of the time, duration, and intensity of the fumigations recorded at the various stations down the valley reveals a number of striking and significant facts. The first of these is the coincidence in point of time of the fumigations. The most frequent fumigations in the late spring, summer, and early autumn are diurnal, and occur during the early morning hours. These usually are of short duration. A characteristic curve expressing graphically this type of fumigation, rises rapidly to a maximum and then falls less rapidly but fairly sharply to a concentration below the sensitivity of the recorder. The dominant influence here is evidently the heating action of the rising sun on the atmosphere at the surface of the earth. This gives rise to temperature differences which may and often do lead to a mixing of the gas-carrying atmosphere with that near the surface. When this occurs with sufficient intensity, a fumigation is recorded at all stations at which the sulphur dioxide reaches a concentration that is not too low to be determined by the recorder. Obviously this effect of the rising sun may be different on the east and the west side of the valley, but the possible bearing of this upon fumigations in the valley must await further study.
>
> Another type of fumigation occurs with special frequency during the winter months. These fumigations are not so definitely diurnal in character and are usually of longer duration. The Tribunal is of the opinion that these are due to the existence for a considerable period of a sufficient velocity of the gas-carrying air current to cause a mixing of this with the surface atmosphere. Whether or not this mixing is of sufficient extent to produce a fumigation will depend upon the rate at which the surface air is diluted by surface winds which serve to bring in air from outside the contaminated area. The fact that fumigations of this type are more common during the night, when the surface winds often subside completely, bears out this opinion. A fumigation with a lower velocity of the gas-carrying air current would then be possible . . .
>
> . . . The conclusion of the Tribunal on this phase of the question is that the concentration of sulphur dioxide falls off very rapidly from Trail to a point about 16 miles downstream from the Smelter, or 6 miles from the boundary line, measured by the general course of the river; and that at distances beyond this point, the concentration of sulphur dioxide is lower and falls off more gradually and less rapidly.

Ibid., pp. 1923–1924.

The lengthy and expensive process of discovery of damage undertaken by experts assisting the Tribunal in the case illustrates the difficulty with the proof of evidence. For three years, the Tribunal supervised those well-established and well-known scientists in chemistry, plant physiology, meteorology, and so forth as they collected data on the pollution caused by the Smelter and on damage to the State of Washington. It admitted that:[64]

> [t]his is probably the most thorough study ever made of any area subject to atmospheric pollution by industrial smoke. Some factors, such as atmospheric turbulence and the movement of the upper air currents have been applied for the first time to the question of smoke control. All factors of possible significance, including wind directions and velocity, atmospheric temperatures, lapse rates, turbulence, geo-strophic winds, barometric pressures, sunlight and humidity, along with atmospheric sulphur dioxide concentrations, have been studied. As said above, many observations have been made on the movements and sulphur dioxide concentrations of the air at higher levels by means of pilot and captive balloons and by airplane, by night and by day.

One of the reasons for the detailed investigation of causation of the damage lies in the role of the Tribunal, which was entrusted not only to determine the damage issue but also to establish a permanent regime to prevent further damage. Accordingly, the Tribunal had to resolve the manner in which the causal factor operated so that a possible remedial regime might be adopted. To ascertain the details of the permanent regime required a further three years of testing.

A similar difficulty was encountered in the *Gabcikovo-Nagymaros* case between Hungary and Slovakia sixty years later.[65] Hungary, which complained that the joint project it had undertaken caused environmental detriment to the Danube River, also acknowledged that the damage was primarily the result of some relatively slow natural processes, the effects of which could not easily be assessed. The *ad hoc* Committee of the Hungarian Academy of Sciences reached the opinion after five years of monitoring following the completion of the water project that in order to evaluate the adverse effects,

> [t]here is undoubtedly a need for the establishment and regular operation of a comprehensive monitoring system . . . The examination of biological indicator objects that can sensitively indicate the changes happening in the environment . . . have to be included.[66]

[64] RIAA, vol. III (1941), at pp. 1973–1974.
[65] ICJ Reports (1997), p. 7. [66] *Ibid*., p. 37, para. 56.

Due to the complexity of the ecological processes and the lack of measured data and relevant calculations, the Committee concluded that the environmental impacts could not be evaluated. The data of a monitoring system newly operating in a very limited area are not enough to forecast the impacts probably occurring over a longer term. In order to make the data more useful, a further multi-year examination of the degradation of the water quality would be necessary. While acknowledging that the Danube environment suffered adverse effects as a result of the project, the Court did not accept that there was sufficient evidence to prove that a grave peril existed which demanded cessation of the project.[67]

For most instances of damage caused by normal industrial and technical activities, the same dilemma exists: ideally, the damage must cease, but the causal factor may not be eliminated if the activity is permitted to continue. The complete cessation of damage would require either putting an end to the activity, or creating a new standard of conduct. When air pollution is caused by long-distance sources in other countries, as in the case of "acid rain" in Europe, or when water pollution results from dumping and sewerage, proof of causation is more complicated. Suggestions have been put forward to establish qualitative and quantitative "eco-standards" to substantiate the norms of conduct.[68] A "concrete and official" statement that a standard has been exceeded will suffice to establish *prima facie* that the offending State is liable to repair damage thus caused.[69] Because this would both simplify the procedure of proof and set up generally acceptable standards, it may explain the current efforts at establishing regional and sub-regional regimes regulating air and water pollution.

Remedies

Once damage is proved, its extent and forms need to be further addressed. In the case of non-accidental damage, a few forms of legal remedy are of particular relevance.

Restitution (*restitutio ad integrum*)

In the case of damage to water resources shared by two or more States, the primary purpose of a legal remedy is to restore the situation to

[67] *Ibid.*

[68] Pierre-Marie Dupuy, "Overview of the Existing Customary Legal Regime Regarding International Pollution," in Daniel B. Magraw (ed.), *International Law and Pollution* (Philadelphia, University of Pennsylvania Press, 1991), p. 61, at pp. 81–82.

[69] *Ibid.*

its original condition.[70] For example, in the case of water diversion, if diversion by an upstream State virtually deprives another riparian State whose population or agriculture relies on the river as its main source of water for drinking or irrigation purposes, the return of water in the approximate amount and quality enjoyed prior to the diversion would be the only remedy acceptable to the downstream State. Monetary compensation alone for the damage caused would not be sufficient to redress the situation. Of course, in the uses of international waters, any additional water development would alter the existing balance in the sharing of resources between riparian States. In other words, the restitution of the original position may not be practical or possible. If there is a prior agreement between the States concerned, it would be relatively easy to renegotiate the sharing on the basis of the agreement and in the light of the new circumstances and needs.[71] If there is no such agreement in existence, each party's entitlement must be determined in accordance with equitable principles. Restitution may not necessarily mean the return of the exact amount of the diverted water.

In the event of water pollution causing damage to another State, the source State should take responsibility for purification of the water. In the *Colorado River Salinity* dispute,[72] the US and Mexico agreed that the

[70] The Permanent Court of International Justice expounded its classic expression of this principle in the *Case Concerning the Factory at Chorzów* as follows: "reparation must, as far as possible, wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability, have existed if that act had not been committed": PCIJ, Series A, No. 17, p. 47.

[71] For example, the 1909 Treaty relating to the boundary waters between the United States and Canada provides that "it is agreed that any interference with or diversion from their natural channel of such waters on either side of the boundary, resulting in any injury on the other side of the boundary, shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs": Article 11 of the Treaty Relating to Boundary Waters and Questions Arising Along the Boundary Between the US and Canada (Washington, January 11, 1909), TS No. 548, cited from *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 84. The terms here provide the same remedy to the other side as prescribed under their respective national laws. Also, in the 1922 Treaty Between Germany and Denmark, Article 26 states: "Any person who suffers loss or damage in consequence of the regularization or of the alteration in the condition of the watercourse occasioned by such regularization has the right to claim full compensation from the person who benefits by the work in question. The matter shall be decided by the Frontier Water commission": *ibid*.

[72] See Richard B. Bilder, "The Settlement of Disputes in the Field of the International Law of the Environment," *Recueil des Cours*, vol. 144 (1975), p. 139, at pp. 171–174; Brownell and Eaton, "The Colorado River Salinity Problem with Mexico," *American Journal of International Law*, vol. 69 (1975), p. 255.

US should take measures to reduce the salinity to acceptable levels and maintain the water quality in the future.[73] Under these circumstances, the importance of the remedy to Mexico was to secure access to its share of water both in quantity and quality. When the pollutant is identifiable or simple, e.g. salinity, the target is manageable. With multiple polluting States and various sources of pollution, however, restitution can prove difficult.

In the air pollution situation, just as in the *Trail Smelter* case, it is difficult to restore the situation to its original condition. Restitution must therefore focus on the elimination or reduction of the emission of the pollutants concerned. In practice, if the source of damage is a certain industry or activity, the industry concerned may be controlled or removed from the area. For example, in the Peyton Packing and Casuco dispute between the US and Mexico, the two US companies whose activities were detrimental to Mexico took measures such as phasing out certain activities, changing working hours, and establishing systems of disinfection, to reduce air pollution.[74]

In many situations, such control or removal of the offending industry may not be economically feasible for the source State, particularly when the industry is of essential importance to its economy – as the Trail Smelter was to Canada. The practical way to reduce the damage would be to control the emission of the pollutants, which, however, goes beyond the issue of damage.

Compensation

When it is determined that the source State is liable for transboundary damage caused to another State, it should compensate the injured State for the loss suffered. In practice, if there is a treaty containing a clause governing the issue of legal remedy in case of damage, the reparation would occur in accordance with that clause. This type of clause is often found in bilateral frontier agreements concerning the uses of shared natural resources. For instance, the 1948 Agreement between Poland

[73] Note, however, that this agreement was only reached after Mexico requested damages of up to US$150 million. This was rejected by the US on the ground that no damages were demonstrable or quantifiable, and such payment would have created political problems and set an undesirable precedent. See Richard B. Bilder, "The Settlement of Disputes in the Field of the International Law of the Environment," *Recueil des Cours*, vol. 144 (1975), p. 139, at p. 173.

[74] *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), p. 71, para. 324.

and the former USSR concerning their frontier regime provides in Article 14:[75]

> 1. The Contracting Parties shall see that frontier waters are kept in proper order. They shall also take appropriate steps to prevent deliberate destruction of the banks of frontier rivers and lakes.
>
> 2. If, through the fault of one Contracting Party material damage is caused to the other Contracting Party as a result of failure to carry out the provisions of paragraph 1 of this article, compensation for such damage shall be paid by the Party responsible therefor.

Similar terms were also laid down in the 1964 Agreement between Finland and the former USSR, in which the contracting parties undertook the responsibility to make reparation for loss or damage caused in the territory of the other party.[76] There are many other examples of such liability clauses.[77] In the *Gabcikovo-Nagymaros Project* case, the ICJ ordered Hungary and Slovakia to compensate each other for respective damage incurred due to their failure to fulfill international obligations under the terms of the 1977 Treaty concluded by the two parties.[78]

Treaties directly addressing non-accidental damage are few. Damage to shared watercourses or caused by frontier projects or forest fire are usually resolved as practical or even political matters between States rather than through the negotiation of legal instruments. Generally, the method of calculation of compensation for non-accidental damage is no different from that for accidental damage. In either case, it usually covers loss of life, personal injury and loss of or damage to property. On the scope of damage, the *Trail Smelter* Tribunal confined compensation to material damage caused by fumigation only. However, apart from claiming for damage to farmland and property,[79] the US also claimed

[75] Agreement Concerning the Regime on the Polish–Soviet State Frontier (Moscow, July 8, 1948), 37 UNTS 25.

[76] Article 5 of the Agreement Concerning Frontier Watercourses (Helsinki, April 24, 1964), 537 UNTS 231.

[77] See, for example, the Treaty Concerning the Rio de la Plata and the Corresponding Maritime Boundary (Montevideo, November 19, 1973), 1295 UNTS 306. Article 51 reads: "Each Party shall be liable to the other for damage inflicted as a result of pollution caused by its own activities or by those of individual or legal entities domiciled in its territory."

[78] ICJ (Rep) 1997, p. 7, at p. 83, operative para. D.

[79] The claims for property damage suffered by individual farmers were divided into four classes by the US: "(a) properties of 'farmers residing on their farms'; (b) properties of 'farmers who do not reside on their farms'; (ab) properties of 'farmers who were driven from their farms'; (c) properties of large owners of land": RIAA, vol. III (1938), at pp. 1924–1925. The Tribunal refused to adopt this division.

compensation for violation of sovereignty, comprising indemnity for money expended in the investigation undertaken concerning the problems created by the smelter, and interest. The Tribunal rejected both of these claims on the ground of lack of jurisdiction, as laid down in the *compromis*.[80] Additionally, in determining damage, the US suggested that liquidated damages be imposed on the operator of the smelter whenever emissions exceeded the predefined limits, regardless of any injuries it might cause. However, the Tribunal refused to adopt this suggestion, opining that "such a regime would *unduly and unnecessarily hamper the operations of the Trail Smelter* and would not constitute a 'solution fair to all parties concerned'."[81] The Tribunal insisted on the requirement of proof of *actual and direct* damage and decided that the contention of the US that fumigation prevented germination of seed was not sustained by the evidence.[82] It further rejected the US claims for damages in respect of livestock, property in the town of Northport near the Smelter, and business enterprises for failure to prove damage or for being "too indirect, remote and uncertain to be appraised."[83]

Regarding damage to cleared land not used for crops and to all uncleared land (other than that used for timber), the Tribunal adopted the measure of damage applied by the US courts in such cases, namely, the amount of reduction in the use or rental value of the land caused by the fumigations and upon proof awarded the US an indemnity of US$78,000. In this case, the physical damage was measured by the reduction in crop yield and in the rental value of the land and buildings and the soil impairment by serious increase in acidity due to the fumigations.[84]

The *Trail Smelter* case demonstrates that, in measuring damage caused by transboundary pollution to properties and to the physical environment, it is difficult to determine what damage is a direct result of the pollution, and therefore what exactly constitutes recoverable damage. More recently, efforts have been made to specify recoverable environmental damage so that damages may be calculated with precision and certainty. One treaty in point is the Lugano Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment[85] concluded by the member States of the Council of Europe in 1993. The

[80] Such claims did not reflect the intention of the parties to compensate "damage caused by the Trail Smelter" as provided in Article III of the Convention for Settlement of Difficulties Arising from Operation of the Smelter at Trail, BC, *ibid*., pp. 1932–1933.
[81] *Ibid*., p. 1974 (emphasis added). [82] *Ibid*., p. 1929. [83] *Ibid*., p. 1931.
[84] *Ibid*., p. 1926. [85] Lugano, June 21, 1993, 32 ILM 1228.

definition of "damage" includes "loss or damage by impairment of the environment."[86] Under the Lugano Convention, "compensation for impairment of the environment, other than for loss of profit from such impairment, shall be limited to the costs of measures of reinstatement actually undertaken or to be undertaken."[87] As the crux of the definition, "measures of reinstatement" is confined to "any reasonable measures aiming to reinstate or restore damaged or destroyed components of the environment, or to introduce, where reasonable, the equivalent of these components into the environment."[88] The issue of who is entitled to take such measures is left to internal law.[89]

It should be noted that liability rules on pollution damage have greatly evolved since the time of the *Trail Smelter* case. Both nationally and internationally, loss of resources or environmental amenity has been recognized and provided as a separate category of damage for compensation.[90]

Procedural and substantive rules governing environmental damage issues are constantly evolving. Regional practice among industrialized States is moving towards harder rules on the prevention of transboundary damage. On the global level, however, general rules of prevention as well as international regimes of liability must be built on broader State practice in each and every field relating to the uses of natural resources.

[86] *Ibid*., Article 2(7)(c). [87] *Ibid*. [88] *Ibid*., Article 2(8). [89] *Ibid*.

[90] As Philippe Sands pointed out: "The Tribunal . . . took the measure of damage used by US courts, an approach which would most likely produce a different result today because of changes in US law which reflect loss of environmental amenity or resources as a separate measure of damage." P. Sands, *Principles of International Environmental Law*, vol. 1, *Frameworks, Standards and Implementation* (Manchester, Manchester University Press, 1995), p. 642.

PART III • DAMAGE TO THE GLOBAL COMMONS

6 Liability for damage to the global commons

No study of international environmental law would be complete without an examination of the injurious consequences of human activities in the areas beyond the limits of national jurisdiction or control, usually referred to as the "global commons," or simply "the commons." The call for the development of State responsibility and liability for damage caused to the commons is so recent and novel that few positive rules of international liability can be construed either from international adjudication or treaty practice.[1] However, international efforts are moving to develop rules to address damage to the commons *per se*.[2]

Traditionally rules of international liability for transboundary damage related predominantly to injury to national rights and interests, whether suffered directly by the State itself or through its nationals. With the upsurge of international concern over environmental protection, however, the issue of damage to the global commons has become one of the most important topics for international action. Such issues as maritime environmental protection,[3] the depletion of the ozone

[1] It is generally claimed that the first formal call for the consideration of the development of legal rules of State responsibility and liability for damage caused to the areas beyond the limits of national jurisdiction and control was the 1972 Stockholm Declaration on the Human Environment (UN Doc. A/Conf.48/14/rev.1) in its Principles 21 and 22. Also Article 235 of the Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396, relates to the development of the rules of State responsibility and liability for damage to the marine environment.

[2] For a general outline of the current environmental issues, see Daniel Barstow Magraw and Sergei Vinogradov, "Environmental Law," in Lori Fisler Damrosch, Gennady M. Danilenko and Rein Müllerson (eds.), *Beyond Confrontation: International Law for the Post-Cold War Era* (Boulder, Westview, 1995), at p. 193.

[3] For example, see the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, IMO Doc. LEG/CONF.10/8/3, reprinted in 35 ILM 1415.

layer,[4] biological diversity,[5] climate change,[6] and land degradation[7] are now a priority. Meanwhile, substantive studies are being carried out in several fora with a view to drafting the rules of international liability for damage caused in the common areas.[8] With each conventional framework in these fields, a new pattern of international actions to cope with global environmental damage is being formed.

This chapter will begin with a general review of the law relating to each area of the commons, focusing on international responsibility and liability. This review will demonstrate that the traditional regime of State responsibility in this field needs further development. With a variety of different approaches being taken, basic legal issues remain unresolved.

The concept and the context

The concept of "the global commons" is a relative term, in juxtaposition with national territories or domains under State control. Although the notion appeared and was applied to some areas as early as Grotius' time,[9] there is neither an agreed definition of the term nor any consensus as to its scope. It is more a collective reference to the relevant regions than a

[4] Among the efforts, the two most important international treaties are the Vienna Convention for the Protection of the Ozone Layer (Vienna, March 22, 1985), 1513 UNTS 323, which entered into force on September 22, 1988, and was supplemented with the Montreal Protocol on Substances That Deplete the Ozone Layer (Montreal, September 16, 1987), 1522 UNTS 451, which entered into force on January 1, 1989.

[5] During the 1992 Rio Conference on the Environment and Development, the Convention on Biological Diversity was adopted (Rio de Janeiro, June 5, 1992), 31 ILM 818 (1992); UN Doc. UNEP/BIO.Div/N7-INC.5/4; Kiss and Shelton, *International Environmental Law*, Appendix C, p. 171. It entered into force on December 29, 1993.

[6] See the United Nations Framework Convention on Climate Change (New York, May 9, 1992), 1771 UNTS 107; Kiss and Shelton, *International Environmental Law*, Appendix B, p. 143; and the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto, December 11, 1997), UN Doc FCCC/CP/1997/7/Add.1. See further C. Vrolijk, "Quantifying the Kyoto Commitments," *Review of European Community and International Environmental Law*, vol. 9, No. 2 (2000), p. 285; Sebastian Oberthür and Hermann Ott, *The Kyoto Protocol: An International Climate Policy for the 21st Century* (New York, Springer, 1999).

[7] See the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, June 17, 1994), 1954 UNTS 107.

[8] For example, the drafting of a sixth annex to the Protocol on Environmental Protection to the Antarctic Treaty covering liability for environmental damage in the Antarctica under the Antarctic Treaty Consultative Meeting (Madrid, October 4, 1991), 30 ILM 1461.

[9] Louis Henkin, "Changing Law for the Changing Seas" in E. A. Gullion (ed.), *Uses of the Seas* (Englewood Cliffs, Prentice-Hall, 1968), at p. 69.

term of art. In common parlance, it refers to those areas beyond national jurisdiction and control. Geographically, it refers to the high seas, outer space, and, perhaps arguably, the polar regions. More recently, depletion of the ozone layer and global warming have also given rise to common concerns of the international community, or, in other words, "common concerns of mankind," which are at least analogous.

The high seas

Although at one time in history, competitions for territorial claims to the seas were fought among the maritime powers, eventually the prevailing theory of the freedom of the seas rendered the area *res communis*, belonging to everyone or to no one.[10] Unlike land, it could not be physically acquired by any nation or made subject to national sovereignty.[11] Politically, the general interests in navigation and exploitation of the living resources of the seas by all States sustained the freedom of the seas, as advocated by Grotius and others.[12] The contemporary development of the law of the sea as a result of the practice and uses of States of their resources has expanded the scope of the freedoms to other activities.[13] At the same time, the sovereign rights of the coastal States to set up zones of national jurisdiction in their immediate area, such as the territorial sea, the continental shelf and the exclusive economic zone, thus "carving out of the commonage,"[14] were also recognized by the 1982 United Nations Convention on the Law of the Sea.[15] The notion

[10] On the legal status of the seas, debates on the concepts of *res nullius* and *res communis* reflected a change of attitude towards the common area in the historic development of the law of the sea. See Sir Robert Jennings and Sir Arthur Watts (eds.), *Oppenheim's International Law* (9th edn., Harlow, Longman, 1992), pp. 720–721.

[11] *Ibid.* [12] Henkin *et al.*, *International Law*, p. 1236.

[13] Four freedoms were prescribed in Article 2 of the 1958 Convention on the High Seas (Geneva, April 29, 1958), 450 UNTS 11, namely, navigation, fishing, laying of submarine cables and pipelines, and freedom to fly over the high seas. The freedom of the high seas is also provided in Article 87 of the 1982 Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396, including six freedoms: freedom of navigation; freedom of overflight; freedom to lay submarine cables and pipelines; freedom to construct artificial islands and other installations; freedom of fishing; and freedom of scientific research.

[14] Under the 1982 Convention on the Law of the Sea, the areas of the territorial sea, the continental shelf, and the exclusive economic zone are specifically defined, and provision is made for sovereignty and sovereign rights over these areas: see in particular Articles 2, 55, 56, 76, and 77.

[15] The notion of the territorial sea developed from an early recognition that the coastal State had special interests in waters adjacent to its shores for some purposes; in time,

of "the high seas" now encompasses the common areas accessible and open to all States, including the air above it.[16] The technical possibility of deep sea-bed mineral resources mining gave rise to legal debate as to the entitlement to the sea-bed and its subsoil, and whether they are also considered part of the commonage of mankind not subject to national acquisition. Under Part XI of the Law of the Sea Convention, the sea-bed, ocean floor, and subsoil and their resources are proclaimed as the "common heritage of mankind."[17] States cannot claim or exercise any sovereign rights over them, for they are vested in the whole of mankind. Mineral resources recovered from the area are not subject to alienation except in accordance with the Convention.[18]

The principle of freedom of the seas pertains not only to the uses by all States but also the common interests of States in the protection and conservation of the sea's resources. Over many years, a great number of international instruments have been concluded to protect fish stocks and marine mammals (e.g. seals, whales, etc.) from over-catch and to protect the marine environment in general from oil pollution, pollution by hazardous substances, pollution from land-based sources, dumping of wastes, nuclear contamination, and so forth. Additionally, weapon testing and certain other military activities were restricted or prohibited by treaties.[19]

Damage to the high seas can come from sea, land, and air.[20] Oil spills and accidents involving nuclear-powered ships in the high seas recur. It has been estimated that some 35 percent of the overall release of petroleum into the sea comes from vessels.[21] Notwithstanding the ban

the various interests combined into "sovereignty" over a "territorial sea": Jessup, *The Law of Territorial Waters and Maritime Jurisdiction* (1927).

[16] Under Article 89 of the Convention on the Law of the Sea, "[n]o State may validly purport to subject any part of the high seas to its sovereignty."

[17] Article 136 of the 1982 Convention on the Law of the Sea. Note also Article 1 which defines "Area" to mean "the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction."

[18] *Ibid*., Article 137.

[19] The second section of this chapter will deal with the existing regimes in more detail.

[20] For a detailed analysis of the main forms and sources of marine pollution, see Kari Hakapää, *Marine Pollution in International Law: Material Obligations and Jurisdiction*; *With Special Reference to the Third United Nations Conference on the Law of the Sea* (Helsinki, Suomalainen Tiedeakatemia, 1981), pp. 40–58.

[21] National Petroleum Council, "Protection of the Marine Environment," *Natural Resources Lawyer*, vol. 8 (1975), pp. 511–543, at p. 512 (with reference to National Academy of Sciences, *Petroleum in the Marine Environment*, January 1975, Table 1-5, p. 6), as cited in *ibid*., p. 45, n. 61.

on nuclear tests on the high seas,[22] vessels with nuclear power sources, whether military or commercial, have the potential to cause serious nuclear contamination to the marine environment.

Apart from accidental oil or nuclear pollution, the heaviest concentrations of pollution are inflicted upon the coastal waters carrying the bulk of human marine activities. The polluting source can be operating within the territorial area of a coastal State and its agent transmitted through any medium to the seas. Ocean dumping of toxic wastes, eventually hazardous through bio-accumulation, can result in effects spread throughout the biosphere. Use of the sea as the final point of disposal for sewage and industrial and agricultural wastes was a common practice until relatively recently. It is reported that some 90 percent of the ocean's productivity is concentrated in the fertile waters of estuaries and continental shelf areas forming 10 percent of the areal width of the marine environment. As was observed,[23]

> In publications, in conferences, in international units the matters are generally divided into air pollution, land pollution and water pollution. In fact there is only one pollution because every single thing, every chemical whether in the air or on land will end up in the ocean.

In general, damage to the seas falls into three categories: first, accidental disasters, such as oil spills and nuclear contamination; secondly, dumping activities; and, thirdly, the incremental and gradual harmful effects of normal activities, including waste disposal and land-based pollution. International concern mostly focuses on the first two types of damage,

[22] 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Moscow, August 5, 1963), 480 UNTS 43 (the "Partial Test Ban Treaty").

[23] Jacques-Yves Cousteau, "Our Oceans are Dying," *New York Times*, November 14, 1971, section 4 (News of the Week in Review), p. 13, col. 3, as quoted by Kari Hakapää, *Marine Pollution in International Law*: *Material Obligations and Jurisdiction*; *With Special Reference to the Third United Nations Conference on the Law of the Sea* (Helsinki, Suomalainen Tiedeakatemia, 1981), at p. 43, n. 51.

In fact, according to the study conducted by the UN Conference on the Law of the Sea, six categories of marine pollution were identified:

a. Land-based pollution;
b. Air-based pollution;
c. Vessel-based (or vessel-source) pollution;
d. Pollution by dumping;
e. Pollution from the exploration and exploitation of the sea-bed;
f. Pollution from other marine activities.

See *ibid*., p. 44.

as their sudden and severe effects on the environment and resources call for immediate response.

Outer space

Partly by analogy, outer space enjoys a legal status similar to that of the high seas, as a common area free for all States to explore and use. The Outer Space Principles Treaty[24] recognizes the "common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes."[25] Under Article I of the Treaty:

> [o]uter space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

Outer space like the high seas is *res communis*, the "province of all mankind,"[26] owned by everyone and by no one. Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty whether by use or occupation or by any other means.[27]

Owing to the nature of space activities, while space-faring States are small in number, the impact of their space activities on social and economic development is global. One of the issues that has been on the agenda of the UN Committee on the Peaceful Uses of Outer Space (COPUOS) is "consideration of the legal aspects related to the application of the principle that the exploration and utilization of outer space should be carried out for the benefit and the interests of all states, taking into particular account the needs of developing countries."[28] Primarily the request of the developing countries, the issue reflects the general concern over access to, and uses of, common resources. Unlike the high seas, where the freedoms of navigation and fishing are exercised by all States, most countries (particularly developing countries) do not have the necessary technical and financial capacities to be meaningfully engaged in space activities.

While in theory outer space is a common area, open to all States to exploit, in reality it is the domain of the powerful and capable. Thus

[24] Moscow, London, and Washington, January 27, 1967, 610 UNTS 205; 6 ILM 386 (1967).
[25] *Ibid*., Preamble. [26] *Ibid*., Article I. [27] *Ibid*., Article II.
[28] The issue was formally adopted in 1988 by the COPUOS and its subsidiary body, the Legal Sub-committee. See N. Jasentuliyana, "Article I of the Outer Space Treaty Revisited," *Journal of Space Law*, vol. 17 (1989), p. 129.

in practice the free access principle facilitates space activities on a first-come first-served basis.[29] With the limited availability of some heavily used resources, such as geo-stationary orbit[30] and the radio spectrum,[31] debates on the common nature of the resources have boiled down to the question of how to facilitate use of the resources, both at present and in the future, by all States on an equal basis.[32] As for the legal status of the moon and other celestial bodies, divergent views on the application of the principle of the common heritage of mankind to these resources[33]

[29] It has been suggested by Dr. Jasentuliyana that "because of the work of the World Administrative Radio Conference (WARC) in the implementation of an a priori planning regime for nominal orbital positions and bandwidths, what has been called the first come – first served principle may no longer be valid . . . [A]n international group of experts should be brought together to formulate standards, practices and guidelines to effectively regulate access to certain orbits to guarantee that both current and future users will have continual and non-discriminatory access": S. Gorove, "Vexing Issues of Supreme Authority and Sovereign Rights Arising from Space Activities," *American Society of International Law Proceedings*, vol. 88 (1994), p. 259, at p. 260.

[30] The geo-stationary orbit is a circular orbit approximately 22,300 miles above the earth's equator. A satellite placed in the orbit lies above the equator and turns on the polar axis of the earth in the same direction and at the same speed as the earth so that it appears stationary in relation to the underlying point on earth. It is used by satellites for telecommunication, broadcasting, and meteorological services. For that reason, it is the most valuable and most utilized segment of outer space.

[31] The constraint on the use of the geo-stationary orbit is its size. With the increasing demand for the location of geo-stationary satellites and the potential development of further space-faring States, there is concern over its possible saturation. While there is no imminent danger of this occurring, studies show that technology must develop to allow for increased use of the radio spectrum as more countries develop the capacity to acquire their own satellites and the demand for the orbit and radio spectrum increases correspondingly. See Katherine Gorove and Elena Kamenetskaya, "Tensions in the Development of the Law of Outer Space," in Damrosch, *Beyond Confrontation*, pp. 234 and 238.

[32] There is a range of claims to these limited resources. Eight equatorial States have insisted upon their sovereignty over the segments of the geostationary space located directly above their territories by the adoption of the Bogota Declaration of 1976. The non-spacefaring States, on a larger scale, have pressed for a prior distribution of segments of space representing their equal share of the resources to guarantee their future uses. The developed countries are more inclined to the principle of practical necessity, ensured by the technical facilities at their disposal. For detailed discussion on the point, see *ibid*., p. 235.

[33] See the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, adopted by the General Assembly on December 5, 1979, and entered into force on July 11, 1984, 1363 UNTS 21. Under Article 11 of the Agreement, the moon and its natural resources are declared the common heritage of mankind, and accordingly the States parties undertook to establish an international regime for the exploitation of the resources based on equitable sharing by all States parties. See also Article 18. For discussions on the positions taken by various States, see Damrosch, *Beyond*

reflect the conflicting interests between the few space States and the rest of the international community.

From the outset of the space age, the adverse impact of the exploration and uses of outer space on the earth was raised for legal consideration.[34] As for damage to the area *per se*, studies have focused on chemical pollution caused by exhaust materials from spacecraft during its launching and operational stages, on biological contamination by terrestrial micro-organisms carried by spacecraft from the Earth, and extraterrestrial micro-organisms carried by spacecraft to the Earth, and on electromagnetic interference.[35] Of the practical dangers to space activities, space debris and nuclear power sources[36] are matters of concern.

With regard to the first problem, studies have revealed an increasing amount of space debris in active orbit around the Earth.[37] Objects such as defunct satellites, burnt-out motors, mission-related objects, and even

Confrontation, p. 231; also Vereshchetin and Danilenko, "Custom as a Source of International Law of Outer Space," *Journal of Space Law*, vol. 13 (1985), p. 22; on the principle of the common heritage of mankind, see Damrosch, *Beyond Confrontation*, pp. 230–234; also S. Gorove, "The Concept of Common Heritage of Mankind: A Political, Moral or Legal Innovation?," *San Diego Law Review: Law of the Seas*, vol. 9 (1972), p. 390.

[34] See, for example, the Outer Space Principles Treaty (Moscow, London, and Washington, January 27, 1967), 610 UNTS 205; 6 ILM 386 (1967), which was largely based on the 1963 UN Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (UN Doc. A/RES/1962/XVIII)); 3 ILM 157 (1964)). See also the Space Liability Convention (London, Moscow, and Washington, March 29, 1972), 961 UNTS 187, which will be discussed below. For more recent studies of the relevant issues, see Bin Cheng, *Studies in International Space Law* (Oxford, Clarendon Press, 1997); G. Lafferranderie and D. Crowther (eds.), *Outlook on Space Law Over the Next 30 Years: Essays Published for the 30th Anniversary of the Outer Space Treaty* (The Hague, Kluwer, 1997); Nandasiri Jasentuliyana (ed.), *International Space Law and the United Nations* (The Hague, Kluwer, 1999).

[35] He Qizhi, "Space Law and the Environment," in Nandasiri Jasentuliyana (ed.), *Space Law: Development and Scope* (Westport, Praeger, 1992), p. 159, at pp. 160–162.

[36] The issue of nuclear power sources has been the subject of the deliberations of COPUOS for some years. In 1990, the Legal Sub-committee reached a consensus on the guidelines and criteria for the safe use of nuclear power sources in outer space: He Qizhi, "Space Law and the Environment," in Nandasiri Jasentuliyana (ed.), *Space Law: Development and Scope* (Westport, Praeger, 1992), p. 159, at p. 169. Studies on space debris have been carried out at the national level by some space States. Suggestions have been put forward to the effect that an international expert group on space debris, possibly within the framework of COPUOS, should be established to study the problem with a view to setting up international standards and recommended practices. See *ibid*., p. 170.

[37] For example, the NASA Satellite Situation Report, cited from L. Perek, "Space Debris," in the proceedings of the Institute of Air and Space Law of Cologne Colloquium held on May 16–19, 1988, the results of which are published in Karl-Heinz Böckstiegel (ed.), *Environmental Aspects of Activities in Outer Space* (Cologne, 1990), at p. 8; Report on Space

nuts, bolts, and paint flecks, circle the earth at various altitudes. For every active satellite there are 20–50 useless objects in outer space. In his comment on traffic control of space vehicles, Cargill Hall wrote:[38]

> In March 1965, two orbiting Soviet cosmonauts reported that they "cried out in surprise" upon viewing a man-made satellite pass within a mile of their own craft. More recently, in June 1965, United States astronauts White and McDivitt also reported seeing and photographing several satellites while in orbit . . . [T]he amount of debris in orbit alone "has been increasing at the rate of fifty percent per annum."

The risk to space activities lies in the fact that a fast-moving fragment the size of a pea can easily shatter a satellite or kill an astronaut performing extra-vehicular activities.[39] It has been observed that contrary to general impressions, space is not all that "spacey." Some regions see intensive use, especially low orbits which often accommodate high value space assets, such as manned space stations, for long periods. Because of their high collision energy, even debris fragments too small to be observed by radar may threaten such an operating system. All countries engaged in space flight must face the growing dangers from orbital debris and pollution.[40] These dangers threaten not only current users but also the activities of future space States.

International sensitivity to the problem of the use of nuclear power sources in outer space was heightened by the malfunction and disintegration of the two Soviet nuclear-powered satellites, Cosmos 954 in 1978 and Cosmos 1402 in 1984. The former dropped onto Canadian

Debris by S. J. Bauer, Chairman of the COSPAR panel on Potentially Environmentally Detrimental Activities in Space, UN Doc. A/AC.105/409 of January 6, 1988. Currently there are about 7,000 objects larger than 20 cm in size in near-Earth space, of which only about 5 percent are active satellites or operational payloads. The rest are non-operational payloads, mission-related debris or debris from satellite break-ups, an accumulation of inactive satellites, burnt-out rocket boosters, instrument covers and a large variety of pieces of metal or other materials.

[38] R. Cargill Hall, "Comments on Traffic Control of Space Vehicles," *Journal of Air Law and Commerce*, vol. 31 (1965), p. 327, at p. 329.

[39] In June 1983, the number 5 window of the US space shuttle *Challenger* was hit by a man-made substance – a paint chip. The window could not be reused and had to be replaced at a cost of US$50,000. The impact of the chip in the window was 0.22 inches in diameter. It was estimated that the paint particle had a diameter of 0.008 inches. See F. K. Schwetje, "Liability and Space Debris," in Karl-Heinz Böckstiegel (ed.), *Environmental Aspects of Activities in Outer Space* (Cologne, 1990), p. 30, n. 8. For a study on space debris, see also Dr. V. Kopal, "Some Remarks on Legal Aspects of Space Debris," *ibid*., p. 44, n. 5; He Qizhi, "Space Law and the Environment," in N. Jasentuliyana (ed.), *Space Law: Development and Scope* (Westport, Praeger, 1992), p. 159, at pp. 163–164.

[40] See the remarks by Dr. W. Kroll, Chairman of the Board, German Aerospace Research Establishment, in Böckstiegel, *Environmental Aspects*, p. 5.

territory and the latter into the sea.[41] Cosmos 954 was originally designed to be boosted after its mission into a high orbit where it would decay after some 600 years. Due to a malfunction, however, it re-entered the earth's atmosphere. While most of its nuclear fuel burned up, 65 kilograms of radioactive material remained and was scattered across northern Canada.[42]

Nuclear explosion during military activities in outer space is categorically prohibited by treaties.[43] There is still a technical question whether radioactive damage arising from nuclear power sources can be equated to the level of damage an explosion might cause.[44] The main threat from nuclear power sources is the potential danger of a radioactive malfunction of the satellite on re-entering the earth, thus placing literally all States in danger. Potential environmental damage from the use of nuclear power sources is also considerable.[45]

The atmosphere

International concern over damage to the atmosphere has focused primarily in recent years on depletion of the ozone layer and climate change.[46] The ozone layer is a protective coat of the stratosphere which has two vital functions for life on earth.[47] By absorbing some of the

[41] For a substantive discussion of the Cosmos 954 accident, see Bruce A. Hurwitz, *State Liability for Outer Space Activities in Accordance with the 1972 Convention on International Liability for Damage Caused by Space Objects* (Dordrecht, Martinus Nijhoff, 1992), pp. 113–132; also He Qizhi, "Space Law and the Environment," in N. Jasentuliyana (ed.), *Space Law: Development and Scope* (Westport, Praeger, 1992), p. 159, at p. 163.

[42] See Hurwitz, *State Liability for Outer Space Activities*, p. 114.

[43] See the Partial Test Ban Treaty (Moscow, August 5, 1963), 480 UNTS 43, and the Outer Space Principles Treaty (Moscow, London, and Washington, January 27, 1967), 610 UNTS 205; 6 ILM 386 (1967).

[44] Scientists and space lawyers so far are uncertain on this point. The major danger from nuclear power sources is radioactive fallout. It is said that if a nuclear power source disintegrated and completely burnt up, the radioactive material would be deposited globally in the stratosphere. See N. Jasentuliyana, "A Perspective on the Use of Nuclear Power Sources in Outer Space," *Annals of Air and Space Law*, vol. 4 (1979), pp. 520–521.

[45] He Qizhi, "Space Law and the Environment," in N. Jasentuliyana (ed.), *Space Law: Development and Scope* (Westport, Praeger, 1992), p. 159, at p. 163.

[46] Some scholars also include "acid rain" within the category of long-range transport of air pollutants. This author believes that in most cases acid rain that affects several States is a regional matter rather than a global issue, and should be considered within a transboundary context. See further, Jutta Brunnée, *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (Dobbs Ferry, Transnational Publishers, 1988); A. D. Ellerman, *Markets for Clean Air: The US Acid Rain Program* (Cambridge, Cambridge University Press, 2000).

[47] Richard B. Steward and Jonathan B. Wiener begin their article with the assertion that "the atmosphere is a global commons," in the economic sense of the term, rather

solar ultraviolet radiation, it provides the heat necessary to maintain the stability of the stratosphere. It also filters ultraviolet radiation and protects the earth from the most dangerous wavelengths.[48] In 1974, Molina and Rowland first published their theory of the ozone layer's destruction by chemicals emitted into the air by man.[49] The danger they identified soon aroused strong public concerns. Subsequent scientific research and studies have strived not only to provide a thorough understanding of the phenomenon, but also to put forward scientific suggestions for minimizing the damage. This is a task not solely for scientists, but for politicians, lawyers, and the public as well. The task remains unfulfilled at present.

The concentration of stratospheric ozone above a particular point on the surface of the earth varies with geographic location (latitude), temperature, atmospheric circulation, the seasons, and the amount of solar radiation.[50] The horizontal distribution of ozone in its largest concentrations is at 25–40 km above the earth's surface.[51] In terms of its physical scope, the atmosphere by definition falls into two legal classifications: either as the exclusive resources within the national airspace super-adjacent to the territory of a particular State; or as the inclusive resources of airspace above the common areas.[52] In international law,

than its technical meaning in international law. The argument is based on the premise that unabated use of the commons as a dumping ground for greenhouse gases could eventually produce significant, perhaps unacceptable environmental changes. Yet actions to reduce emissions are likely to entail significant expense. In the absence of an international regime regulating use of the atmospheric commons, no nation will have an adequate incentive to limit its own use because it will have no assurance that others will do likewise. See Richard B. Steward and Jonathan B. Wiener, "The Comprehensive Approach to Global Climate Policy: Issues of Design and Practicality," *Arizona Journal of International and Comparative Law*, vol. 9 (1992), p. 83.

48 For an explanation of the scientific aspects and the effects of the depletion of the ozone layer, see Brunnée, *Acid Rain*, pp. 34–49.

49 M. J. Molina and F. S. Rowland, "Stratospheric Sink for Chlorfluoromethanes: Chlorine Atom Catalyzed Destruction of Ozone," *Nature*, vol. 249 (1974), p. 811.

50 R. T. Watson, "Atmospheric Ozone," and J. E. Frederick, "The Ultraviolet Radiation Environment of the Biosphere," in EPA and UNEP (eds.), *Effects and Changes in Stratospheric Ozone and Global Climate*, vol. 1, *Overview* (EPA, 1986), pp. 69 and 121–128; Brunnée, *Acid Rain*, p. 35.

51 For more detail, see Brunnée, *Acid Rain*, p. 35; Allen L. Springer, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States* (Westport, Quorum Books, 1983), pp. 21–24.

52 There have been heated discussions on the issue of the demarcation between airspace and outer space. The primary issue is whether a space object can pass through the airspace of a foreign country during the ascending or descending phases of the flight in non-accidental conditions without prior authorization of the underlying State. See the discussions on the issue in "Vexing Issues of Supreme Authority and Sovereign Rights Arising from Space Activities," *American Society of International Law Proceedings*, vol. 88 (1994), p. 259.

airspace has a precise legal connotation, meaning the aerial space superadjacent to the national land and water territories.[53] As to its height, the traditional theory was that it was infinite. When man entered into the space age, one of the legal issues presented to international lawyers was how to define the point at which airspace ends and outer space begins for the purpose of determining the extent to which a State can assert sovereignty over its airspace and thus exercise control. Political and legal concerns of national States over their national security and air defense were self-evident. Although the dividing line between the two legal regimes is still a matter of controversy,[54] States have acknowledged as customary international law the existence of two legal regimes governing respectively airspace activities under the sovereignty of States and outer space ventures under international law.[55]

The depletion of the stratospheric ozone layer by chlorofluorocarbons (CFCs) and other ozone-depleting substances has rendered the ozone layer a subject of international concern.[56] Ozone depletion is global in cause and effect, and in the necessity of international action to curb its potential irreversibility.[57]

Extensive studies have been carried out to ascertain the effects of ozone depletion on the earth and humans. These effects may be felt

[53] Roman and early common law recognized certain proprietary rights on behalf of private owners in the airspace overlying their land, which was expressed in the maxim *cujus est solum, ejus est usque ad coelum* ("he who has the soil owns upward into heaven"). The 1944 Chicago Convention on International Civil Aviation (Chicago, December 7, 1944), 15 UNTS 295, recognizes the sovereignty of every nation over the airspace above its territory, although it does not define the physical demarcation of the area.

[54] The two main schools of thought on the issue are the spatial approach and the functional approach. Since 1967, the question of the demarcation of the atmosphere and outer space has been on the agenda of COPUOS. After a series of studies by scientific groups, a large number of States and scholars were in favor of delimiting the two spheres by reference to the minimum altitude of orbiting artificial Earth satellites, approximately one hundred kilometers above sea level. The opponents, mainly the developed countries, argued that the law of each sector (i.e. airspace or outer space) should apply according to the function of the craft and the nature of the activity rather than the physical location in which it is conducted. See N. M. Matte, *Aerospace Law* (Toronto, Carswell, 1969), pp. 70–74.

[55] For a detailed discussion on the issue of delimitation of the two areas, see Damrosch, *Beyond Confrontation*, pp. 243–248.

[56] Studies in the area initially attributed the effects to atmospheric testing of nuclear weapons, high-flying supersonic aircraft, and water vapor and NO_2, which were thought to be deposited directly in the stratosphere. Even though the current weight of scientific opinion holds CFCs responsible for the depletion, it has not yet been proved beyond doubt.

[57] Brunnée, *Acid Rain*, p. 139.

in several areas: human health, crops, natural terrestrial ecosystems, and aquatic plants. It is estimated that "even with emissions constant at the 1980 levels, 142,000 new cases of skin cancer (6% increase for females, 8% for males for a 2% ozone depletion) will occur by 2025. With increasing CFC emissions the number of new cases will rise to 256,000 (22.5% increase for females, 30% for males for 7.5% ozone depletion) for the same year."[58] Experiments have shown that the depletion would cause crop reduction and changes in species diversity and composition.[59]

Both in cause and in effect, the depletion of the ozone layer is directly linked with global climate change – the "greenhouse effect". Scientific studies have revealed that greenhouse gases can induce ozone destruction and cause climate change. The earth's temperature depends on the amounts of sunlight which penetrate the atmosphere, in relation to the amounts which are reflected back into space. According to scientific theories, greenhouse gases prevent the reflection and retain heat, creating an effect analogous to a greenhouse. The consequences of these effects would be immense: the change of climate would directly affect agricultural productivity and other food supplies. The sea level would rise dramatically with the melting of glaciers and polar ice.[60] The main component gases identified so far are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), HCFCs and HFCs. CO_2 emissions are the largest single contribution to the potential global climate change, accounting for over half of the radioactive forcing effect of all greenhouse gases.[61] As greenhouse gas emissions occur as part of every combustion process, their reduction and control is imperative. While further scientific studies are needed, the long-term risk for the world as a whole is gradually achieving recognition.[62]

[58] D. J. Dudek and M. Oppenheimer, "The Implications of Health and Environmental Effects for Policy," in EPA and UNEP (eds.), *Effects and Changes in Stratospheric Ozone and Global Climate*, vol. 1, *Overview* (EPA, 1986), pp. 368–370, cited from Brunnée, *Acid Rain*, p. 44.

[59] R. C. Worrest, "The Effects of Solar UV-B Radiation on Aquatic Systems: An Overview," in EPA and UNEP (eds.), *Effects and Changes in Stratospheric Ozone and Global Climate*, vol. 1, *Overview*, pp. 175–191, cited from Brunnée, *Acid Rain*, p. 45.

[60] Brunnée, *Acid Rain*, p. 47.

[61] Richard B. Stewart and Jonathan B. Wiener, "The Comprehensive Approach to Global Climate Policy: Issues of Design and Practicality," *Arizona Journal of International and Comparative Law*, vol. 9 (1992), p. 83, at p. 85.

[62] IPCC, Report of Working Group II, 1990, cited in Alan E. Boyle, "International Law and the Protection of the Global Atmosphere: Concepts, Categories and Principles," in Robin Churchill and David Freestone (eds.), *International Law and Global Climate Change* (London, Graham & Trotman, 1991), p. 7.

The polar regions

The legal position of the polar regions is more complicated than the other areas of the global commons.[63] They are the last two land-masses left on earth that are not occupied by States on the basis of national jurisdiction or control. In Antarctica, territorial claims are frozen under Article IV of the 1959 Antarctic Treaty (the "Antarctic Treaty").[64] Antarctica has a unique role in scientific research. It provides a habitat for many species and serves various scientific purposes. It is a control area against which scientists can measure environmental deterioration in other parts of the globe, serving as a valuable scientific laboratory for measuring the extent and effects of global climate changes. It plays an important role in the regulation of the earth's weather patterns. Larger than all of Europe, the Antarctic ice sheet would, if spread, cover a large part of the southern Atlantic and Pacific Oceans. If melted, the sea level would rise by at least 1.5 meters around the world, flooding coastal areas.[65] Environmental protection of the area is rightly regarded as a common concern.[66]

[63] For a recent detailed introduction to the international law pertaining to Antarctica, see F. Francioni and T. Scovazzi, *International Law for Antarctica* (2nd edn., The Hague, Kluwer, 1996).

[64] In Antarctica, seven States maintain their territorial claims on the sectors of the continent, some of which overlap. The United States and the Soviet Union did not recognize the above-mentioned claims, and yet reserved their own rights to make territorial claims on the basis of the exploration activities conducted by their nationals. See Henkin *et al*., *International Law*, pp. 1362–1363 and 1365. In the 1959 Antarctic Treaty (Washington, December 1, 1959), 402 UNTS 71; Kiss, *Selected Multilateral Treaties*, p. 150, all claims were frozen under Article IV which neither recognized such claims nor denied them, and specified that no activities in the area would give rise to an assertion or denial of such a claim. Springer considers that this has rendered Antarctica *res communis*: Allen L. Springer, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States* (Westport, Quorum Books, 1983), p. 14, n. 60. See Vladimir Trofimov, *Legal Status of Antarctica* (Moscow, Promotey, 1990), pp. 35 and 42. As explained by Trofimov, the Soviet Union considers the area neither *terra nullius* nor *res communis*, as it stresses the interests of the original parties to the Antarctic Treaty in managing activities. It took the position that the parties to the Antarctic Treaty proceeded from the understanding that Antarctica had a special legal status and the Antarctic Treaty should formalize only certain specifically agreed freedoms and restrictions which would maintain Antarctica's *status quo*, both in terms of its natural conditions as well as its legal status.

[65] See Keith Suter, *Antarctica: Private Property or Public Heritage?* (London, Zed Books, 1991), pp. 1–8.

[66] Notwithstanding the existing interests in mineral mining in the area, the importance of Antarctica's environmental protection is generally shared. Latin American countries in particular express the same view with regard to the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (Wellington, June 2, 1988), 27 ILM

Ever since the conclusion of the Antarctic Treaty, all activities concerning Antarctica have been conducted in accordance with the treaty regime. In 1983, during the UN General Assembly sessions, the question was raised whether Antarctica should be under the control of the parties to the Antarctic Treaty system alone or should be part of the common heritage of mankind to be accessible and beneficial to all States.[67] The developing countries expressed strong interests in a wider international arrangement, since

> the Continent of Antarctica has a considerable environmental, climatic, scientific and potential economic significance to the World. They expressed their conviction that, in the interest of all mankind, Antarctica should continue forever to be used exclusively for peaceful purposes, should not become the scene or object of international discord and should be *accessible to all Nations*.[68]

The position taken by the developing countries on the current regime over Antarctica expresses the political desire for more democratic decision-making with regard to common resources as well as interests in the participation and sharing of the potential benefits derived from the exploitation and uses of the commons.

Although the regime has been maintained as the main forum for the consideration of Antarctic matters, with the expansion of the membership of the consultative parties and observers,[69] the general interest among States in the area as a centre for important scientific research and observation, particularly for the understanding of the global environment, is on the rise.[70] The increasing amount of scientific activity in the region in recent years has already caused some disturbance

868. See "The Future of the Antarctic Regime: New Directions," *American Society of International Law Proceedings*, vol. 85 (1991), p. 461, at pp. 461–475. See Chopra, "Antarctica in the United Nations: Rethinking the Problems and Prospects," *American Society of International Law Proceedings*, vol. 80 (1986), p. 269. See also S. N. K. Blay, R. W. Piotrowicz, and B. M. Tsamenyi, *Antarctica After 1991: The Legal and Policy Options* (Hobart, Faculty of Law, University of Tasmania, 1989).

67 Francesco Francioni, "Antarctica and the Common Heritage of Mankind," in Francesco Francioni and Tullio Scovazzi (eds.), *International Law for Antarctica* (Milan, Giuffrè, 1987), p. 101.

68 This view was articulated in a resolution adopted at the Conference of Heads of State or Government of non-aligned countries held in New Delhi in March 1983, UN Doc. A/38/193 (1983), pp. 2–3, cited in *ibid*., pp. 105–106, n. 12 (emphasis added).

69 The treaty parties expanded the regime by including India, Brazil, China, and Uruguay as consultative parties and, furthermore, any party to the treaty may send observers to meetings: Henkin *et al*., *International Law*, p. 1367.

70 Owing to the unique opportunities for the study of the continent as well as the earth itself, "powerful currents of legal political opinion now support the idea that Antarctica should be held in common by all the nations of the earth acting through

to the environment, although conscientiously kept to a minimum.[71] Reports of oil spills in the area have deepened public concern over the environmental protection of the region.[72] The decision to suspend mining activities for fifty years by the consultative parties to the Antarctic Treaty postponed the entry into force of the Antarctic mineral mining regime,[73] indicating the priority these countries attach to environmental protection of the area. Currently, efforts are under way to conclude a sixth annex to the 1991 Protocol on Environmental Protection to the Antarctic Treaty on State responsibility and liability for damage caused to Antarctica.[74]

The situation with the Arctic region is rather different from that of Antarctica. While no territorial assertion is recognized,[75] the Arctic contains 40 percent of world reserves of oil and gas and other natural

some international body": S. N. K. Blay, R. W. Piotrowicz, and B. M. Tsamenyi, *Antarctica After 1991: The Legal and Policy Options* (Hobart, Faculty of Law, University of Tasmania, 1989), at p. 15.

[71] Currently there are sixty-nine bases operating in the area, and hundreds of tourists visit each year. There is no code of conduct for garbage disposal or guided tours. See Keith Suter, *Antarctica: Private Property or Public Heritage?* (London, Zed Books, 1991), pp. 108–110. However, during her recent visit to Antarctica in February 2001, the author learnt that people on the bases are highly conscious of the ecological protection of Antarctica and ensure that garbage generated by the bases and by tourism is disposed of in an environmentally friendly manner.

[72] One of the accidents reported involved the collision of the *Bahia Paraiso*, an Argentine ship, with rocks in the Bismarck Strait on the northern tip of Antarctica. There were several other oil spills from stations reported to have taken place in 1989, where thousands of litres of jet fuel, diesel oil, and petrol were discovered in the base areas. *Ibid*.

[73] In 1988, member States of the Antarctic Treaty concluded the Convention on the Regulation of Antarctic Mineral Resource Activities (Wellington, June 2, 1988), 27 ILM 868, although it is not yet in force. Australia and France refused to sign it in the interests of environmental protection of the region from mining activities.

[74] In 1991, the Antarctic Treaty parties concluded a new protocol to the Antarctic Treaty on the protection of the Antarctic environment alter the decision to continue constraints on mining activities in the area. Article 16 of the Protocol provides: "the Parties undertake to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by this Protocol. Those rules and procedures shall be included in one or more Annexes." In accordance with this provision, experts are currently working on the drafting of an annex on liability for environmental damage caused to Antarctica. The specific proposals will be discussed later. See the Report of the twenty-fourth Antarctic Treaty Consultative Meeting, St. Petersburg, July 9–20, 2001, paras. 61–82.

[75] Iceland was the first country to implement the "new law of the sea" in the Nordic-Arctic area. In 1976, Norway established an economic zone of 200 nautical miles. On June 12, 1980, Denmark proclaimed an economic zone of 200 nautical miles around Greenland. A map of the Arctic and the Norwegian Sea with the new zones inserted makes it evident that most of the Arctic will in the future be under national

resources, and national claims still over-shadow the public activities in the area. Territorial claims have been made by States adjacent to the region based on the sector principle,[76] but they are not free from controversy.[77] Efforts have been made among the Arctic States to enhance international cooperation in the protection of the environment and the indigenous peoples in the region.[78] States generally take the view that it is important to maintain the Arctic Ocean as a part of the high seas accessible to all States for scientific research and other purposes. If new zones were to be established for various national purposes, only a small area at the very apex of the North Pole would remain part of the "high seas," an outcome which is certainly not in the interests of all States.

The existing legal regimes for the global commons

Most legal regimes adopted to date dealing with the global commons are aimed at preventing military rivalry and national occupation, and

control – for the time being only as regards economic exploitation, but possibly in other respects in future. This is a useful reminder of the concept of "creeping jurisdiction." The wider extension of national control and sovereignty will also affect the future opportunities for scientific research in the polar areas, since the new law of the sea allows a close national control of all foreign research activities in the economic zone. The development of the law of the sea thus holds many implications for the polar areas. See Bo Johnson Theutenberg, "Development and Cooperation in the Arctic," in Kari Möttölä (ed.), *The Arctic Challenge: Nordic and Canadian Approaches to Security and Cooperation in an Emerging International Region* (Boulder, Westview Press, 1988), pp. 303–316.

[76] This theory refers to the land expanse of which the baseline is the coast of the State adjacent to the area, the apex the North Pole, and the limits to either side the meridians from the North Pole to the eastern and western frontiers of the State.

[77] For example, with regard to the territorial claim over the Arctic islands known as "Sverdrup's Islands" by Canada, Norway stated that it did not acknowledge the so-called sector principle "which means the direct extension of Canada's borders converging to the North Pole": G. H. Hackworth, *Digest of International Law* (Washington, United States Government Printing Office, 1940–1944), vol. I, p. 465. The former Soviet view was that the State territory of countries adjacent to the Arctic and having polar sectors in the Arctic includes all lands and islands lying within these sectors. Unlike those in the Arctic, sectors in Antarctica have no baselines measured at the coast of the States claiming the sector, largely due to the fact that the mainland of Antarctica is thousands of miles away from other continents.

[78] On June 14, 1991, the Arctic States (Canada, Denmark, Finland, Norway, Sweden, the Soviet Union, and the United States) adopted the Arctic Environmental Protection Strategy, the objectives of which are to protect the environment and indigenous peoples of the area. See Henkin *et al*., *International Law*, p. 1366, n. 2; E. Franckx, "Nature Protection in the Arctic: Recent Soviet Legislation," *International and Comparative Law Quarterly*, vol. 41 (1992), p. 366.

at reserving the areas solely for peaceful exploration and uses for the benefit of all mankind. Rules of State responsibility and liability for damage caused in the common areas generally take three forms: (1) disarmament treaties governing activities in the regions; (2) general treaties establishing the legal regime of each area; and (3) private international rules of liability for certain types of harmful activities in the common areas. While environmental concern was merely a marginal factor in the drafting of some of these treaties, they have nonetheless made a certain contribution.

Prohibiting certain harmful activities in the common areas

One of the first concerns over the potential negative uses of the commons was the expansion of militarization and weapons development in the common areas. In view of their serious impact on natural resources and the environment, testing and emplacement of nuclear weapons and other weapons of mass destruction are prohibited wholly or partly in these regions. The first distinctive provisions to this effect were laid down in the Antarctic Treaty,[79] which expressly prohibits any nuclear explosions and disposal of radioactive and chemical wastes in Antarctica and the testing of any type of weapons thereon. Article I(1) reads:

> Antarctica shall be used for peaceful purposes only. There shall be prohibited, *inter alia*, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any types of weapons.

Furthermore, Article V prohibits "any nuclear explosions in Antarctica and the disposal there of radioactive waste material."

In 1963, the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (the "Partial Test Ban Treaty")[80] was adopted, with the aim to "put an end to the contamination of man's environment by radioactive substances."[81] The States parties undertook "to prohibit, to prevent, and not to carry out any nuclear weapon test

[79] Washington, December 1, 1959, 402 UNTS 71; Kiss, *Selected Multilateral Treaties*, p. 150. See also *Status of Multilateral Arms Regulation and Disarmament Agreements* (3rd edn., New York, United Nations, 1988), p. 12.

[80] Moscow, August 5, 1963, 480 UNTS 43. See also *Status of Multilateral Arms Regulation and Disarmament Agreements* (3rd edn., New York, United Nations, 1988), p. 20.

[81] *Ibid*., Preamble.

explosion" in the places defined by the Treaty.[82] In 1971, the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof was also concluded to prohibit nuclear emplacement and prevent radioactive contamination of the ocean floor.[83] Under this Treaty, parties are obliged to consult with each other whenever a doubt arises as to the emplacement of nuclear weapons on the ocean floor. A verification system is established to ensure compliance with the treaty obligations.[84]

The ban on atmospheric testing of nuclear weapons on the high seas by the Partial Test Ban Treaty was not accepted by all nuclear States, however.[85] Although it has been claimed that the atmospheric test ban has become so generally accepted as to render it a norm of customary international law binding on all States,[86] there is no authoritative evidence to sustain such a claim. In the 1974 *Nuclear Tests Cases* brought by Australia and New Zealand against France over French nuclear tests in the South Pacific Ocean, the International Court of Justice avoided making a declaration on the illegality of nuclear testing by holding that the object of the dispute had disappeared with the French public declaration that atmospheric testing would cease.[87] The Court in its advisory opinion on the legality of the use or threat of use of nuclear weapons, requested by the General Assembly in 1994, held that there was in neither customary nor conventional international law any authorization or prohibition of the threat or use of nuclear weapons.[88]

[82] See *ibid*., Article 1. Here the term "under water" is defined to include territorial waters or high seas.

[83] London, Moscow, and Washington, February 1, 1971, 955 UNTS 115; *Status of Multilateral Arms Regulation and Disarmament Agreements* (3rd edn., New York, United Nations, 1988), p. 100.

[84] See *ibid*., Article III.

[85] France and China chose not to become parties to the Treaty.

[86] Inspired by existing treaties such as the Partial Test Ban Treaty, the Sea-Bed Denuclearization Treaty, and the Tlatelolco Treaty for the Denuclearization of Latin America, the Resolution on Nuclear Weapons Tests adopted at the UN Conference on the Human Environment in 1972 was thought to present evidence of the existence of such a norm: Jan Schneider, *World Public Order of the Environment: Towards an International Ecological Law and Organization* (Toronto, University of Toronto Press, 1979), at p. 41.

[87] Nuclear Tests Cases of December 20, 1974: *Australia* v. *France* ICJ Reports (1974), p. 253; and *New Zealand* v. *France* ICJ Reports (1974), p. 457.

[88] *Legality of the Threat or Use of Nuclear Weapons*, ICJ Reports (1996), p. 225, at p. 266. The Court could not conclude definitively on the legality or otherwise of the threat or use of nuclear weapons under extreme circumstances of self-defense "in which the very

In 1985, South Pacific countries concluded the South Pacific Nuclear Free Zone Treaty,[89] which provides for renunciation of nuclear explosive devices, the prevention of the stationing and testing of nuclear explosive devices, and the prevention of the dumping of radioactive wastes thereof, furthering the efforts to ban such activities in the region.

For historical reasons and due to their strategic importance, the high seas have drawn great attention in the process of disarmament. By comparison, outer space activities from their inception have been guided by positive rules. The UN Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space unanimously adopted by the General Assembly on December 13, 1963,[90] set out general legal principles for space activities, based upon which the Outer Space Principles Treaty,[91] and four other space treaties, were adopted.[92] The Outer Space Principles Treaty specifies that the placing into orbit, installing on celestial bodies, or stationing in outer space in any other manner of any objects carrying "nuclear weapons or any other kinds of weapons of mass destruction" are prohibited.[93] The 1979 Agreement Governing the Activities of States on the moon and Other Celestial Bodies[94] is another important instrument. Article 3 prohibits the use of force or any other hostile act or threat of hostile act on the moon, and prohibits the placing in orbit, on or in the moon, of nuclear weapons or any other weapons of mass destruction. Further, it prohibits the establishment of military bases, installations, and fortifications, the testing of any type of weapons, and the conduct of military maneuvers on the moon. In broad terms, these principles have met with the general acceptance of States. Of course this does not mean that in the past forty years outer

survival of a State would be at stake": *ibid*. For a detailed analysis of the nuclear weapons decisions, see L. Boisson de Chazournes and P. Sands (eds.), *International Law, the International Court of Justice and Nuclear Weapons* (Cambridge, Cambridge University Press, 1999).

89 South Pacific Nuclear Free Zone Treaty (Rarotonga, August 6, 1985), 1445 UNTS 177.

90 UN Doc. A/RES/1962(XVIII). See Christol, *Law of Outer Space*, p. 50.

91 Moscow, London, and Washington, January 27, 1967, 610 UNTS 205; 6 ILM 386 (1967).

92 These are the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Washington, London, and Moscow, April 22, 1968), 672 UNTS 119; the Space Liability Convention (London, Moscow, and Washington, March 29, 1972), 961 UNTS 187; the Convention on Registration of Objects Launched into Outer Space (New York, November 12, 1974), 1023 UNTS 15; and the Agreement Governing the Activities of States on the Moon and other Celestial Bodies (December 5, 1979), 1363 UNTS 21.

93 Article 4 of the Outer Space Principles Treaty, 610 UNTS 205; 6 ILM 386 (1967).

94 December 5, 1979, 1363 UNTS 21.

space has been free from all harmful military activities. On the contrary, there has been debate as to whether such military activities as weapons testing in outer space are consistent with the principles and objectives of the Outer Space Principles Treaty, serving peaceful purposes.[95]

The 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques should also be mentioned.[96] The term "environmental modification techniques" refers to "any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the earth, *including its biota, lithosphere, hydrosphere and atmosphere, or of outer space*."[97] States parties undertake not to engage in the military or hostile use of environmental modification techniques which have "widespread, long-lasting or severe effects."[98]

General rules of State responsibility for damage to the global commons

Disarmament efforts cover only a small portion of the problem of damage to the commons. For the most part, damage issues must be examined under the general legal regimes on the common areas.

Protection of the ocean

Protection of the marine environment has long been the subject of international law-making. International as well as regional efforts have contributed to the conclusion of a host of treaties, under which States undertake increasing responsibilities to protect the marine environment. Among them, the most important is the 1982 United Nations Convention on the Law of the Sea.[99] Part XII is devoted to protection and preservation of the marine environment. Under the Convention, States parties undertake "the obligation to protect and preserve the marine environment."[100] They are also obliged to "take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their

[95] See Christol, *Law of Outer Space*, pp. 23–26.
[96] December 10, 1976, 1108 UNTS 151; Christol, *Law of Outer Space*, p. 133.
[97] *Ibid*., Article II (emphasis added). [98] *Ibid*., Article I.
[99] Montego Bay, December 10, 1982, 1833 UNTS 396.
[100] *Ibid*., Article 192. See also *Official Records of the Third United Nations Conference on the Law of the Sea*, vol. XVII (United Nations Publication, Sales No. E.84.V.3, UN Doc. A/CONF.62/122).

environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights" in accordance with the Convention. These measures should deal with all sources of pollution of the marine environment.[101] As a general obligation, States parties must adopt laws and regulations to prevent, reduce, and control pollution of the marine environment from land-based sources,[102] from sea-bed activities,[103] from dumping,[104] from vessels,[105]and from or through the atmosphere.[106] States are also obliged to enforce any laws and regulations thus adopted.[107] On responsibility and liability, Article 235 provides:

> 1. States are responsible for the fulfillment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law.
>
> 2. States shall ensure that recourse is available in accordance with their legal systems for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction.
>
> 3. With the objective of assuring prompt and adequate compensation in respect of all damage caused by pollution of the marine environment, States shall co-operate in the implementation of existing international law and the further development of international law relating to responsibility and liability for the assessment of and compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.

From the terms of the Convention, it is not difficult to see that there is still considerable endeavor required at the national level, and consequently through further international cooperation, in order to achieve the ultimate aim of protection of the marine environment.

Regulatory rules of conduct on the high seas have been adopted with regard to the prevention of oil pollution of the sea, both in normal operation and in emergency situations, for example, the International Convention for the Prevention of Pollution of the Sea by Oil,[108] and the International Convention Relating to Intervention on the High Seas in

[101] Law of the Sea Convention Article 194(2) and (3).
[102] *Ibid*., Article 207. [103] *Ibid*., Articles 208 and 209. [104] *Ibid*., Article 210.
[105] *Ibid*., Article 211. [106] *Ibid*., Article 212. [107] *Ibid*., Section 6, "Enforcement."
[108] London, May 12, 1954, 327 UNTS 3, entered into force on July 26, 1958. The Convention is also reproduced in Singh, *International Maritime Law Conventions*, p. 2233, incorporating the amendments of 1962 and 1969.

Cases of Oil Pollution Casualties.[109] The 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation[110] is the first international effort of its kind on the individual or collective response of States to marine pollution by oil. In the past, such cooperation was mainly at the regional level. The Convention specifies the procedures for cooperation and assistance between the States parties in response to oil pollution. Under the Convention, national contingency plans shall be prepared and adequate oil spill combating equipment made available. It regulates the reporting procedures and sets up the terms for rendering assistance in the case of an oil accident.[111]

With regard to the international liability of States for damage to the marine environment by oil, the current state of the law does not provide any specific rules and procedures at the international level. Some treaties refer the matter to national jurisdiction. For example, Article VI of the International Convention for the Prevention of Pollution of the Sea by Oil provides:

> 1. Any contravention of Articles III and IX shall be an offence punishable under the law of the relevant territory in respect of the ship in accordance with paragraph (1) of Article II.
>
> 2. The penalties which may be imposed under the law of any of the territories of a Contracting Government in respect of the unlawful discharge from a ship of oil or oily mixture outside the territorial sea of that territory shall be adequate in severity to discourage any such unlawful discharge and shall not be less than the penalties which may be imposed under the law of that territory in respect of the same infringements within the territorial sea.

Thus States are obliged to extend as far as possible national jurisdiction and control over unlawful oil discharge beyond the limits of their territories. States are not required to follow any international standards but to impose the same domestic rules of punishment on such activities. In practice, as each State acts under its own laws, different rules may apply.

Apart from oil pollution, other types of marine pollution are also regulated by international instruments, such as the dumping of nuclear and other hazardous and toxic substances into the sea from land-based sources or from vessels. Among them is the Convention on the

[109] Brussels, November 29, 1969, 970 UNTS 211; 9 ILM 25 (1970), entered into force on May 6, 1975.

[110] London, November 30, 1990, 1891 UNTS 77; 30 ILM 733 (1991), entered into force on May 13, 1995.

[111] *Ibid*., Articles 4 and 5.

Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the "London Dumping Convention"),[112] which directly addresses marine dumping pollution. The objective of the London Dumping Convention is 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."[113] By restricting certain categories of materials and substances from being dumped in the seas, States parties undertake the general obligation to ensure practical steps are taken to prevent damage to the marine environment.

With regard to State responsibility and liability for damage, Article X states:[114]

> 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.

The article explicitly addresses the common area of the seas, but "the principles of international law" referred to in the article remain to be developed. In 1983, the contracting parties to the London Dumping Convention adopted a resolution calling for a moratorium on the dumping of low-level radioactive wastes at sea. However, in 1993, as another response to the growing marine pollution problems, the contracting parties adopted amendments banning the dumping of low-level radioactive wastes at sea.[115] Additionally, the parties agreed to ban the dumping or incineration of industrial waste at sea.[116] At a special meeting on November 17, 1996, the contracting parties adopted the 1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter,[117] which is intended to replace the 1972 London Dumping Convention thirty days after ratification by twenty-six

[112] London, Mexico City, Moscow, and Washington, December 29, 1972, 1046 UNTS 137; 11 ILM 1291 (1972), which entered into force on August 30, 1975. Note also the International Convention for the Prevention of Pollution from Ships (London, November 2, 1973), 1340 UNTS 184; 12 ILM 1319 (1973).

[113] *Ibid*., Article I. [114] *Ibid*., Article X (emphasis added).

[115] The vote was 37–0 with five abstentions by the UK, France, Russia, China, and Belgium. Each State had 100 days to file an objection refusing to be bound by the ban. See Kiss and Shelton, *International Environmental Law*, p. 72.

[116] *Ibid*. [117] 36 ILM 1 (1997).

countries, fifteen of whom must be contracting parties to the 1972 Convention. There have been sixteen ratifications to date to the 1996 Protocol.[118] Not only is the Protocol far more restrictive than the 1972 Convention, it represents a major step forward, inspired by the global trend towards precaution and prevention evidenced in UNCED's Agenda 21.[119] The most important innovations introduced by the Protocol are the codification in Article 3 of the "precautionary approach" and the "polluter pays" principle.[120]

The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal[121] serves to restrain the flow of hazardous wastes between States and to prevent disposal of hazardous wastes in the ocean beyond national jurisdiction.[122] On the matter of liability rules, the treaty expressed the need for further development. Article 12 states:

[118] As at June 30, 2002, there were sixteen States that had become parties to the Protocol. In summary, the London Dumping Convention was amended in 1978, 1980, 1989, 1993, and 1996. Controlling measures of wastes disposal at sea include restrictions on incineration, permits, the banning of dumping of low-level radioactive wastes, the phasing out of industrial wastes, the banning of incineration at sea of industrial wastes, etc.

[119] Agenda 21, Report of the UN Conference on Environment and Development, Rio de Janeiro, June 3–14, 1992, A/CONF.151/26 (vol. II), August 13, 1992.

[120] Article 3 provides:

> 1. In implementing this Protocol, Contracting Parties shall apply a precautionary approach to environmental protection from dumping of wastes or other matter whereby appropriate preventive measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relationship between inputs and their effects.
>
> 2. Taking into account the approach that the polluter should, in principle, bear the cost of pollution, each Contracting Party shall endeavor to promote practices whereby those it has authorized to engage in dumping or incineration at sea bear the cost of meeting the pollution prevention and control requirements for the authorized activities, having due regard to the public interest.

See 36 ILM 1 (1997), Article 3.

[121] Basel, March 22, 1989, 1673 UNTS 125; see also T. Scovazzi and T. Treves (eds.), *World Treaties for the Protection of the Environment* (Milan, Istituto per l'Ambiente, 1992), p. 436.

[122] Article 2(3) defines "transboundary movement" as "any movement of hazardous wastes or other wastes from an area under the national jurisdiction of one State to or through an area under the national jurisdiction of another State or to or through an area not under the national jurisdiction of any State, provided at least two States are involved in the movement."

The Parties shall co-operate with a view to adopting, as soon as practicable, a protocol setting out appropriate rules and procedures in the field of liability and compensation for damage resulting from the transboundary movement and disposal of hazardous wastes and other wastes.

For that purpose, the Basel Protocol on Liability and Compensation was adopted at the Fifth Conference of the Contracting Parties to the Basel Convention on December 10, 1999.[123] The Protocol's stated objective is to "provide for a comprehensive regime for liability and for adequate and prompt compensation for damage resulting from the transboundary movement of hazardous wastes and other wastes and their disposal including illegal traffic in those wastes."[124]

Regional efforts constitute an important aspect of the fight against marine pollution. In the 1976 Convention for the Protection of the Mediterranean Sea Against Pollution,[125] States parties undertook to develop rules of State responsibility and liability for damage caused to the marine environment. Article 12 states:[126]

The Contracting Parties undertake to cooperate as soon as possible in the formulation and adoption of appropriate procedures for the determination of liability and compensation for damage resulting from the pollution of the marine environment deriving from violations of the provisions of this Convention and applicable protocols.

The text was revised at Barcelona on June 10, 1995, and the Convention was renamed the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean. Article 4(3) obliges the States parties to apply the precautionary approach, and the polluter pays principle, as well as to promote cooperation in environmental impact procedures and integrated management of coastal areas. Article 16 contains a provision on liability and compensation almost identical in terms to Article 12 of the 1976 Convention.

Similar provisions also found expression in the 1978 Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution,[127] the 1983 Convention for the Protection

[123] The text is included in the Report of the Fifth Meeting of the Conference of the Parties to the Basel Convention, Annex III, p. 88 (Doc. UNEP/CHW.5/29).
[124] *Ibid*., Article 1.
[125] Barcelona, February 16, 1976, 1102 UNTS 44; Scovazzi and Treves, *World Treaties*, p. 448.
[126] *Ibid*., Article 12.
[127] Kuwait, April 24, 1978, 1140 UNTS 133. Article XIII reads:

The Contracting States undertake to co-operate in the formulation and adoption of appropriate rules and procedures for the determination of:

and Development of the Marine Environment of the Wider Caribbean Region,[128] and the 1974 Convention on the Protection of the Marine Environment of the Baltic Sea Area.[129]

While the general trend in the area is moving towards a comprehensive approach to regulation within the framework of the 1982 United Nations Convention on the Law of the Sea, regional agreements only intensify the integration of international action to deal with all matters relating to the sea. The adoption of three regional conventions in the industrial areas in the early 1990s places much more emphasis on the protection of the marine environment.

Of the three instruments, the first was the Convention for the Protection of the Marine Environment in the North-East Atlantic, adopted in Paris on September 22, 1992,[130] which replaced the 1972 Oslo Convention on dumping and the 1974 Paris Convention on land-based pollution. The Convention recognizes in principle the inherent worth of the marine environment of the North-East Atlantic; as interpreted,[131] the area should receive enhanced protection during use by the contracting States. The Convention reaffirms the principles as laid down in Part XII of the Convention on the Law of the Sea as customary international law.[132] The Convention also embraces the precautionary principle and

(a) Civil liability and compensation for damage resulting from pollution of the marine environment, bearing in mind applicable international rules and procedures relating to those matters; and
(b) Liability and compensation for damage resulting from violation of obligations under the present Convention and its protocols.

[128] Cartagena de Indias, March 24, 1983, 1506 UNTS 157; 22 ILM 221 (1983). Article 14 of the Convention reads as follows:

The Contracting Parties shall co-operate with a view to adopting appropriate rules and procedures, which are in conformity with international law, in the field of liability and compensation for damage resulting from pollution of the Convention area.

[129] Helsinki, March 22, 1974, 1507 UNTS 167; Kiss, *Selected Multilateral Treaties*, p. 405. Article 17 provides:

The Contracting Parties undertake, as soon as possible, jointly to develop and accept rules concerning responsibility for damage resulting from acts or omissions in contravention of the present Convention, including, *inter alia*, limits of responsibility, criteria and procedures for the determination of liability and available remedies.

[130] 32 ILM 1069 (1993).

[131] See Kiss and Shelton, *International Environmental Law*, p. 73.

[132] The Preamble to the Convention for the Protection of the Marine Environment in the North-East Atlantic recalls "the relevant provisions of customary international law

the polluter pays principle for marine damage.[133] Article 2(2)(b) provides that the contracting parties shall apply

> the polluter pays principle, by virtue of which the costs of pollution prevention, control and reduction measures are to be borne by the polluter.

Given the uncertainties with the causal relationship between conduct and effects, the Convention establishes a test of "reasonable grounds for concern" as the basis for preventive actions.[134] In its four Annexes, obligations relating to pollution from land-based and offshore sources, dumping, incineration, and monitoring are specifically enumerated.

The second development was the revision of the 1974 Convention on the Protection of the Marine Environment of the Baltic Sea Area on April 9, 1992, in Helsinki.[135] Like the previous instrument, it also enshrines the precautionary principle and the polluter pays principle.[136] On the rules of liability, the contracting parties undertake jointly to develop and accept rules concerning responsibility for damage resulting from acts or omissions in contravention of the Convention, including limits of responsibility, criteria and procedures for the determination of liability, and available remedies.[137] The Baltic Marine Environment Protection Commission, which was established by the 1974 Convention, is maintained.[138] Its major tasks include definition of pollution control criteria, objectives for the reduction of pollution, and objectives concerning measures taken.[139]

The third instrument is the Convention on the Protection of the Black Sea Against Pollution, adopted by the six coastal States on April 21, 1992.[140] The Convention extends to the territorial sea and the exclusive

reflected in Part XII of the United Nations Law of the Sea Convention and, in particular, Article 197 on global and regional cooperation for the protection and preservation of the marine environment."

[133] *Ibid*., Article 2.

[134] *Ibid*., Article 2(2)(a), enshrining the precautionary approach. Under the Convention, while objective evidence is still required, it need not be conclusive for the practical reason that it is difficult, if not impossible, to obtain such thorough evidence for the purpose of proof, considering the vast span of the ocean and the long-distance effects of dumping by the coastal States.

[135] The Convention was adopted by the Czech and Slovak Republics, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, the Russian Federation, Sweden, the Ukraine, and the EEC. See Conf. Doc. No. 4 of the Diplomatic Conference on the Protection of the Marine Environment of the Baltic Sea Area.

[136] Article 3(2) and (4) of the Convention on the Protection of the Marine Environment of the Baltic Sea Area.

[137] *Ibid*., Article 25. [138] *Ibid*., Article 19. [139] *Ibid*., Article 20(1), Annex III.

[140] Bucharest, April 21, 1992, 1764 UNTS 3; 32 ILM 1101 (1993).

economic zone of each of the contracting parties in the Black Sea.[141] The general objectives are to prevent, reduce, and control the marine pollution of the region.[142] These efforts primarily target accidental occurrences of marine pollution and its prevention at the source, redressing both point-source and diffuse-source pollution.

Another important regional undertaking, of a different nature, on the protection of the seas is the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa.[143] The Convention categorically bans the dumping of hazardous wastes at sea.[144] An *ad hoc* expert organ was designated to prepare a draft protocol setting out appropriate rules and procedures in the field of liability and compensation for damage from the transboundary movement of hazardous wastes.[145]

Outer space law

In contrast to the law of the sea, States parties to the Outer Space Principles Treaty[146] undertake to bear international responsibility for national activities carried out by either governmental agencies or non-governmental entities.[147] The State party that launches or procures the launching of an object into outer space, including to the moon and other celestial bodies, is internationally liable for damage caused to another State party or to its natural or juridical persons by such object or its component parts on the earth, in airspace, or in outer space.[148] The Space Liability Convention,[149] as analyzed above, further spells out the kinds of liability a State party is to undertake[150] and the procedure for recourse. In terms of public international law, this Treaty is the only example which explicitly imposes absolute liability on States for damage caused by anyone under the State's jurisdiction or control engaging in space activities. The term "damage" is defined under the Treaty to mean

[141] *Ibid*., Article I(2). [142] *Ibid*., Article V(2).
[143] Bamako, January 29, 1991, 30 ILM 773 (1991).
[144] *Ibid*., Article 4(2). [145] *Ibid*., Article 12.
[146] Moscow, London, and Washington, January 27, 1967, 610 UNTS 205.
[147] *Ibid*., Article VI. [148] *Ibid*., Article VII.
[149] London, Moscow, and Washington, March 29, 1972, 961 UNTS 187; 10 ILM 965 (1971).
[150] States are absolutely liable for damage caused on the surface of the earth or to aircraft in flight, and are liable for damage caused by their space objects elsewhere than on the surface of the earth to a space object of another launching State, or to persons or property on board such a space object only if they are at fault: *ibid*., Articles II and III.

"loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations."[151]

With regard to the space commons *per se*, the Outer Space Principles Treaty only vaguely touches on the area by providing in Article IX that States parties shall undertake to avoid harmful contamination of the moon and other celestial bodies and to prevent the introduction into the earth's environment of extraterrestrial matter which may cause adverse changes to the environment. It has been suggested that this obligation should be applied to outer space as a whole.[152] In terms of such harmful objects as space debris,[153] there is no provision directly on point.

Protection of the atmosphere

In relation to the protection of the atmosphere, two treaty systems on the ozone layer and the world climate are of great significance. In the 1970s, scientific studies came to the conclusion that, because of the global dimensions of ozone depletion, individual measures would generate more costs than benefits. States, with the direct involvement of UNEP, moved quickly to the search for an international solution.[154] In 1985, the Vienna Convention for the Protection of the Ozone Layer was

[151] *Ibid*., Article I.

[152] Katherine Gorove and Elena Kamenetskaya, "Tensions in the Development of the Law of Outer Space," in Damrosch, *Beyond Confrontation*, p. 240.

[153] Scientific studies on space debris have been carried out individually by space States. Two possible solutions to the problem have been proposed: either place fewer satellites in orbit, or remove dead satellites from orbit. The first proposal may be subject to the demand for use, while the latter would be extremely expensive. So far, major space States have shown little interest in carrying either proposal into effect. See ITU, CCIR Report to the Second Session of the World Administration Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of the Space Services Utilizing It (WARC ORB (2)), Part I (1988), p. 70.

[154] In 1977, the UNEP Governing Council adopted a World Plan of Action on the Ozone Layer and established the Coordinating Committee with representatives of the UN bodies, specialized agencies, international, regional, intergovernmental, and non-governmental organizations, and scientific institutions, which was to coordinate, initiate, and review research and monitoring activities: Iwona Rummel-Bulska, "The Protection of the Ozone Layer Under the Global Framework Convention," in C. Flinterman, B. Kwiatkowska and J. G. Lammers (eds.), *Transboundary Air Pollution: International Legal Aspects of the Co-operation of States* (Dordrecht, Martinus Nijhoff, 1986), p. 281. The initial reactions from the industrialized countries, particularly the EEC countries, were quite cautious. They took a different position from the North American and Nordic countries, suggesting the imposition of a general production capacity limitation, while their opponents held that in view of the current production of CFC emissions such a limitation would not be practical to prevent

adopted.[155] As a framework, the Convention stipulates the basic principles for future actions and sets up a permanent body for cooperation and further negotiation. Under the Convention, the parties undertake the obligation to adopt measures to "protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer."[156] The general obligations focus on exchange of information, harmonization of national actions, and the strengthening of cooperation with international organizations with a view to implementing the Convention. Article 8 of the Convention provides that additional protocols may be adopted.[157]

In the wake of the adoption of the Convention, negotiations on a protocol began, resulting in the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer.[158] Among its main features, three aspects should be mentioned. First, on the reduction formula,[159] the parties agreed to freeze or reduce the production and consumption of eight substances: five CFCs and three bromine compounds (halons).[160] Secondly, in order to ensure that more States accepted the Protocol, the import of controlled substances from non-States parties was banned.[161] Finally, the Protocol allowed developing countries a ten-year grace period for compliance.[162]

irreversible damage to the ozone layer. In the end, the multi-option approach was adopted to gradually phase out CFC emissions from different sources.

155 Vienna, March 22, 1985, 1513 UNTS 323; 26 ILM 1529 (1985).

156 *Ibid*., Article 2(1).

157 *Ibid*., Article 8(1) reads: "The Conference of the Parties may at a meeting adopt protocols pursuant to Article 2."

158 Montreal, September 16, 1987, 1522 UNTS 3; 26 ILM 1550 (1987).

159 From the outset of the negotiations, States, particularly the EEC countries and other industrialized countries, disagreed on the scientific assessment of the ozone depletion rates to be expected. They proposed production control measures to reduce CFC emissions. The North American and Nordic countries, on the other hand, insisted on controlling both production and emission. See M. Tolba, "Nowhere to Hide: Statement to the Ad Hoc Working Group of Legal and Technical Experts for the Preparation of a Protocol on CFCs to the Vienna Convention for the Protection of the Ozone Layer," Third Session, Geneva, April 27, 1987; Report of the First Session: UNEP/WG.151/L.4.

160 Montreal Protocol, Article 2, Annex A.

161 *Ibid*., Article 4. This was not considered a restriction on trade in violation of the GATT as it complied with Article XX(b) of the GATT general exceptions, authorizing measures "necessary to protect human, animal or plant life or health."

162 *Ibid*., Article 5. On the special situation of developing countries, the developing world argued that they had produced and used only small quantities of CFCs and thus were not responsible for the current problems surrounding depletion of the ozone layer.

In subsequent meetings of the States parties, several amendments and adjustments to the Protocol were adopted. The 1990 London Amendment[163] advanced the schedule for the complete phase-out of the five CFCs and the three halons and ten additional substances by 2000. In order to attract more countries, particularly developing countries, into the regime, the London Amendment endorsed a financial mechanism and an interim international fund to facilitate implementation. Financial assistance to developing countries was recognized as imperative for their participation in the process of combating global environmental damage. This was followed by the 1992 Copenhagen Amendment,[164] and further amendments in Vienna in 1995, Montreal in 1997, and Beijing in 1999, thus setting up a comprehensive treaty regime, and an effective benchmark for other environmental topics.

The proliferation of international environmental law instruments in the early 1990s was remarkable. Between 1990 and 1994, for example, more than fifty international texts on various aspects of international environmental law were adopted. This represents a 10–15 percent increase in less than four years in the total number of multilateral instruments dedicated to or addressing issues of environmental protection. The UN Conference on Environment and Development (UNCED), held in Rio de Janeiro on June 3–14, 1992, laid down policy goals as well as guidelines and principles on the environment and development.[165] Two important international treaties on environment were adopted: the Convention on Biological Diversity and the Framework Convention on Climate Change.[166]

Moreover, they argued that they should be allowed some increase in their share of allowable CFC emissions for industrial development in view of the fact that prior emissions were negligible. Finally, in order to be able to comply with their obligations under the Protocol, they needed financial and technical support for the transition to the new technologies. See UNEP/WG.167/2 and UNEP/WG.172/2.

[163] Adjustments and Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer (London, June 29, 1990), 30 ILM 537 (1991).

[164] Montreal Protocol on Substances that Deplete the Ozone Layer – Adjustments and Amendment (Copenhagen, November 23–25, 1992), 32 ILM 874 (1993).

[165] During the Conference, five important documents were adopted, namely, the Rio Declaration on Environment and Development (UN Doc. A/CONF.151/26 (vol. I)); the Convention on Biological Diversity, (UN Doc. UNEP/BIO.Div/N7-INC.5/4); the Framework Convention on Global Climate Change (1771 UNTS 107); Agenda 21 (UN Doc. A/CONF.151/26 (vol. II)); and the Statement of Principles to Guide the Management, Conservation and Sustainable Development of All Types of Forests. For a descriptive analysis, see Kiss and Shelton, *International Environmental Law*, chapter II, p. 23.

[166] *Ibid*.

The issue of climate change is arguably more troublesome and more challenging than the ozone layer from a legal point of view.[167] Unlike in the case of ozone layer protection, where the target is certain, manageable and affordable under current technology, global warming involves many more gases of different types. There is a much greater degree of scientific uncertainty, partly due to second- and third-order effects of warming. While there are greenhouse gases that cause climate warming (called "sources"), there are also a variety of natural systems that absorb greenhouse gases (called "sinks"), for instance, forests and grassland.[168] Technically, States still differ over what is the best and most cost-effective solution to the problem, as any action so far envisaged would likely cause substantial change to the existing patterns of energy production and consumption.

For greenhouse gases, scientific uncertainties make it difficult to quantify the damage a pollutant is likely to cause at different margins and therefore difficult to judge the benefits of abatement.[169] Nevertheless, global climate change soon became the focal point of political discussions among governments, international organizations, and the

[167] Different views are still held as to the net effects of greenhouse gases on the earth. For instance, the International Council of Scientific Union's Scientific Committee on Problems of the Environment concludes:

> given the uncertainties in regional scale estimates . . . and the numerous deficiencies in methodologies of impact assessment, there is presently no firm evidence for believing that the net effects of higher CO_2 and climatic change on agriculture in any specific region of the world will be adverse rather than beneficial. But it is certain that some will gain and others will lose, although we know neither where they will be found nor the magnitude of the impacts.

Cited from A. Barrie Pittock, "The Carbon Dioxide Debate: Reports from SCOPE and DOE," *Environment*, vol. 29, No. 1 (1987), p. 25, at p. 29.

[168] On the issue of the climate change, Richard Stewart explained:

> We are dealing with many more gases of different types; we are dealing with a variety of natural systems for absorbing greenhouse gases (called "sinks"), particularly forests. We are dealing with a much greater degree of scientific uncertainty, in part because of the second- and third-order effects of warming. Finally we are dealing with a situation in which there is no relatively easy and quick technological fix. One of the important reasons why we have been able to make so much progress in dealing with the chlorofluorocarbons (CFCs) is that technology really is available, the cost is moderate, and in part for those reasons the developed countries were willing to provide the wherewithal to the developing nations to switch over to the new substances and the new technologies.

American Society of International Law Proceedings, vol. 85 (1991), pp. 402–409.

[169] Christopher D. Stone, "Beyond Rio: 'Insuring' Against Global Warming," *American Journal of International Law*, vol. 86 (1992), p. 445, at p. 450.

scientific community in the late 1980s. Launched by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP), the Intergovernmental Panel on Climate Change (IPCC), a body of working groups on the science of global warming, was set up to study the likely impacts and available response strategies to pave the way for a legal instrument to be adopted during the 1992 UN Conference on Environment and Development (UNCED). During the Second World Climate Conference held in 1990, a number of principles were agreed upon among the participating States.[170]

The United Nations Framework Convention on Climate Change aims at the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, by maintaining the level to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.[171] Among other general obligations,[172] two principles merit particular emphasis. The first is the precautionary principle. Under the terms of Article 3(3) of the Convention, the principle carries three implications. First, in making development decisions, States parties should take into account possible adverse effects to the climate every step of the way. Secondly, if threats of serious irreversible damage are anticipated, precautionary measures should be taken in spite of a lack of full scientific certainty. Thirdly, the measures taken should be comprehensive and cost-effective so as to ensure global benefits at the lowest possible cost. Although States generally agree that precautionary measures should be taken before actual damage occurs, they

[170] The conference adopted the Ministerial Declaration, which was signed by 137 States. The five principles are contained in the Declaration: (1) The goal of international action should be to hold greenhouse gases in the atmosphere to a safe level. (2) Achieving such a goal will require a concerted international response initiated without delay despite scientific and other uncertainties. (3) The developed countries should lead the way by reducing their emissions of climate altering greenhouse gases. (4) The developing countries will require financial and technological cooperation to participate meaningfully in meeting international climate objectives. (5) A global framework convention on climate change should be negotiated without delay. See R. E. Benedick *et al*. (eds.), *Greenhouse Warming: Negotiating a Global Regime* (Washington, World Resources Institute, 1991).

[171] See Article 2 of the Framework Convention (New York, May 9, 1992), 1771 UNTS 107; 31 ILM 849 (1992), adopted on June 14, 1992, at Rio de Janeiro.

[172] Under Article 3 of the Framework Convention, five general principles are laid down: (1) the common but differentiated responsibilities principle; (2) the principle to give special consideration to developing countries; (3) the precautionary principle; (4) the sustainable development principle; and (5) the principle of sustainable economic growth and development for all parties.

differ over the extent of such measures and the approach which should be taken.[173]

The other important principle is the common but differentiated responsibilities principle, whereby developed and developing countries have different obligations under the Convention. There are two aspects to this principle. On the one hand, under Article 4(2)(a), the developed countries commit themselves to take the lead in combating climate change and the adverse effects thereof, thus reversing longer-term trends in anthropogenic emissions consistent with the objectives of the Convention. Moreover, the developed countries also undertake to provide new and additional financial resources and to transfer environmentally benign technology to developing countries. Developing countries, on the other hand, are to take into account that economic and social development and poverty eradication are the first and overriding priorities. In meeting their obligations under the Convention, the extent of their effective implementation of the Convention's objectives will depend on the fulfillment of the commitment by the developed countries to provide financial assistance and technology.[174] In reviewing the adequacy of the commitments undertaken by the developed countries, the first Conference of the Parties of the Convention adopted the Berlin Mandate,[175] reaffirming the "common but differentiated" principle. The Berlin Mandate, in setting up the process for fixing quantified limitation and reduction objectives within specified time-frames for anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol, indicates that the process should be guided by a number of considerations, including:[176]

[173] As a novel concept directed to the environmental field in particular, the principle has been taken up by a number of international treaties in a surprisingly short timespan, as discussed above. Article 3(3) of the Framework Convention provides: "The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures." A similar clause mentioning the principle is also contained in the Convention on Biological Diversity (31 ILM 818 (1992)); the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (32 ILM 1069 (1993)); and the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area (1507 UNTS 167).

[174] Framework Convention, Article 4, paras. 3, 5 and 7.

[175] Report of the Conference of the Parties on its First Session, Berlin, March 28–April 7, 1995, FCCC/CP/1995/7/Add.1 (June 6, 1995), p. 4.

[176] The Berlin Mandate: Review of the Adequacy of Article 4, Paragraph 2 (a) and (b), of the Convention, Including Proposals Related to a Protocol and Decisions on Follow-Up,

(d) The fact that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that the per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs;

(e) The fact that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capacities and their social and economic conditions.

Based on these facts, the Mandate, while reaffirming the existing commitments for the developed countries, expressly states that no new commitments should be introduced for the developing countries.[177]

Similar to the Vienna Convention for the Protection of the Ozone Layer, the Framework Convention also envisaged a treaty system, with a framework convention, a conference of the parties, a permanent secretariat, and options to adopt additional protocols or amendments. In December 1997, the third Conference of the Parties was held in Kyoto, Japan, during which the Kyoto Protocol to the United Nations Framework Convention on Climate Change was adopted.[178] One of the main objectives of the Conference was to negotiate and adopt in accordance with the Berlin Mandate specific limitation and reduction targets and timetables for the developed countries as listed in Annex I to the Framework Convention on Climate Change. As a result of persistent negotiations and consultations among the State parties, particularly between the developed countries and the developing countries, the Kyoto Protocol provides that developed countries[179] shall reduce their overall emissions of six kinds of gases as listed in the Protocol[180] by at least 5 percent below 1990 levels in the commitment period 2008–2012.[181]

Decision 1 adopted by the First Conference of the Parties to the United Nations Framework Convention on Climate Change, FCCC/CP1995/7/Add.1/Decision 1/CP.1.

[177] *Ibid*., p. 5. [178] See UN Doc. FCCC/CP/1997/L.7/Add.1, December 10, 1997.

[179] These countries referred to in the Convention and the Protocol are listed in Annex I to the Convention, and include all industrialized countries as well as those in the process of transition to a market economy.

[180] These greenhouse gases comprise the following: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6).

[181] Article 3 of the Kyoto Protocol reads:

1. The Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to

As a supplement to domestic reduction actions, two types of project activities are provided: joint implementation projects and a clean development mechanism.[182] The first is designed to allow the developed State parties to transfer to, or acquire from, any other such State party, emission reduction units resulting from such projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases. The second concerns cooperation projects between developed countries and developing countries. The purpose of the clean development mechanism is to promote sustainable development in developing countries and to assist developed countries to fulfill their commitments to reduce emissions under the Kyoto Protocol.[183]

As the major contributors to atmospheric damage, industrial countries are rightfully held responsible for the present state of climate change under the Framework Convention. The Kyoto Protocol does not impose any limitation and reduction commitments on developing countries.[184] Since a number of important industrial sectors and processes were

> their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with the provisions of this Article, with a view to reducing their overall emissions of such gases by at least 5 percent below 1990 levels in the commitment period 2008 to 2012.
>
> 2. Each party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitments under this Protocol.
>
> . . .

[182] Kyoto Protocol, Articles 6 and 12.

[183] Even at this stage of negotiations, States still differ over the specific approach of a clean development mechanism and the feasibility of emission trading between countries.

[184] Since the Kyoto meeting, the developed countries have also asked the developing countries to embark on the same course of reduction together with them, but on a voluntary basis. This has met with strong opposition from the developing countries. They argue that the developed countries, which comprise only a small percentage of the world population but consume a large percentage of its energy, should first fulfill their international obligations under the Framework Convention and the Kyoto Protocol before asking the developing countries to commit themselves to the same reduction process. For example, the US, which only comprises 4 percent of the world's population, consumes about 25 percent of world energy and emits 20 percent of total world CO_2. The developing countries such as China, on the other hand, forming 22 percent of world population, emitting 11 percent of CO_2, are already striving for a more balanced and sustainable development by raising energy efficiency, increasing forestation, and implementing population control with the very limited means available. Chinese per capita emission is only one-ninth of the US per capita emission, and per capita power consumption is one-fortieth of that consumed by the US. Therefore, the developing countries argue that emission trading should serve solely as a supplementary means for the fulfillment of the reduction obligation between developed countries. If, as proposed by the developed countries, such

concerned,[185] negotiations on the limitation and reduction targets proved difficult.[186] Reviewing the implementation of commitments and other provisions of the Convention, the Conference of the Parties, at its resumed sixth session held in Bonn in July 2001, adopted a decision to further enhance the financial mechanisms and capacity-building in developing countries for the implementation of the Convention (the "Bonn Agreement").[187] Based on "Core Elements for the Implementation of the Buenos Aires Plan of Action,"[188] funding mechanisms for developing countries, for the Global Environmental Facility climate change focal area, and for least developed countries, and funding under the Kyoto Protocol, were set up.[189] On the transfer of technologies, the Conference of the Parties agreed to establish an expert group with twenty experts from different parties and international organizations.[190] Regarding the implementation of the commitments by developed countries under the Kyoto Protocol,[191] a comprehensive package of measures

emission trading is to be formulated as an international trade system among States, it would mean that there would be an emission ceiling for every country, including developing countries. That would go against the very principle of common but differentiated responsibility for developed and developing countries which forms the basis of international cooperation in the field of world climate change. See the statements made by the Chinese delegation during the fourth Conference of the Parties (COP 4) of the Climate Change Convention, Buenos Aires, November 1998.

185 See Annex A to the Protocol.

186 The final negotiations on the Kyoto Protocol lasted for about fifty hours, and the Conference was extended by one more day.

187 Decision 5/CP.6, FCCC/CP/2001/L.7, July 24, 2001.

188 Hermann E. Ott, "The Bonn Agreement to the Kyoto Protocol – Paving the Way for Ratification," *International Environmental Agreements: Politics, Law and Economics*, vol. I, No. 4 (December 2001), pp. 469–476.

189 Decision 5/CP.6, FCCC/CP/2001/L.7, July 24, 2001, pp. 2 *et seq*, Annex on Core Elements for the Implementation of the Buenos Aires Plan of Action, Part I on the funding under the Convention and Part II on funding under the Kyoto Protocol.

190 *Ibid*., Part III on development and transfer of technologies.

191 The implementation of commitments is largely dealt with in Articles 3(14), 6, 12, and 17 of the Kyoto Protocol. Article 3(14) requires, among other things, the developed countries to strive to implement their commitments under the Protocol in such a way as to minimize adverse social, environmental, and economic impacts on developing country parties. Articles 6 and 12 refer to joint implementation activities and the clean development mechanism. The latter concerns emission reduction activities carried out by developed countries together with developing countries. On the preservation of the "sinks" that absorb greenhouse gases, the Annex attached to Decision 5 at the resumed sixth session of the Conference of the Parties contains a section on land-use, land-use change and forestry, including principles governing the treatment of land-use, land-use change and forestry activities: FCCC/CP/2001/L.7, July 24, 2001, Decision 5/CP.6, Review of the Implementation of Commitments and of Other Provisions of the Convention.

was adopted.[192] The Conference of the Parties at its seventh session, held in Marrakesh in November 2001, finalized the operational details of the Kyoto Protocol and adopted the Marrakesh Accord,[193] opening the way to the widespread ratification by governments and the early entry into force of the Kyoto Protocol. Both the Bonn Agreement and the Marrakesh Accord are the results of hard bargaining among different groups of States, particularly between the developed and the developing countries.[194]

International action on climate change will have a profound impact on the energy industry. The process will not only change the traditional pattern of economic and social development, but, perhaps also our basic philosophical perceptions and value judgments. While at the national level, States endeavor to solve mounting environmental problems so as to maintain sustainable development, the critical task for the final success of the global action lies in a truly meaningful cooperation in this field between developed countries and developing countries. Notwithstanding scientific and technical progress in the understanding of the problem, the practical solution at an international level requires, first of all, a bridge of understanding on some basic issues.

It is generally recognized that protecting the environment is primarily a matter for each State. It is the State that has to direct societal life in a way that ensures the natural bases of life are preserved. To reverse the current atmospheric damage and protect the world climate, efforts at the national level are essential. National practice of the industrial countries in dealing with pollution problems demonstrates that the process of international cooperation is the result of a constant

[192] *Ibid*., Annex, parts I, II, and III relating to funding, Part V on matters relating to Articles 2(3) and 3(14), and Part VI concerning Articles 6, 12, and 17 of the Kyoto Protocol.

[193] The Marrakesh Accord, among other things, specifies how to measure emissions and reductions, the extent to which carbon dioxide absorbed by carbon sinks can be counted towards the Kyoto Protocol, how the joint implementation, emissions trading, and clean development mechanism will work, and the rules for ensuring compliance with the commitments undertaken under the Kyoto Protocol.

[194] In the climate change negotiations, there were different interest groups, e.g. the European Union, the JUSSCANNZ group (a coalition of non-EU developed countries, with the acronym referring to Japan, the United States, Switzerland, Canada, Australia, Norway, and New Zealand), the Alliance of Small Island States (AOSIS, a coalition of some forty-three low-lying and small island States that are particularly vulnerable to sea-level rise) and the Group of 77 and China (the developing countries). At present, the most skeptical party is the United States, which still hold strong reservations regarding the obligations imposed by the Kyoto Protocol.

readjustment of national policy on development and environment. The effectiveness of global action lies with national capabilities to adapt to the agreed standards of practice. In negotiating joint actions, however, States are inclined to maintain national practice as much as possible so as to avoid overburdening the need to adapt to new practice, thereby minimizing the social and economic impact.[195] As Peter Thacher rightly pointed out,[196]

> while support activities are intended to encourage active participation by all States, as a practical matter, their chief purpose is to improve national capabilities, especially in developing countries, relevant to the agreed goals and program. In general terms, whether by non-binding principles, international standards, norms, codes of conduct, or treaty, the effectiveness of any international agreement rests on national practices. The aim should therefore be to encourage national practices that reduce the buildup of CO_2 and other heat-trapping gases.

The principle of common but differentiated responsibilities recognizes the limits on the equality of States.[197] It is generally agreed that the major polluters should bear a heavier responsibility to redress the consequences to the world environment. In this way, the differentiated responsibility placed on the developed countries should be understood as a legal claim for damage they have caused to the world environment, both at present and historically.[198] On the basis of equity, the duty to transfer technology and provide financial assistance to developing countries should not be considered merely in terms of their respective current capacities to comply with the obligations to reduce harmful effects, but rather as a legal entitlement of developing countries to an equal opportunity to development. In complying with the obligation to remedy the harm, developing countries are consequently deprived of the benefits of a period of development enjoyed by developed countries during the

[195] In the ozone layer negotiations, for example, the disagreement over the approach of controlling CFCs between the EC countries, on the one hand, and the North American and Nordic countries, on the other, largely reflects their domestic concerns for follow-up measures at the national level. See Brunnée, *Acid Rain*, pp. 228–229.

[196] Peter Thacher, "Focusing on the Near Term, Alternative Legal and Institutional Approaches to Global Change," in R. E. Benedick *et al*. (eds.), *Greenhouse Warming: Negotiating a Global Regime* (Washington, World Resources Institute, 1991), pp. 37 and 48.

[197] Kiss and Shelton, *International Environmental Law*, p. 2.

[198] Preambular paras. 3, 6, and 18; Article 3(1) of the Framework Convention on Climate Change.

process of their industrialization, which itself is largely responsible for today's environmental problem. Of course, this does not imply that developing countries should be entitled to develop in the way that developed countries did during their industrialization process regardless of its social costs; nor does it imply that the existing social and economic system can be totally ignored in terms of the transfer of technology and financial assistance.[199] What it means is that, based on the existing economic order, any international measures to be taken should not further widen the gap between the developed and the developing countries.[200] In the final analysis, world environmental protection is part of an integral process of economic and social development for every country. The debate during the negotiation process on climate change once again manifests the difficulty in reconciling the conflicting interests between the part and the whole.

[199] The conflict between transfer of technology and protection of intellectual property transferred from the developed countries to the developing countries lies in the competitiveness of the market. The developed countries believe that unrestricted and non-commercial access to technology for developing countries would adversely affect intellectual property protection and would in the long term discourage the development of markets and trading in environmentally friendly goods and services. But it is also true that restrictions on transferring technology to developing countries, even in the absence of intellectual property protection, is more financial than legal. See Kiss and Shelton, *International Environmental Law*, pp. 19–20.

[200] Even in the current effort for the protection of the ozone layer, the problem of unfairness to developing countries still exists. The point is forcefully made in a statement by the Department of Environment of the Malaysian Government:

> i. In the course of working towards compliance with the Protocol and the protection of the ozone layer, Malaysia shares many of the concerns expressed by developing countries . . .
>
> ii. Its industries have invested heavily in manufacturing facilities such as moulds and storage for CFCs and commercial, household and automobile refrigeration/air conditioning systems which number hundreds of thousands, generally have much longer life span than those found in the throw-away society of the developed world. What would be the assistance available to them for conversion, where can they acquire the technology, and who bears the costs of amortization?
>
> iii. . . . As the major producers have cut back production, CFCs become scarce and expensive, where are the substitutes and the technology? Over the last three months, some industries have reported difficulties in obtaining supply and cost has gone up by 30%. If the situation gets worse the industries would lose competitiveness.

Delivered at the international conference in Penang, Malaysia in February 1992. See Peter Lawrence, "Technology Transfer Funds and the Law – Recent Amendments to the Montreal Protocol on Substances That Deplete the Ozone Layer," *Journal of Environmental Law*, vol. 4 (1992), p. 15, at p. 18, n. 23.

The Antarctic regime

Protection of the Antarctic environment is one of the primary objectives of the Antarctic regime.[201] With regard to international liability rules for environmental damage to Antarctica, there are two relevant legal instruments. One is the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (the "Antarctic Mineral Resource Convention").[202] The other is the current work being carried out by the Antarctic parties on the international liability for environmental damage to the area, intended to be included as a sixth annex to the 1991 Protocol on Environmental Protection to the Antarctic Treaty.

The Antarctic Mineral Resource Convention directly addresses environmental damage arising from mining activities. It imposes strict liability on the operator for damage caused to the Antarctic environment or dependent or associated ecosystems, including payment in the event that there will be no restoration to the *status quo ante*. The operator's home State will take responsibility for residual remedial costs not borne by the operator who failed to exercise due diligence to prevent damage.[203] In the midst of criticism of the Convention, the then New Zealand Foreign Minister commented:[204]

> As far as environmental protection is concerned, the convention is an innovative and farsighted document. In fact, in terms of its rigor and its effectiveness, the convention's protection regime has no parallel in international law-making.

The Antarctic Mineral Resource Convention was drafted at a time when resource development in the common areas became one of the major concerns of the international community under the influence of the third UN Conference on the Law of the Sea.[205] The ultimate decision to put a moratorium on mining activities in the area indicates a change of

[201] In order to protect the Antarctic environment, the Antarctic Treaty Consultative Parties adopted a series of guidelines and recommendations in relation to environmental protection pertaining to, for example, the protection of specially protected species, the uses of the ice, waste disposal, and tourist activities.

[202] Wellington, June 2, 1988, 27 ILM 868, not yet in force.

[203] *Handbook of the Antarctic Treaty System* (6th edn., Cambridge, Polar Publications, Scott Polar Research Institute, 1989), p. 3314.

[204] "Signing of Minerals Convention," *External Relations Review* (Wellington), No. 1 (1989), p. 33.

[205] For an introduction, see Keith Suter, *Antarctica: Private Property or Public Heritage?* (London, Zed Books, 1991), pp. 52–59.

policy priorities among the States parties.[206] "Don't sign – don't mine" expresses the desire for the absolute protection of the area from mining activities, upon the understanding that any such activity, even if protected by the Convention's rules, would cause damage to the fragile ecological environment of the region.

The Protocol on Environmental Protection to the Antarctic Treaty was concluded in 1991.[207] It explicitly prohibits any activities relating to mineral resources other than scientific research. On the issue of liability, it provides in Article 16:

> Consistent with the objectives of this Protocol for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems, the Parties undertake to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by this Protocol. Those rules and procedures shall be included in one or more Annexes to be adopted in accordance with Article 9(2).

Under the mandate of this article, an *ad hoc* working group of experts has been set up to work on an annex on liability for environmental damage. From 1993 to 1998, the legal experts group held several rounds of discussions under the chairmanship of Rudiger Wolfrum. The Antarctic Treaty Consultative Meeting (ATCM) continued the work during its twenty-third session in 2000 and twenty-fourth session in 2001.[208] With a view to eventually concluding a single comprehensive annex on liability, the participants held informal consultations and focused primarily on a few

[206] *Australian*, May 15, 1989, p. 3. The Australian Government made an official statement in the newspaper to the effect that, although it recognized that the newly adopted Convention on the Regulation of Antarctic Mineral Resource Activities undoubtedly provided a very thorough protective regime for mining activities in the area, Australia was of the view that mankind expected stricter protection of the world's last remaining wilderness. Therefore, Australia would not sign the Convention and instead would seek urgent negotiations within the framework of the Antarctic Treaty regime for the conclusion of a convention on the comprehensive protection of its environment.

[207] The Protocol to the Antarctic Treaty on the Protection of the Environment (Madrid, October 4, 1991), Scovazzi and Treves, *World Treaties* p. 259. By 2001, there were thirty-seven States parties to the Protocol.

[208] The working group under the chairmanship of Don MacKay (New Zealand) held informal consultations on the item in The Hague on September 11–14, 2000 during ATCM XXIII. The informal consultations continued during ATCM XXIV. Two working papers prepared respectively by the United States and the Chairman served as the working basis. See the Final Report of the XXIV Antarctic Treaty Consultative Meeting, St. Petersburg, July 8–20, 2001; ATCM XXIV/WP6, ATCM XXIV/WP17.

major issues that are particularly pertinent to the Antarctic situation: the scope of response actions; preventive measures and contingency plans in case of an environmental emergency; the concept of dependent or associated ecosystems; jurisdictional issues relating to State and non-State actors in Antarctica; the possibility of establishing an environmental fund; and dispute settlement procedures.[209] Given the unique value of Antarctica for scientific research and studies of the world ecological environment and its vulnerability to the impact of human activities, States differ over the issue of how broad and strict the liability regime should be. For example, on the scope of response action, while some delegations contended that clean-up and restoration of the environment should be included in the response action, experts believe that clean-up and restoration are follow-up actions, as they should follow an assessment of whether such action is feasible and cost-effective, and whether it would appreciably affect the natural rate of recovery or would cause more harm than the impact of the incident.[210] As in any other common area, the needs of scientific research and the interest of environmental protection have to be balanced in setting up the liability regime in the region.

Private international rules of liability for certain types of harmful activities in the commons

International treaties on liability for damage inflicted in the commons primarily address such physical damage as loss of life, injury to health, and damage to property caused to individuals of another State, which have already been discussed at length in the previous chapters. Damage to the commons *per se*, if not explicitly provided for, is purposely precluded from the scope of coverage. For example, in the Oil Pollution Liability Convention damage to the marine environment only extends to the territorial sea of the States parties.[211] This narrow scope was extended by the 1992 Protocol, which replaces Article II of the Convention with the following text:[212]

[209] *Ibid*., Item 10: The Question of Liability as Referred to in Article 16 of the Protocol, paras. 59–80; Working Paper WP-38, Agenda Item 10, ATCM XXIV.

[210] See Response to XXIII ATCM Resolution 5 (1999), paper submitted jointly by SCAR and COMNAP, XXIV ATCM Working Paper WP-14, Agenda Item 10, SCAR-COMNAP.

[211] Article II of the Oil Pollution Liability Convention, 973 UNTS 3.

[212] Article 3 of the 1992 Protocol to Amend the Oil Pollution Liability Convention (emphasis added); Scovazzi and Treves, *World Treaties*, p. 667.

This Convention shall apply exclusively:

a. to pollution damage caused:
   (i) in the territory, including the territorial sea, of a Contracting State, and
   (ii) in the exclusive economic zone of a Contracting State, established in accordance with international law, or, if a Contracting State has not established such a zone, in an area beyond and adjacent to the territorial sea of that State determined by that State in accordance with international law and extending not more than 200 nautical miles from the baselines from which the breadth of its territorial sea is measured;
b. to preventive measures, *wherever taken*, to prevent or minimize such damage.

By such terms, preventive measures taken in the common area beyond national jurisdiction and control of a contracting State is obviously included, but the purpose of the measures thus taken is still to prevent or minimize damage caused in the areas under national jurisdiction and control.

In summary, protection of the global commons from harmful effects caused by human activities has not been adequately addressed in the existing international treaties. The encouraging trend towards greater protection as revealed by recent developments in the environmental field on State responsibility and liability is coupled with the efforts to impose higher standards of conduct on States in their activities in the common areas. In developing new rules in the interests of the international community, however, a few basic legal issues need further examination.

7 Legal issues relating to damage to the global commons

Damage to the global commons touches on a number of basic legal issues relating to remedies. Under international law, in order to make a valid claim for reparation for injury, two requirements must be met. First, the source State must have violated its international obligation towards the injured State. Secondly, on the assumption that each and every obligation of a State corresponds to a right of at least one other State, only that party to whom the international obligation is due is entitled to invoke the new legal relationship entailed by the internationally wrongful act of the source State under the rules of State responsibility.[1] To invoke the responsibility of the source State for causing damage to the global commons *per se*, the law has to identify what international obligations the source State has violated under applicable international law. In this regard, the concept of *erga omnes* obligations raises a number of legal issues in the context of the protection of the world environment. Has such protection, for instance, constituted a normative obligation any derogation from which would give rise to a wrong under international law, or does it remain exhortative, calling for positive behavior from States in their use of world resources?

Supposing such a normative legal obligation does exist, the question remains as to who should be considered an injured State with the right to bring a claim against the source State under international law, or

[1] *Reparation for Injuries Suffered in the Service of the United Nations*, Advisory Opinion of 11 April 1949, ICJ Reports (1949), p. 174, at pp. 181–182: "only the party to whom an international obligation is due can bring a claim in respect of its breach." See also *Yearbook of the ILC* (1985), vol. II (Part Two), pp. 25–27 (commentary to former Article 5 of the Draft Articles on State Responsibility). According to one commentator, "it is up to each State to protect its own rights; it is up to none to champion the rights of others": Prosper Weil, "Towards Relative Normativity in International Law?," *American Journal of International Law*, vol. 77 (1983), p. 413, at p. 431.

to act on behalf of the international community. The ILC's Articles on the Responsibility of States for Internationally Wrongful Acts 2001 (the "Articles on State Responsibility") attempt, indirectly at least, to take into account the rapid development of environmental law, particularly in the field of common resources.[2] The Articles can be read as conferring on each State the right as "an injured State" to invoke the responsibility of another State for damage caused to common resources, if the breach of obligation particularly affects that State or if it "is of such a character as radically to change the position of all the other States to which the obligation is owed with respect to the further performance of the obligation."[3] In this connection, there are a few basic issues requiring further consideration.

Erga omnes obligations and the question of standing

Damage to the commons may take two forms which involve different legal issues: damage caused to other States in the common areas (i.e. the polar regions, outer space, or the high seas); or damage to common resources and the environment *per se*. Identification of the injured party in the former case is done simply by the application of the law of State responsibility,[4] while the latter case proves much more difficult under existing international law. To claim damage to the commons, one has to first ask whose rights and interests as recognized by international law have been injured, and what kind of legal obligation a State owes to the international community in the protection of the environment. The most controversial solution to this question is the notion of *erga omnes* obligations, obligations owed to all States.

[2] ILC's Articles on State Responsibility, annexed to GA Resolution 56/83 of December 12, 2001.

[3] Article 42 of the Articles on State Responsibility. In relation to the development of the concept of an "injured State," Article 40 of the Draft Articles on State Responsibility adopted by the ILC on first reading distinguished the right arising from bilateral obligations and that from multilateral treaties: see Report of the ILC on the Work of its Forty-Eighth Session, May 6–July 26, 1996, GAOR, Fifty-First Session, Supp. No. 10 (A/51/10), p. 140. The article was redrafted in the second reading to include specifically the notion of obligations "owed to the international community as a whole (*erga omnes*)" and the obligation "established for the protection of the collective interests of a group of States": see Article 40*bis*, Report of the ILC, Fifty-Second Session, May 1–June 9 and July 10–August 18, 2000, GAOR, Fifty-Fifth Session, Supp. No. 10 (A/55/10), p. 39, n. 40.

[4] See Article 42 of the Articles on State Responsibility and its commentary; Crawford, *Articles on State Responsibility*, pp. 255–260.

As early as 1966 in the *South West Africa* cases, the notion of *actio popularis* was raised by Ethiopia and Liberia against South Africa,[5] and the International Court of Justice was required to pronounce on this point. The Court, in denying the legal standing of the two States, refused to allow "the equivalent of an '*actio popularis*', or right resident in any member of a community to take legal action in vindication of a public interest," describing such an action as unknown to international law at that time.[6] The Court insisted that *only* the State directly injured has the right to bring a claim invoking responsibility of the acting State.[7] The Court's decision received strong criticism by the international community for its negative impact on the fight against racial discrimination and apartheid.[8]

A few years later, the Court in the *Barcelona Traction, Light and Power Company, Limited* case,[9] gave a different legal opinion on the issue. It drew a distinction between the obligations of a State towards the international community as a whole and those arising *vis-à-vis* another State. In relation to the former category of obligations, it proclaimed that "[i]n view of the importance of the rights involved, all States can be held to have a legal interest in their protection," and labelled them obligations *erga omnes*.[10] The Court went on to explain that such obligations derive from, for instance, the outlawing of acts of aggression, genocide, slavery, and racial discrimination.[11] In its opinion, some of the corresponding rights of protection had become part of the body of general international law, and others were conferred by international instruments of a universal or quasi-universal character.[12] Notably, given the time of the

[5] *South West Africa Cases (Ethiopia* v. *South Africa; Liberia* v. *South Africa)*, Second Phase, ICJ Reports (1966), p. 3, at p. 47, para. 88.

[6] *Ibid*. [7] *Ibid*., p. 36.

[8] Commenting on Article 48 of the final Draft Articles on State Responsibility which allows a State other than the injured State to invoke the responsibility of another State where the latter has breached an obligation owed to a group of States or to the international community as a whole, the representative of South Africa to the Sixth Committee on behalf of the Southern African Development Community in his statement made during the fifty-sixth session of the General Assembly on the item of State responsibility, endorsed the provision and welcomed it as overruling the decision of the ICJ in the 1966 *South West Africa* cases, which, he said, was a major setback to the advancement of racial justice in Southern Africa and was rightly condemned by the international community.

[9] *Case Concerning the Barcelona Traction, Light and Power Company, Limited (Belgium* v. *Spain)*, Second Phase, ICJ Reports (1970), p. 3, at p. 32, paras. 33 and 34.

[10] *Ibid*., para. 33. [11] *Ibid*., para. 34.

[12] For example, the Court referred to *Reservations to the Convention on the Prevention and Punishment of the Crime of Genocide, Advisory Opinion*, ICJ Reports (1951), p. 23.

case, the Court made no mention of obligations relating to the global environment.

The position originally taken in the *South West Africa* cases was maintained in the *Nuclear Tests* cases by the Court,[13] where both applicant States, New Zealand and Australia, made their claim partly on the ground of international community interests. In claiming the right to be protected, New Zealand emphasized the rights of all members of the international community to the preservation from unjustified radioactive contamination of the terrestrial, maritime, and aerial environment, and in particular, that of the region where the tests were being conducted.[14]

Likewise, in its request for the indication of interim measures of protection, the Government of Australia also claimed that:

> It is of considerable significance that in this Request Australia is seeking to assert the inviolability of its sovereign territory against the irreversible consequences of conduct which has not only been the subject of concern to Australia and its people and of scientists throughout the world, but also of universal apprehension, opposition and condemnation ... Such fear and condemnation cannot be regarded as unfounded. They testify to the harm to peoples, their environment and biosphere inherent in such tests. An essential element upon which they rest is the terrible and irreversible contribution which such tests make to the pollution of man's environment in all States, of which Australia is one.[15]

Evidently, the applicants argued the existence of a rule of customary international law prohibiting States from conducting such harmful activities on the high seas on the basis that the tests would seriously infringe the rights of other States to the uses of the common resources and to the preservation of the environment that belongs to the whole international community.

[13] *Nuclear Tests Cases*: *Australia* v. *France*, ICJ Reports (1973), p. 98; and *New Zealand* v. *France*, ICJ Reports (1973), p. 134. See also Judgments of December 20, 1974: *Australia* v. *France*, ICJ Reports (1974), p. 253; and *New Zealand* v. *France*, ICJ Reports (1974), p. 457.

[14] The Request for the Indication of Interim Measures of Protection Submitted by the Government of New Zealand lists the following rights to be protected: "(i) *the rights of all members of the international community*, including New Zealand, that no nuclear tests that give rise to radio-active fall-out be conducted; (ii) that *the rights of all members of the international community*, including New Zealand, to *the preservation from unjustified artificial radio-active contamination of the terrestrial, maritime and aerial environment* and, in particular, of the environment of the region in which the tests are conducted and in which New Zealand, the Cook Islands, Niue, and the Tokelau Islands are situated." ICJ Pleadings, *Nuclear Tests*, vol. II, p. 48, at p. 49 (emphasis added).

[15] Request for the Indication of Interim Measures of Protection Submitted by the Government of Australia, ICJ Pleadings, *Nuclear Tests*, vol. I, p. 42, at pp. 44 and 45.

In reply, France argued that, in the absence of ascertained damage attributable to its nuclear experiments, the tests did not violate any rule of international law.[16] It rejected the existence of a precise legal norm concerning the threshold of atomic pollution which France should not cross and upon which Australia could have relied for its claim.[17] Accordingly, France in the first place did not accept that there was any international law that prohibited nuclear tests on the high seas. Furthermore, with regard to alleged damage caused by the tests to the high seas, France insisted that, unless there was actual injury that may be attributed to it, it should not be restrained from the conduct.

The ICJ did not directly address the issue of whether there was a customary international law on the prohibition of nuclear tests on the high seas,[18] but made it clear that it did not recognize any authority for the right of an individual State to claim for damage to the marine environment on behalf of the international community as well as the region. In its Order, the Court indicated interim measures of protection to Australia on the basis of its territorial sovereignty, but stated that "the circumstances of the case *do not* appear to require the indication of interim measures of protection in respect of *other rights* claimed by Australia in the Application."[19]

The International Law Commission, in codifying rules of State responsibility, once again considered the issue of obligations *erga omnes*. Under the original Article 19 drafted during the first reading, two kinds of breaches of international obligations were identified: international crimes and international delicts.[20] An international crime was defined as "an internationally wrongful act which results from the breach by a State of an international obligation so essential for the protection of fundamental interests of the international community that its breach is recognized as a crime by that community as a whole." An international

[16] See *Australia* v. *France*, ICJ Reports (1973), p. 98, at p. 105, para. 28. [17] *Ibid*.

[18] However, this is now a rule of conventional international law. On September 10, 1996, the UN General Assembly adopted the Comprehensive Nuclear Test-Ban Treaty (35 ILM 1439 (1996)), which provides that "[e]ach State party undertakes not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control": Article 1 of the Convention. By September 2001, 161 States had signed it and 79 had ratified. Of the 44 States with nuclear power, with whose participation the Treaty shall enter into force, 37 States have ratified, including China, Russia, France, and the United Kingdom.

[19] *Australia* v. *France*, ICJ Reports (1973), p. 98, at p. 105, para. 31 (emphasis added).

[20] For its commentary on Article 19, see *Yearbook of the ILC* (1976), vol. II (Part Two), pp. 95–122.

crime may result, *inter alia*, from "a serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas."[21] The ILC added "serious pollution of the world environment" to the list of obligations *erga omnes* enumerated by the ICJ in the *Barcelona Traction* case as the most serious violations of international law against the world community.[22] In its commentary, it explained:[23]

More recently, the requirements of economic and social development on all sides and the marvelous achievements, but also the terrible dangers, of scientific and technological progress have led States to realize the imperative need to protect *the most essential common property of mankind* and, in particular, to safeguard and preserve the human environment for the benefit of present and future generations. New rules of international law have thus appeared, others in course of emergence have become firmly established and yet others, already existing, have acquired new vigour and more marked significance; these rules impose upon States obligations which are to be respected because of *an increased collective interest on the part of the entire international community*.

Due to the considerable controversy over the concept of an international crime, Article 19 was eventually deleted on second reading.[24] However,

[21] *Ibid*., Article 19(3)(d). Article 19 of the Draft Articles on State Responsibility adopted by the ILC on first reading listed the following as examples of acts constituting international crimes: acts against international peace and security; acts in violation of the rights of self-determination of peoples; acts against fundamental human rights such as slavery, genocide, and apartheid; and acts that seriously damage the world environment on a massive scale: *ibid*. This article was deleted from the final version of the Articles adopted in 2001. However, certain underlying ideas of the former Article 19 were recognized in a different form.

[22] Such a characterization is similar to, but certainly not equated with, the particular category of rules of *jus cogens*, peremptory norms of international law from which no derogation is permitted. See Article 53 of the Vienna Convention on the Law of Treaties (Vienna, May 23, 1969), 1155 UNTS 331; and the deliberations by the ILC on the article (formerly Article 50). *Yearbook of the ILC* (1966), vol. II, pp. 247–249. For the interaction between the concepts of *actio popularis*, *jus cogens* and *erga omnes*, see A. P. Rubin, "*Actio Popularis*, *Jus Cogens* and Offenses *Erga Omnes*," *New England Law Review*, vol. 35 (2001), p. 265.

[23] Commentary on Article 19, *Yearbook of the ILC* (1976), vol. II (Part Two), p. 95, at pp. 101–102, para. 15 (emphasis added).

[24] See Articles 40–41 and commentaries; Crawford, *Articles on State Responsibility*, pp. 245–253. See also commentaries to Part 2, Chapter III of the Articles, especially paras. 5–7; Crawford, *Articles on State Responsibility*, pp. 242–245. For studies of State responsibility for international crimes, see N. H. B. Jørgensen, *The Responsibility of States for International Crimes* (Oxford, Oxford University Press, 2000); A. de Hoogh, *Obligations Erga Omnes and International Crimes* (The Hague, Kluwer Law International, 1996).

the concept of a "serious breach of international obligations" is maintained in the final Articles. Under Article 40, if "an obligation arising under a peremptory norm of general international law" is grossly or systematically violated by the responsible State, this gives rise to a serious breach of the international obligations of the responsible State.[25] In its commentary on the article, the ILC also refers to those international cases listed previously as international crimes, such as aggression, illegal use of force, slavery, slave trade, genocide, racial discrimination, apartheid, torture, and deprivation of the right to self-determination.[26] Notably, in analyzing the concept of peremptory norms of general international law, the final draft draws the distinction between "peremptory norms of general international law" and "obligations owed to the international community as a whole." While recognizing that there is a substantial overlap between the two concepts, the Articles place emphasis on the scope and priority to be given to the former category of obligations and the legal interests of all States in compliance with the latter. Under the Articles, if a peremptory norm of general international law is breached, there would be additional legal consequences arising for the responsible State and for all other States.[27]

By singling out a special category of the most serious breaches of international obligations within the regime of State responsibility, the ILC has managed to handle a difficult area of great concern to States after the deletion of Article 19 on international crimes. Given the international practice in this area, particularly in recent years, as rightly identified by the ILC, States are likely to appreciate the current drafting.

[25] Article 40 reads:

> 1. This Chapter applies to the international responsibility which is entailed by a serious breach of a State of an obligation arising under a peremptory norm of general international law.
>
> 2. A breach of such an obligation is serious if it involves a gross or systematic failure by the responsible State to fulfill the obligation.

[26] ILC commentaries on Article 40; Crawford, *Articles on State Responsibility*, pp. 245–248.

[27] Article 41 provides that in case of serious breach of international obligation, in addition to the legal consequences as provided for in the Articles for breach of international obligations, all other States should cooperate to bring an end to the breach and not recognize as lawful a situation created by the breach. International actions taken by the competent international organizations including the Security Council and the General Assembly remain intact. For breach of obligations to the international community, Article 48 should apply. See ILC commentaries on Articles 40, 41, and 48; Crawford, *Articles on State Responsibility*, pp. 245–253 and 276–280.

The more controversial part, however, rests with the obligations owed to the international community (obligations *erga omnes*).[28]

In defining the term "injured State" in earlier versions of the Draft Articles on State Responsibility, which is of special relevance to the present discussion, the ILC specified the legal relations derived from the breach of an obligation undertaken by a State party to a multilateral treaty or customary international law. Article 40 provided as follows:[29]

> 1. . . .
> 2. In particular, "injured State" means:
>
> . . .
>
> (e) If the right infringed by the act of a State arises from a multilateral treaty or *from a rule of customary international law*, any other State party to the multilateral treaty or bound by the relevant rule of customary international law, if it is established that:
>
> i. The right has been created or is established in its favor;
>
> ii. The infringement of the right by the act of a State necessarily affects the enjoyment of the rights or the performance of the obligations of the other States parties to the multilateral treaty or bound by the rule of customary international law; . . .
>
> (f) If the right infringed by the act of a State arises from a multilateral treaty, any other State party to the multilateral treaty, if it is established that the right has been expressly stipulated in that treaty *for the protection of the collective interests* of the States parties thereto.

With regard to multilateral obligations, the Special Rapporteur in his third report suggested three categories: first, obligations owed to the international community as a whole, *erga omnes*; secondly, obligations owed to all the parties to a particular regime, *erga omnes partes*; and, thirdly, obligations to which some or many States are parties, where particular States were nonetheless recognized as having a legal interest.[30] On second reading, the concept of an "injured State" was recast in the following terms:[31]

[28] See in particular, Articles 42 and 48.

[29] Article 40 of the Draft Articles provisionally adopted by the ILC on first reading, *Yearbook of the ILC* (1996), vol. II (Part Two), p. 62 (emphasis added).

[30] Third Report on State Responsibility by Mr. James Crawford, Special Rapporteur, UN Doc. A/CN.4/507, p. 46, paras. 106 *et seq*. See also Report of the ILC, Fifty-Second Session, May 1–June 9 and July 10–August 18, 2000, GAOR, Fifty-Fifth Session, Supp. No. 10 (A/55/10), pp. 37–39, paras. 114–118.

[31] Article 42 of the Draft Articles on State Responsibility adopted by the ILC on second reading at its Fifty-Third Session in 2001 (A/CN.4/L.602/Rev.1 of July 26, 2001).

A State is entitled as an injured State to invoke the responsibility of another State if the obligation breached is owed to:

a. That State individually; or
b. A group of States including that State, or the international community as a whole, and the breach of the obligation:
   i. Specially affects that State; or
   ii. Is of such a character as radically to change the position of all the other States to which the obligation is owed with respect to the further performance of the obligation.

In comparing the two versions of the definition of the injured State, one major difference is that the later draft omitted any characterization of the sources of multilateral obligations. Nevertheless, it maintains the three types of obligations as originally envisaged, namely: obligations owed to an individual State; obligations owed to a group of States; and obligations owed to the international community as a whole. Technically, this is more in line with the general principle that State responsibility is invoked if an act of State constitutes a breach of international obligation undertaken by the responsible State no matter whether such an obligation is derived from an international treaty or customary international law.[32] Practically, however, the provision that a breach that may "radically . . . change the position of all the other States to which the obligation is owed with respect to the further performance of the obligation"[33] can be subject to different interpretations by States. The issue is further complicated by the provisions of Article 48 on invocation of responsibility by a State other than an injured State. According to Article 48, in a multilateral situation, States other than the injured State also have the right to invoke the responsibility of the wrongdoing State if:[34]

a. the obligation breached is owed to a group of States including that State, and is established for the protection of a collective interest of the group; or
b. the obligation breached is owed to the international community as whole.

Such a State may seek from the responsible State cessation of the wrongful act and assurances and guarantees of non-repetition, and

[32] Article 1 of the Articles on State Responsibility provides that: "*Every* internationally wrongful act of a State entails the international responsibility of that State" (emphasis added).

[33] *Ibid*., Article 42(b)(ii). [34] *Ibid*., Article 48(1).

performance of the obligation of reparation in the interest of the injured State or of the beneficiaries of the obligation breached.[35] These provisions have expanded the traditional concept of an injured State and may be problematic in a number of respects in relation to the global commons.

Article 42 was carefully considered and formulated by the ILC with a view to providing a comprehensive definition of injured State, covering both bilateral and multilateral legal relations. The ILC explains that, to be entitled to present a claim or to commence proceedings before an international court or tribunal, or even to take countermeasures, when invoking the responsibility of the responsible State, the injured State must have a specific right to do so, conferred either by a treaty or under customary international law.[36] In multilateral situations, there are two types of cases that may give rise to multilateral claims:[37] (1) where several States are injured (for example, in a case of pollution of the high seas by toxic residues in violation of Article 194 of the Convention on the Law of the Sea, coastal States may suffer damage to their fisheries and tourism industries); and (b) each and every State to whom the obligation is owed is considered injured when the performance of all the States concerned is dependent on the performance of each of the others (for example, the Disarmament Treaty, and the Nuclear Free Zone Treaty). The first type of situation can be handled along the same line as bilateral obligations, while the second type of situation deserves more careful consideration. By analogy with Article 60(2) of the Vienna Convention on the Law of Treaties,[38] which provides that, when there is a material breach of a treaty that radically changes the position of every party with respect to the further performance of its obligations under the treaty, other contracting parties may terminate or suspend the operation of the treaty, the ILC proposes that, when such a breach occurs, all the other States would be regarded as injured States, and thus in a position to invoke the responsibility of the responsible State. The problem with this analogy is that in a treaty relationship, when a material breach takes place, States parties may choose what to do with the contractual relationship. As they are free to enter into the treaty,

[35] *Ibid*., Article 48(2).

[36] ILC commentaries on Article 42, para. 2; Crawford, *Articles on State Responsibility*, p. 256.

[37] See the examples given in the commentary on Article 42, paras. 11–15; Crawford, *Articles on State Responsibility*, pp. 259–260.

[38] 8 ILM 679 (1969); done at Vienna on May 23, 1969; entered into force on January 27, 1980.

they are free to opt out. If such a breach causes injury to the other parties, rules of State responsibility should come into play. However, it is questionable to invoke the responsibility of the defaulting State in addition to termination or suspension of the treaty simply because its performance cannot be furthered by other States parties. Indeed, with certain categories of obligations, particularly those governed by peremptory norms of international law, no derogation should be allowed. But to place the proposition on a general basis would not be in line with State practice.

Furthermore, regarding the common areas, there are a few general obligations on States that are supposedly owed to the international community. For instance, it is generally recognized and accepted that States are under a legal obligation to protect and preserve the global environment, including the global common areas. This obligation can be found in various legal instruments on the law of the sea, the polar regions, outer space, and so on. The principle that States have 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* was enunciated repeatedly during the two world conferences on the environment. Obviously every State owes a duty to preserve and protect the world environment in the interests of the international community as a whole. However, to assert that States are prohibited from causing damage in the common areas is far from the reality of the situation, as most adverse effects produced in the common areas, particularly in the high seas, by and large arise from the normal conduct of State activities. It is one thing to say that every State has an obligation to protect the global environment, particularly the commons, but it is another to accept that each State has legal standing to invoke the responsibility of the State whose activity has caused adverse effects to the commons. This is not only a matter of primary rules, but also a question of secondary rules. Like the concept of *jus cogens*,[39] States generally agree on the notion of obligations *erga omnes*, but differ on its content. States have committed themselves to protect the world environment, but the duty of such protection has to be substantiated in concrete terms before any obligation of responsibility can be measured in the case of damage. Even jurists who argued against the conduct of

[39] During the Vienna Conference on the Law of Treaties, efforts to draw up a list of peremptory norms of international law were unsuccessful owing to division among States. See J. Sztucki, *Jus Cogens and the Vienna Convention on the Law of Treaties* (Vienna, Springer-Verlag, 1974), pp. 119–123.

nuclear tests on the high seas also doubted the existence of positive rules, customary law, or such general principles as enunciated in the *Trail Smelter* case that may be extended beyond injury to foreign nationals and foreign territory, and applied to damage to the commons.[40] As pointed out by many jurists, in the absence of universal representation capable of taking action for the protection of the interests of the international community, it would be difficult to identify any such interest without it being associated with particular interests of certain members of the community. Therefore, without proper judicial channels or other institutional mechanisms organized to ensure the consistency of the interests of the part with the whole, it "would mean that any State, in the name of higher values as determined by itself, could appoint itself the avenger of the international community,"[41] thus likely inducing unwarranted claims and disputes. Theoretically the question of standing would be rendered irrelevant in the situation of the global commons. As yet, there is no system of universal representation, nor is there a genuine international communal identity, albeit States have identical goals and shared values in their interrelations, which are based on accommodated individual interests.

On the question of standing, the ILC in its Articles on State Responsibility maintains two traditional conditions for the admission of claims: the nationality rule and the exhaustion of local remedies rule.[42] In international jurisprudence, international courts have been cautious in dealing with States' claims on behalf of communal interests and have generally followed the traditional line. In the *South West Africa* cases,[43] the ICJ unequivocally rejected the legal standing of Ethiopia and Liberia to claim on behalf of the community of States in the mandate of the League of Nations, as the notion of *actio popularis* was not known to

[40] For instance, Margolis speculated that the rule of the *Trail Smelter* case might be extended to serious injury to persons and property on the high seas since "a ship on the high seas is assimilated to the territory of the State the flag of which it flies": E. Margolis, "The Hydrogen Bomb Experiments and International Law," *Yale Law Journal*, vol. 64 (1955), p. 629, at p. 642, quoting a *dictum* from the *Case of the SS "Lotus,"* PCIJ Series A., No. 10 (1927), p. 25. However, he conceded that "[i]t is somewhat less clear whether the *Trail Smelter* rule may be carried beyond injury to foreign nationals and foreign territory, and applied to the contamination of high seas fisheries, except perhaps by invoking a *res communis* theory with respect to the natural resources of the seas": *ibid*.

[41] Prosper Weil, "Towards Relative Normativity in International Law?," *American Journal of International Law*, vol. 77 (1983), p. 413, at p. 433.

[42] Articles on State Responsibility 2001, Article 44.

[43] ICJ Reports (1966), p. 3, at p. 47.

international law as it stood at that time. In the *Barcelona Traction* case,[44] the same Court not only reiterated the necessity of nationality linkage of the injured party with the claimant State even in the case of a flagrant violation of international norms on an international scale,[45] it also emphasized the distinction between a right and an interest in making a damages claim. In this particular case, Belgium brought a claim against Spain on behalf of Belgian shareholders who collectively held approximately 88 percent of the shares in a Canadian company which had been mistreated by Spanish authorities. However, as the damage complained of was not directed at the Belgian nationals but at the company itself, incorporated and headquartered in Canada, the Court refused to recognize that Belgium had legal standing to make the claim.[46] The ICJ was of the opinion that a mere interest, as claimed by Belgium, was not sufficient to give the applicant State the standing to claim for damage. It must possess a legal right to make the claim. The Court based its reasoning on the principle that, when a company suffers injury, it is normally the rights of the legally distinct company itself which are damaged rather than the separate rights of the shareholders. From this flows the principle that it is the State of nationality of the company which is entitled to make a claim.[47] Obviously, the Court's consideration was a practical one: the need to avoid complicated multiple lawsuits. In reality, if all States were entitled to take unilateral action for the interests of the international community, such as demanding cessation, claiming for damages, even taking countermeasures, it would be impossible

[44] ICJ Reports (1970), p. 3, at p. 32, paras. 33–34.

[45] With regard to obligations *erga omnes*, the Court said, even so, "the instruments which embody human rights do not confer on States the capacity to protect the victims of infringements of such rights irrespective of their nationality": *ibid*., p. 47, para. 91.

[46] The policy considerations of the judgment, as analyzed by Professor Schachter in his Hague Lecture, indicate that in addressing damage, significant emphasis tends to be placed on the maintenance of stability of State relations: Schachter, *International Law*, pp. 205–213.

[47] Note the dilemma of individual claimants with dual nationality which, for example, the Iran–US Claims Tribunal resolved by the application of the test of dominant and effective nationality, citing a *dictum* from the ICJ decision in the *Nottebohm* case (ICJ Reports (1955), p. 4) in support. See *Nasser Esphahanian* v. *Bank Tejarat*, 2 Iran–US CTR, p. 157, at p. 166; Case No. A18, 5 Iran–US CTR, p. 251, at p. 265; G. H. Aldrich, *The Jurisprudence of the Iran–United States Claims Tribunal* (Oxford, Clarendon Press, 1996), pp. 54–57; also C. N. Brower and J. D. Brueschke, *The Iran–United States Claims Tribunal* (The Hague, Martinus Nijhoff Publishers, 1998); and M. Aghahosseini, "The Claims of Dual Nationals Before the Iran–United States Claims Tribunal: Some Reflections," *Leiden Journal of International Law*, vol. 10 (1997), p. 21.

to prevent any State from exercising undesirable intervention or even policing power.[48]

The terms "obligation . . . owed to the international community as a whole" and "collective interest" are not legally defined.[49] What interests should be deemed as "collective" and how collective should such interests be in order to entitle any State to claim damages on behalf of other States? In the common areas, for example, States may undertake international obligations to protect certain fishing stocks in the high seas by concluding fishery agreements. Under current State practice, if any State party breaches its international obligation under the relevant agreement, other States parties shall be entitled to invoke its State responsibility. One may claim that there is a collective interest in the protection of those species. However, from the viewpoint of environmental protection, it may seem too restrictive to say that only those States parties which have an interest in such protection by virtue of their ratification of the agreement have standing to invoke a defaulting State's responsibility. But to give a broader interpretation to such a collective interest and allow States other than the States parties to invoke international responsibility of the defaulting State would imply a disservice to the said treaty regime.

In addressing the issue, the ILC points out that such obligations as respect for human rights and protection of fundamental freedoms in contemporary international law bear such a character. It continues that:[50]

[48] For a critical view on the subject, see Prosper Weil, "Towards Relative Normativity in International Law?," *American Journal of International Law*, vol. 77 (1983), p. 413; also Henkin *et al*., *International Law*, p. 578.

[49] Article 48 of the Articles on State Responsibility. In identifying such common interests, Peter Sand uses the concept of global security, arguing that "if global environmental security is taken to mean security against those risks that threaten our common survival, the focus of collective legal action may indeed be sharpened considerably. A tentative priority list of genuine survival risks would thus, as a minimum, have to include the following essential concerns: climatic security, biological security, chemical security." See P. Sand's unpublished paper, *International Law on the Agenda of the United Nations Conference on Environment and Development*, p. 15 cited in Geoffrey Palmer, "New Ways to Make International Environmental Law," *American Journal of International Law*, vol. 86 (1992), p. 259, at p. 260.

[50] *Yearbook of the ILC* (1985), vol. II (Part Two), pp. 25–27 (commentary to former Article 5 of the Draft Articles on State Responsibility), para. 20. However, the ILC also admitted that:

> obviously the current provision cannot and does not prejudge the question to what extent "primary" rules of international law, either customary or conventional, impose

The interests protected by such provisions are not allocatable to a particular State. Hence the necessity to consider in the first instance every other State party to the multilateral convention, or bound by the relevant rule of customary law, as an injured State.

In the environmental field, the principle of the "common heritage of mankind," as currently accepted in respect of the mineral resources of the deep sea-bed and subsoil beyond national jurisdiction, falls into the same category. Any infringement of such interests, imposed by the relevant treaty, should be regarded as affecting all the States parties.[51] At the same time, the ILC is also fully aware that, in the present stage of development of the international community of States as a whole, the recognition or establishment of such a collective interest of States is still limited in its application. However, the combined effect of Articles 42, 48, and 54[52] of the Articles on State Responsibility is that the right of States other than the injured State to invoke the responsibility of the defaulting State is so broad that any exercise of such a right as in the *Nuclear Tests* cases would likely provoke an international dispute. The Articles need more time and more practice to mature.

Despite the theoretical controversy and practical difficulty with the application of obligations *erga omnes* in the common areas, the importance of the doctrine in international law certainly cannot be over-emphasized, given the fact that environmental protection of the commons requires the concerted action of all States.[53]

> obligations on States and create or establish rights of States for the protection of human rights and fundamental freedoms. While the Universal Declaration on Human Rights and other relevant instruments are certainly pertinent for the determination of the possible scope of this provision, it is clear that not every one of the rights enumerated in these instruments, nor every single act or omission attributable to a State which could be considered as incompatible with the respect of such rights, even if an isolated act or omission (which might not even be intentional), must necessarily be qualified as giving rise to the application of the present provision.
>
> This passage was deleted from the commentaries as finally adopted.

[51] *Ibid*., para. 23.

[52] Article 54 reads: "This Chapter does not prejudice the right of any State, entitled under article 48, paragraph 1 to invoke the responsibility of another State, to take lawful measures against that State to ensure cessation of the breach and reparation in the interest of the injured State or of the beneficiaries of the obligation breached."

[53] See K. Zemanek, "The Legal Foundations of the International System," *Recueil des Cours*, vol. 266 (1997), p. 12, at p. 257. For a detailed study on the concept of *erga omnes* obligations, see M. Ragazzi, *The Concept of International Obligations Erga Omnes* (Oxford, Clarendon Press, 1997).

The element of harm

Consistent with the argument that we do not charge a party for depositing a single drop of oil or some other harmful substance in the ocean,[54] a threshold of harm is also required for the application of the legal regime applicable to the commons. Activities harmful to the common environment may result in two kinds of consequence: one is the deprivation of the rights and interests of other States in access to, or utilization of, the shared resources; the other is the irreversible degradation or damage to the natural resources and the environment. In most international instruments on the protection of the common areas, both types of damage are covered. For example, without specifying the rules relating to remedies, the 1982 United Nations Convention on the Law of the Sea provides a relatively broad definition of "pollution of the marine environment":[55]

> the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

Traditionally, damage inflicted on the environment itself, particularly that within the public domain, was often left unattended for lack of entitlement. Recent development of national legislation has shown a rapid proliferation of environmental law imposing legal obligations on the polluter to pay for damage to the environment *per se*.[56] International law is following the same trend. Examples can be found in the 1984 Protocol to Amend the 1969 International Convention on Civil Liability for Oil

[54] In the context of marine pollution, the US once questioned whether the single drop of oil that might be the normal result of the starting of an engine is damage for which liability should arise. Obviously no one would want to take liability to that extreme. See D. A. Bagwell, "Liability under United States Law for Spills of Oil or Chemicals from Vessels," *Lloyds Maritime and Comparative Law Quarterly* (1987), p. 496, at p. 498; Henry C. Burmester, "Liability for Damage from Antarctic Mineral Resources Activities," *Virginia Journal of International Law*, vol. 29 (1989), p. 621, at p. 636, n. 92.

[55] Article 1(4) of the UN Convention on the Law of the Sea (Montego Bay, December 10, 1982), 1833 UNTS 396.

[56] Environmental legislation to set up civil liability under the "polluter pays" principle for damage caused to the environment and natural resources is quite popular among States, developed and developing alike.

Pollution Damage,[57] the 1988 Convention on the Regulation of Antarctic Mineral Resources Activities[58] and the 1991 Protocol on Environmental Protection to the Antarctic Treaty,[59] in which impairment of the environment or ecosystem, other than loss of economic benefits derived from such impairment, is singled out as one major category of damage.[60] Recent State practice is also inclined to extend liability to ecological damage.[61]

Environmental damage

For damage to the environment, the main form of reparation is restitution, that is, the obligation to restore the area to the condition it would have been in if such damage had not occurred. For legal recovery, damage must be quantifiable and certain. Environmental damage to the commons raises a number of problems with regard to the assessment of damage. In addition, if it proves impossible or inappropriate to restore the *status quo ante*, should monetary compensation be considered necessary and sufficient? Several international instruments address environmental damage, often by reference to some particular event or contamination caused by the escape or discharge of hazardous or toxic

[57] IMO Doc. LEG/CONF.6/66. [58] 27 ILM 868.

[59] 30 ILM 1461 (1991). Article 3 of the Protocol provides: "The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be *fundamental considerations* in the planning and conduct of all activities in the Antarctic Treaty area" (emphasis added).

[60] In the Antarctic Mineral Resource Convention, the primary concern is environmental damage rather than personal injury. See Article 8 of the Convention.

[61] In the *Patmos* case relating to a collision between the Greek tanker *Patmos* and the Spanish tanker *Castillo de Monte Aragon*, where tons of spilled oil washed ashore on the coast of Sicily, the Tribunal of Messina gave a rather narrow interpretation to the terms of the Oil Pollution Liability Convention (973 UNTS 3), rejecting the claim by the Ministry of the Merchant Marine of Italy for damage to its territory and marine resources, on the ground that, since the territorial sea is not State-owned property, damage to it cannot be compensated to the Ministry. This also applies to marine fauna and flora which are considered as *res communis omnium*. The Court of Appeal of Messina reversed the decision of first instance and recognized ecological damage as covered by the Oil Pollution Liability Convention. For further information, see Andrea Bianchi, "Harm to the Environment in Italian Practice: The Interaction of International Law and Domestic Law," in P. Wetterstein (ed.), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Oxford, Clarendon Press, 1997), p. 103.

substances or oil into the area concerned,[62] or to the general adverse effects of the activities on a certain environment.[63]

With regard to marine and outer space areas, environmental damage is practically confined to injury to natural resources that can be measured in economic units as suffered by other States, e.g. loss of tourism or damage to the fishing industry, or in terms of the costs of removal and restoration. Environmental values are considered in each particular context using a criterion based on the nature and extent of human use as well as on the availability of the natural resource to human society with the currently available and feasible technology.

In calculating environmental damage, the loss or impairment to the environment is often measured by reference to the costs of measures of reinstatement or restoration. Under the Lugano Convention, the definition of "damage" includes:[64]

> loss or damage by impairment of the environment in so far as this is not considered to be damage within the meaning of sub-paragraphs a or b [personal injury and property damage] above provided that compensation for impairment of the environment, other than for loss of profit from such impairment, shall be limited to the costs of measures of reinstatement actually undertaken or to be undertaken.

"Measures of reinstatement" are defined as "any reasonable measures aiming to reinstate or restore damaged or destroyed components of the environment, or to introduce, where reasonable, the equivalent of these components into the environment."[65]

One of the particular characteristics of environmental damage is the focus on the clean-up and removal costs. Such costs are enforced in some national practice,[66] and are acknowledged in several international instruments on environmental damage. According to the polluter pays

[62] Such as the 1976 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources (London, December 17, 1976), 16 ILM 1450; Kiss, *Selected Multilateral Treaties*, p. 474.

[63] For example, Article 1 of the United Nations Convention on the Law of the Sea.

[64] Article 2(7) of the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano, June 21, 1993), 32 ILM 1228 (1993); Kiss and Shelton, *International Environmental Law*, p. 226.

[65] *Ibid*., Article 2(8).

[66] Section 107 of the United States Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (the "Superfund") provides that any person who owns or operates a facility where hazardous wastes are or were disposed of, or who arranges with a transporter for the disposal or treatment of such wastes, or any person who accepts or has previously accepted hazardous substances for transport to a disposal or treatment facility, is liable for all costs of removal and remedial action

principle, the polluter should bear the clean-up and removal costs for the restoration of the *status quo ante*. In the common areas, however, the requirement of "clean-up and removal" may not be a simple task. For instance, to remove used nuclear-powered devices or space debris from active orbits in outer space, or to clean up spilled oil from the ocean or from the Antarctic area, are very expensive and require the use of advanced technology.

With regard to the Antarctic environment, the 1988 Convention on the Regulation of Antarctic Mineral Resources Activities,[67] although not yet in force, contains some unique provisions on the terms of environmental damage.[68] For the purpose of protection, the term, "the Antarctic environment or dependent or associated ecosystems,"[69] is intended to reach beyond the boundaries drawn up by the Antarctic Treaty. The term has been picked up by the later drafting work on the sixth annex to the 1991 Protocol on Environmental Protection to the Antarctic Treaty on international liability for environmental damage to Antarctica. Damage such as polluting the habitat of a colony of penguins, seals or even an area of limited animal activity which holds no "commercial value" may destroy a critical link in the food chain or life support system of other flora and fauna.[70]

Legal experts have had lengthy discussions on the definition of damage to the Antarctic environment.[71] In the draft, it was suggested that damage should mean "any harmful impact on the Antarctic environment

incurred by the United States or a State or any other costs incurred consistent with the National Contingency Plan by any other person: 42 USCA S. 9607.

67 Wellington, June 2, 1988, 27 ILM 868.

68 See *ibid*., Article 8.

69 *Ibid*., Article 8(2).

70 ASOC Information Paper, No. 1988-1, January 4, 1988, at p. 228.

71 In order to provide for comprehensive protection of the Antarctic environment and its dependent and associated ecosystems, an expert group was established by the Antarctic Treaty Consultative Meetings, with the mandate to draft rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by the Protocol on Environmental Protection to the Antarctic Treaty, in accordance with Article 16 of the said Protocol. See paras. 69–77 of the Final Report of the XVII Antarctic Treaty Consultative Meetings held in Venice. Since then, the group has held several meetings. Its work has been assisted and enriched by the views contributed by the scientific and technical community on the implications of a liability regime for scientific and associated logistic programs. See para. 3 of the Report of the Group of Legal Experts on the Work Undertaken to Elaborate an Annex or Annexes on Liability for Environmental Damage in Antarctica, November 21, 1997; and the Report of the XXIV Antarctic Treaty Consultative Meeting, St. Petersburg, July 9–20, 2001, paras. 61–82, for the most recent update on the work of the group.

and dependent and associated ecosystems caused by any activity in the Antarctic Treaty area." As a criterion, such an impact must be, to use the terminology of the Protocol on the Protection of the Antarctic Environment, of a "more than a minor or transitory"[72] nature, or alternatively, be "significant and lasting."[73] In relation to the definition issue, a practical question is raised, namely, whether the harmful impact that has been previously assessed and found acceptable by national authorities through initial environmental evaluations (IEE)[74] or subjected to a stricter evaluation procedure by the Treaty parties through a comprehensive environmental evaluation (CEE),[75] should be excluded from the scope of application. The divergent views of the experts reveal several aspects.[76] First, how comprehensive and sufficient an environmental assessment is a party expected to carry out under the treaty obligation? What is the relationship between such an assessment and liability rules? And, most importantly, what would be the proper balance between the need to ensure the continuity of scientific research on the continent and the community's interests in the protection of the environment? Although, under the Antarctic Treaty system,[77] there are a series of specific rules of conduct for the protection of the area's environment, experts could not agree on the issue of whether liability rules should only cover damage arising from unplanned activities or should extend to both planned and unplanned activities. Of course, stricter rules would be imposed if both planned and unplanned activities are covered.

Prevention and mitigation costs

Preventive and mitigating costs are generally accepted as recoverable damage. The term "preventive measures" normally refers to actions

[72] Article 8(1) of the Protocol.

[73] Para. 12 of the Report of the Group of Legal Experts on the Work Undertaken to Elaborate an Annex or Annexes on Liability for Environmental Damage in Antarctica, November 21, 1997.

[74] Articles 1 and 2 of Annex I to the Protocol on Environmental Protection to the Antarctic Treaty on Environmental Impact Assessment.

[75] *Ibid*., Article 3.

[76] Paras. 14–18 of the Report of the Group of Legal Experts on the Work Undertaken to Elaborate an Annex or Annexes on Liability for Environmental Damage in Antarctica, November 21, 1997.

[77] The "Antarctic Treaty system" means "the Antarctic Treaty, the measures in effect under that Treaty, its associated separate international instruments in force and measures in effect under those instruments": Article 1(e) of the Protocol on Environmental Protection to the Antarctic Treaty.

taken after an injurious act occurs. Preventive and mitigating measures are emergency in nature, and responsive to the practical needs of the situation. Normally the party which takes such action would act according to its own assessment of the situation and would use the best knowledge and technology available to it to control damage. In the Oil Pollution Liability Convention,[78] preventive measures are defined as "any reasonable measures taken by any person *after an incident has occurred* to prevent or minimize pollution damage."[79] Similarly, in the 1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment,[80] the term "preventive measures" is defined as "any reasonable measures taken by any person, after an incident has occurred to prevent or minimise loss or damage."[81] In the common areas, if the responsible party and other rescue parties take joint action to prevent and mitigate damage, the scope of the operation and its costs are unlikely to provoke any disputes between the parties. If, however, the third party takes measures without consulting the responsible party, the extent to which such measures are considered necessary and appropriate to minimize damage may prove problematic when seeking compensation from the responsible party.

Clean-up and remedial measures

Clean-up, removal, or restoration actions in the common areas can prove difficult and complicated. Adverse effects of human activities on the ecosystem or the natural resources in these regions may not be assessed to the fullest extent and compensated by monetary sums for restoration and recovery.[82] As an example of national treatment of the hazardous wastes situation, United States legislation imposes no limit on the costs of remedy or removal.[83] Governmental agencies as the public trustee may recover for natural resource damage in excess of the costs of restoration.[84] The same consideration should be given to the common areas, where years of scientific research may be completely wiped out by a single oil spill or an accident, causing not only a loss in time and money, but also destroying long-term monitoring efforts by research teams. In the Antarctic area, because of its fragility, damage to the ecosystem may

[78] Brussels, November 29, 1969, 973 UNTS 3. [79] *Ibid*., Article I (7) (emphasis added).
[80] Lugano, June 21, 1993, 32 ILM 1228.
[81] *Ibid*., Article 2(9); Kiss and Shelton, *International Environmental Law*, p. 226.
[82] *Ibid*. [83] 42 USCA S. 9607 (CERCLA).
[84] *Ibid*.; Kiss and Shelton, *International Environmental Law*, p. 226, n. 32.

destroy a critical link in the food chain or the life support system of other flora and fauna. In such cases, any measurement of loss should perhaps extend also to monetary compensation. In the current legal development on the protection of the Antarctic environment, jurists still differ over the extent to which States should be held liable for remedial actions. States that have active Antarctic research activities tend to give strict interpretation to the obligation of protection under the relevant Antarctic agreement and claim that in the vast majority of cases it may not be feasible to undertake remedial measures in the area.[85]

Providing a remedy for long-term adverse effects to the environment is more complicated. The meaning of "restoration" in the case of environmental damage carries both subjective judgment and objective evaluation. What is reparable and what is not often goes beyond the liability regime. When a liability regime is designed specifically for a common area such as Antarctica, additional monetary compensation, beyond that immediately necessary to repair the damage, may be required for the protection of the environment and its ecosystem on a long-term basis. Even so, it needs to be restricted to a reasonable range for the benefit of the activities in the region.

Punitive damages

In considering the viability of establishing an environmental protection fund for the protection of Antarctica, it is clear that there is no industry in a position to provide the necessary financial resources for a compensation fund, and that the consultative parties to the Antarctic Treaty are not willing to make such contributions either. It is envisaged therefore that the only money a fund could receive, apart from voluntary contributions, would be compensation for unrepaired or irreparable damage. Therefore, suggestions have been put forward that the operator should be obliged to provide reasonable compensation for "unrepaired" or "irreparable harm." The argument here is that an operator who has caused irreparable damage should not be left in a better position than an operator who has caused damage but has repaired it.[86] Additionally, compensation for long-term effects is also proposed as a source of contribution to the fund. Some conceive this as punitive damages.

[85] Report of the Group of Legal Experts on the Work Undertaken to Elaborate an Annex or Annexes on Liability for Environmental Damage in Antarctica, November 21, 1997, paras. 24–27.

[86] *Ibid*., para. 30.

In the environmental field, punitive damages are often imposed at the national level for non-compliance with administrative orders to remedy environmental damage.[87] Under the existing international conventions on civil liability, the acting party would be subject to unlimited liability if damage were caused by willful or intentional acts of the author. The purpose of liability is to compensate the aggrieved party rather than to punish the wrongdoer. Moreover, in international practice, punitive damages are rarely imposed for the purpose of compliance, nor are they considered appropriate for injurious acts of States, because it would contradict the principle of sovereign equality. For private parties, it would also be a major departure from the regimes on civil liability based on restoration of the *status quo ante* to enforce punitive damages for environmental harm and change the nature of liability law.[88] Taking into account unrepaired damage and long-term effects, the most difficult question is how to assess the amount of damages.

Limitation of liability

With regard to environmental damage to the commons, whether to put a ceiling on liability is a practical question. In the existing international treaty provisions on international liability for environmental pollution, both strict liability and fault-based liability are imposed for certain hazardous activities. These regimes, as analyzed in previous chapters, have two common features: the channeling of liability to one identified actor or actors; and limited liability. Supplementary to the regulatory rules, separate regimes on liability and compensation for damage to the commons could conceivably be designed for each specific area of the commons and for each specific type of activity.[89] But following the

[87] Frank P. Grad, *Environmental Law* (3rd edn., New York, Matthew Bender, 1985), p. 695. But the purpose of the imposition of such a sanction is not simply to punish, but to bring about compliance with the administrative order: *ibid*. p. 11.

[88] The modern legal systems are based on the distinction between reparation for injury done and punishment of the wrongdoer. The former is generally done within the framework of private law while the latter is, as a rule, a public law sanction. Nevertheless, this basic distinction of functions does not exclude penal considerations in private law to serve certain purposes, e.g. of securing atonement for the misdeed in the community's interest, of deterring others from the wrongdoing, and of educating the wrongdoer. The punitive element alone is never dispositive. See Hans Stoll, "Consequences of Liability: Remedies," in A. Tunc (ed.), *International Encyclopedia of Comparative Law*, vol. 11, pp. 94–96.

[89] This approach was advanced as a possible solution by ASOC in its Report of the Antarctic and Southern Ocean Coalition (ASOC) on the XXIV Antarctic Treaty

general model, the limitation of liability and the proper channeling, as in other fields of civil liability, will be determined by policy considerations in balancing the utilization and preservation of resources.

State liability

The international liability of States for damage caused in the common areas is similar to any other transboundary damage case. Apart from State public activities, the extent to which a State should be held responsible for the injurious consequences caused by legal entities under its jurisdiction and control cannot be easily answered. The existing international practice varies from area to area, subject to the nature of the activity in question. This is also the case with activities carried out in the common areas. The prevailing view among legal experts is that State liability for Antarctic activities carried out by operators should only be invoked in narrowly defined circumstances: provided States parties have undertaken the obligations provided for under the Protocol and its annexes by adopting laws and regulations and taking the necessary administrative measures, including enforcement in order to secure the compliance of operators with international obligations, they should not be responsible for any failure on the part of the operator. This follows the general principles of State responsibility. In other words, only when a State fails to fulfill its international obligation to exercise control over activities carried out by entities under its jurisdiction and control, should it be held accountable for the legal consequences thereof.

Institutional and financial mechanisms

National laws on the environment are strongly characteristic of their modern origin,[90] as is international law in this field. With regard to the enforcement of rules relating to environmental protection, national laws leave little room for private tort law to play a role, except for the vindication of private rights to compensation for damage between private parties. Likewise, at the international level, the private international law approach has limited functions in addressing damage to

Consultative Meeting, July 9–20, 2001, St. Petersburg (Report Pursuant to Article III(2), under Agenda Item 5(b)), under heading D, "Liability." See also Sean D. Murphy, "Prospective Liability Regimes for the Transboundary Movement of Hazardous Wastes," *American Journal of International Law*, vol. 88 (1994), p. 24, at p. 26.

[90] Frank P. Grad, *Environmental Law* (3rd edn., New York, Matthew Bender, 1985), p. 13.

the environment.[91] In the common areas, recent years have seen an impressive growth of international and regional institutions and mechanisms for the management of activities in the common areas and for the protection of the environment and resources. Tackled at source, and prevented from the outset, environmental damage to the commons is controlled through the joint efforts of States coordinated by these institutions and mechanisms. The political will as expressed by States to enhance international cooperation in the field of the environment in general has also given birth to important international mechanisms governing the global commons.

The objectives of these institutional mechanisms are primarily to set up standards for environmental assessment, to exchange information and data relating to the protective measures undertaken by State parties, to coordinate emergency assistance efforts in case of accidental damage, to promote scientific research and studies in understanding the nature and cause of the harmful effects to the relevant area, and to provide or facilitate a dispute settlement process. Some of these mechanisms are quite comprehensive, while others remain general.

Some regional bodies play an active role in the protection of the marine environment. Under the Convention for the Protection of the Marine Environment of the North-East Atlantic,[92] a commission is established to supervise the implementation of the Convention. The Commission serves to maintain a general overview of the condition of the marine area, of the effectiveness of measures taken, and of the need for additional or different measures.[93] The States parties report to the Commission on a regular basis on their legal, regulatory, or other measures taken for the implementation of the Convention, including measures to prevent or punish conduct in contravention of the provisions of the Convention.[94] The Commission ensures that national measures are in conformity with the Convention, and shall decide upon steps to be adopted by States parties for full compliance, when appropriate.[95] This international supervision procedure is further enhanced by the possible attendance at the Commission's meetings of observers from non-party

[91] For a fine illustration on the point, see Murphy's analysis of the possible approaches that the international community may take in coping with transboundary movement of hazardous wastes, which sheds some light on the legal aspects of the damage rules. Sean D. Murphy, "Prospective Liability Regimes for the Transboundary Movement of Hazardous Wastes," *American Journal of International Law*, vol. 88 (1994), p. 24, at pp. 37–60.

[92] Paris, September 22, 1992, 32 ILM 1069. [93] *Ibid*., Article 10(2).

[94] *Ibid*., Article 22. [95] *Ibid*., Article 23.

States, international organizations, or non-governmental organizations (NGOs), upon a unanimous vote of the Commission. The observers may present any information or reports relevant to the objectives of the Convention.[96]

The Baltic Marine Environment Protection Commission set up under the 1974 Convention on the Protection of the Marine Environment of the Baltic Sea Area[97] and maintained by the 1992 Convention,[98] serves to observe the implementation of the Convention, to make recommendations, and to promote cooperation between the States parties.[99] The Commission meets at least once a year,[100] while the State parties report to the Commission on their national measures adopted for compliance with the Convention.[101] The Convention does not specify whether there is any review of the reports submitted by the State parties. Nevertheless, the Commission may request the submission of information on discharge permits, emission data, or data on environmental quality.[102] With regard to pollution control, the Commission has the substantive function of defining pollution control criteria, objectives for the reduction of pollution, and objectives concerning measures taken.[103]

The third regional treaty regime that should be mentioned is the Convention on the Protection of the Black Sea Against Pollution,[104] which consists of a framework convention and three protocols. The first protocol deals with pollution from land-based sources, by discharge from rivers, canals, coastal establishments and other artificial structures.[105] It extends to the waters landward of the baseline and to the fresh water limit. The second protocol deals with marine pollution caused by oil and other harmful substances in emergency cases.[106] It oversees the preparation of contingency plans, the reporting of accidents, and the notification of other States. The last protocol handles dumping pollution.[107]

[96] *Ibid*., Article 11. See further E. Hey, T. Ijlstra, and A. Nollkaemper, "The 1992 Paris Convention for the Protection of the Marine Environment of the North-East Atlantic: A Critical Analysis," *International Journal of Marine and Coastal Law*, vol. 8 (1993), p. 1.

[97] Helsinki, March 22, 1974, 1507 UNTS 167. [98] Helsinki, April 9, 1992.

[99] Articles 19–20 of the 1992 Convention. [100] *Ibid*., Article 19(4).

[101] *Ibid*., Article 16. [102] *Ibid*., Article 16(2). [103] *Ibid*., Article 20(1)(d), and Annex III.

[104] Bucharest, April 21, 1992, 1764 UNTS 3; 32 ILM 1101 (1993).

[105] Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land-Based Sources, 1764 UNTS 18 (1994), adopted 1992, entered into force in 1994.

[106] Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and other Harmful Substances in Emergency Situations, 1764 UNTS 24 (1994), adopted 1992, entered into force in 1994.

[107] Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping, 1764 UNTS 27 (1994), adopted 1992, entered into force in 1994.

It provides lists of wastes of different categories, determined by the toxicity and composition of the matter, the dumping site, and the disposal method. There is also a commission established under this treaty system with supervisory functions similar to those of the equivalent bodies under the previous two conventions.[108]

These regional efforts are swift responses to the public call for greater protection of the marine environment. They reflect the extent of regional cooperation with regard to environmental protection, including the commons, and they are advanced and innovative in many respects. Institutionally, they provide for a legal structure to ensure the harmonization of and cooperation between national actions in the implementation of the objectives of the respective treaties and a more effective way to deal with pollution damage to the high seas.

The Antarctic Treaty regime offers a more inspiring development in the field of environmental protection of the commons. With five annexes and a schedule on arbitration,[109] the Protocol on Environmental Protection to the Antarctic Treaty provides a comprehensive legal regime for the protection of the Antarctic environment. Structurally, there are three layers of bodies responsible under the regime for the protection of the area: the Antarctic Treaty Consultative Meetings, the Committee for Environmental Protection established under Article 11 of the Protocol, and the scientific and technical committees set up under the Treaty regime.

The Antarctic Treaty Consultative Meetings, as the decision-making body, shall, drawing upon the best scientific and technical advice given by the relevant bodies, define the general policy for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and adopt measures for the implementation of the Protocol.[110] In making decisions, the Antarctic Treaty Consultative Meetings shall take into account the advice and recommendations made by the Committee for Environmental Protection and the scientific bodies.

The second layer, the Committee for Environmental Protection, is a recommendatory organ composed of representatives of each of the States

[108] Articles XVII and XVIII of the Convention on the Protection of the Black Sea Against Pollution. For an analysis, see Kiss and Shelton, *International Environmental Law*, pp. 77–79.

[109] They are: Annex I on environmental impact assessment; Annex II on conservation of Antarctic flora and fauna; Annex III on waste disposal and management; Annex IV on prevention of marine pollution; and Annex V on area protection and management.

[110] Article 10 of the Protocol on Environmental Protection to the Antarctic Treaty.

parties.[111] The contracting parties to the Antarctic Treaty which are not a party to the Environmental Protection Protocol may send observers to the Committee's meetings.[112] The Committee shall invite the President of the Scientific Committee on Antarctic Research (SCAR)and the Chairman of the Scientific Committee for the Conservation of Antarctic Marine Living Resources to its meetings, and, upon the approval of the Consultative Meetings, other scientific organizations may observe its sessions.[113] The scientific committees existing under the Antarctic Treaty, as the third layer, provide scientific and technical advice to the other bodies.

The Environmental Protection Protocol lays down detailed provisions on the environmental assessment of any proposed activities pursuant to scientific research programs, tourism, and other activities for which advance notice is required under the Antarctic Treaty.[114] The States parties have the obligation to adopt national laws and to take measures necessary for compliance with the Protocol.[115] They may draw each other's attention to activities which may affect the implementation of the Protocol.[116] The Consultative Meetings may do the same to the non-parties to ensure their compliance.[117] Considering the fragile nature of the environment, in order to take emergency response actions States parties are required to establish contingency plans in accordance with the requirements prescribed by Article 15 of the Protocol. Moreover, State activities are subject to inspections arranged by the Consultative Parties, and the reports of such inspections will be made public after comments by the relevant parties.[118]

This is the strictest and most comprehensive international legal regime on the environmental protection of the commons established to date. To a great extent, State activities are under direct international supervision and management. With such precise regulation of conduct, it will be relatively easy to identify wrongful acts of the parties in the conduct of their activities.

Treaty systems for protecting the ozone layer and for addressing climate change are setting up a different type of international institution in the environmental field. The most innovative are the financial arrangements to enable developing countries to participate in global

[111] *Ibid*., Article 11(2). [112] *Ibid*., Article 11(3). [113] *Ibid*., Article 11(4).

[114] In particular, see Annex I. There are three stages for assessment: the preliminary stage, initial environmental evaluation, and comprehensive environmental evaluation. See Annex I, Articles 1, 2, and 3 respectively.

[115] Article 13(1) of the Protocol on Environmental Protection to the Antarctic Treaty.

[116] *Ibid*., Article 13(4). [117] *Ibid*., Article 13(5). [118] *Ibid*., Article 14.

action against environmental damage. Under the Montreal Protocol on Substances That Deplete the Ozone Layer, as amended,[119] a financial mechanism was established, including a multilateral fund. The fund is financed by contributions from developed countries on the basis of the UN scale of assessments. The fund facilitates the provision of financial and technical cooperation, including transfer of technologies, to enable developing countries to comply with control measures undertaken under the Protocol.

In connection with financial arrangements, the Global Environment Facility (GEF) is another mechanism of growing importance. It is a funding institution established in 1990 for a three-year pilot phase, with initial sums of US$1.2 billion. It is implemented jointly by the World Bank, the United Nations Environment Program (UNEP), and the United Nations Development Program (UNDP). It provides funding to developing countries for global environmental projects. Initially it covered four areas: ozone layer depletion, climate change, biological diversity, and pollution of international waters.[120] The World Bank administers the funds, assisting countries with annual per capita income levels below US$4,000. The UNDP provides funds for institutional work, sponsors training programs, and assists other technical projects. The UNEP is responsible for ensuring consistency with international environmental agreements, as well as some other research projects in connection with GEF issues.

Once the initial three-year phase for the GEF was completed, more funding was added, and the GEF has since continued to function as one of the most important financial mechanisms for environmental protection. During the UN Conference on Environment and Development (UNCED), more transparent decision-making and wider participation in the GEF's work were called for.[121] Financial assistance and transfer of technologies to developing countries remain a constant

[119] Montreal, September 16, 1987, 1522 UNTS 3; 26 ILM 1550 (1987); Henkin *et al.*, *Basic Documents*, p. 738.

[120] During the negotiations on the combating of desertification, particularly in Africa, the developing countries requested that the GEF should be expanded to cover desertification projects.

[121] Chapter 33 of Agenda 21 addresses the issue. It calls for a system that is "transparent and democratic in nature, including in terms of decision-making and operations, by guaranteeing a balanced and equitable representation of the interests of developing countries and giving due weight to the funding efforts of donor countries": para. 33.14(a)(vi). Developing countries generally favor a voting mechanism modeled after the Montreal Protocol Fund, which provides an equal number of seats to both developed and developing countries on the Executive Committee and requires a

issue in the whole process of global action on the protection of the environment. At this stage, when the general policy goal has been agreed upon, the essential task lies in determining the ways and means to realize it. Institutionally, apart from the problems with the decision-making process (as criticized by developing countries during the UNCED), meaningful participation by developing countries in the negotiating process is essential. Environmental protection will conceivably be a long and constantly changing process of development. It is clear that new rules to deal with the greenhouse effect will affect a range of crucial national activities for a large number of countries, virtually guaranteeing that the negotiating process to reach that goal will be time-consuming.[122]

In conclusion, damage to the global commons is being tackled with unprecedented joint international efforts.[123] Rapid progress in some of the common areas demonstrates a strong sense of urgency shared by the international community at large for early action to protect the common environment, and a shared political resolve by developed and developing nations alike to maintain sustainable development for the betterment of the future as well as the present. The goal is set, but the process is gruelling,[124] because the damage issue we now face can no longer

majority vote of each bloc for all decisions: see Kiss and Shelton, *International Environmental Law*, p. 48.

[122] Richard Elliot Benedick *et al*. (eds.), *Greenhouse Warming: Negotiating a Global Regime* (Washington, World Resources Institute, 1991), p. 74.

[123] For a thorough review of the regimes governing the global commons, see J. Vogler, *The Global Commons: Environmental and Technological Governance* (Chichester, John Wiley and Sons Ltd, 2000).

[124] Despite continued efforts to develop international regimes for the protection of the global commons, there is some concern that the conflict between free trade and the environment, as represented by the hostile attitude of GATT/WTO panels toward unilateral trade measures taken to protect the global commons, may undermine the effective operation of such regimes. Although it is beyond the scope of this study to consider the impact of international trade law on the environment, it is worth noting that there is considerable speculation among environmentalists that the GATT and the WTO are "incompatible or even antagonistic toward individual and collective efforts of the world's nations to address the ever-burgeoning threats to our commonly shared natural resources": G. M. Wiser, "The Clean Development Mechanism Versus the World Trade Organization: Can Free-Market Greenhouse Gas Emissions Abatement Survive Free Trade?," *Georgetown International Environmental Law Review*, vol. 11 (1999), p. 531, at p. 532. See also R. W. Parker, "The Use and Abuse of Trade Leverage to Protect the Global Commons: What Can We Learn from the Tuna–Dolphin Conflict?," *Georgetown International Environmental Law Review*, vol. 12 (1999), p. 1. Once again, the basic issue of development and environment has to be reconsidered and balanced.

be handled by marginal corrective measures through liability rules. The process of redress requires social engineering, genuine cooperation among all countries, rich and poor, and, above all, a fundamental change in our perceptions and values. The current approaches are varied, as the targets are different. What they all should achieve is a sustained and sustainable development.

PART IV • UNDERLYING PRINCIPLES

8 The nature and basis of international liability

Causing transboundary damage is referred to as an international tort by some jurists. Such descriptions apply terms and concepts of private law by analogy to international claims and jurisprudence. As is so often the case, however, legal rules and principles cannot stand on their own. They have to operate within the institutional framework in which they have developed. While legal theories on transboundary damage are evolving, international practice has not followed the same course as has been experienced in the private law field. To this day, cases where transboundary damage is settled by the application of the general principles of international law on State liability for cross-border damage are few and far between.[1] Why there is such a discrepancy between theory and practice, and between private law and international law, is not merely a theoretical question. To say that States are interest-oriented and will tend not to assume binding obligations may be too simple an answer: States do undertake legal obligations in their international relations, including in the environmental field, as we have seen. On the other hand there is a marked reluctance to take the implications of their having done so to their "logical" conclusion, i.e. a general rule or principle of liability.

By taking three parameters – normativity, equity, and efficiency – as a point of departure, this chapter will analyse the subject, focusing on the policy aspects that have so affected the course of legal development on transboundary damage. The purpose of this part is not simply to explain why and how the law has developed to its present stage, but to discern in which direction it will develop and why. The basis of

[1] The only case usually cited is the *Trail Smelter* case (*United States* v. *Canada*), RIAA, vol. III (1938, 1941), p. 1905.

international liability for transboundary damage is a core issue. It is a topic on which numerous theories have been advanced: for example, liability by conduct, liability by result, objective liability, strict liability, and so on. Behind each theory there is always a policy choice, an attempt to protect certain activities, or a trade-off of interests. The basis of international liability indicates the strictness of rules that States agree to impose on their conduct and the responses that they feel obliged to make in cases of transboundary damage. The debate on the basis of international liability, to a large extent, reflects the diversity and discrepancy of national practice with regard to the harm and damage that persistently accompany the advancement of science and technology in modern societies, as well as the inadequacy of international mechanisms to harmonize that practice. In this regard there are two main schools of thought on international liability for transboundary damage – liability in the event of fault ("fault liability") and strict liability.

The character of the rules governing transboundary liability

To study tort is to study an object in motion; it is to study an ongoing debate about how a changing society's legal institutions should respond to harms and misfortunes persistently generated by the clashes and misadventures endemic to social life.[2] Damage is a kind of depletion, deprivation, or disturbance of resources. In the final analysis, liability is about the allocation of loss, and, at a certain level, "corrective justice." If society was ready to accept either the proposition that "the loss lies where it falls" or that "he who causes it should bear the loss," it would be easy to formulate a general rule of liability or non-liability. But things are not so simple; in practice only some losses can be recovered. The purpose of the law is to properly and fairly distribute the loss, but the manner in which a "fair" distribution can be achieved requires a normative yardstick or judgment. For our purposes, rules governing liability for transboundary damage must be: normative in character; binding on all parties, States, or private entities engaged in the activity concerned; equitable and appropriate to the given circumstances; and efficient in reallocating and utilizing the limited resources that bear on the interests of the several States. Through allocating the loss, unexpected behavior is modified and social order and international cooperation maintained.

[2] See generally, Page Keeton, Robert E. Keeton, Gregory Keating, and Lewis D. Sargentich, *Cases and Materials on Tort and Accident Law* (3rd edn., St. Paul, West Publishing Co., 1998).

These three parameters – normativity, equity, and efficiency – dictate the extent to which States would recognize and accept binding rules of international liability for transboundary damage.

Normativity

The term "normativity" refers to the authoritative character of a rule or standard binding upon members of a group, which serves to guide, control, or regulate proper and acceptable behavior.[3] It is one of the major qualities perceived as essential for a rule of law. It is also referred to as "legality" or "legitimacy."[4] Either term implies that it is normative, binding, and enforceable. What is required is the force behind voluntary compliance, or, as Thomas Franck has termed it, the "pull" of law.[5] If any rule of liability for transboundary damage is going to be accepted by States, it must first be considered by them as normative. In international practice, it proves its legitimacy either through the "symbolic validation"[6] of the law-making process; for example by the adoption of an international treaty, or by the formation of international customary law through usage and practice. If a State consents to a rule and accepts its legitimacy, it will usually observe it voluntarily.[7] To achieve this "pull," the rule requires certain qualities. First, the rule must be perceived and accepted by the majority of the community members as necessary for the maintenance of the normal order of society. By general approval, we mean a moral standard rather than a procedural legal requirement. If a certain kind of conduct is deemed by the general public within a society as a requirement for the operation of an activity, anyone involved with the activity would be expected to perform it that way. To do otherwise threatens the public interest and is considered unacceptable. For industrial and technical activities, considerations of public safety and security and the social interest in providing the victims of accidental and non-accidental damage with expeditious compensation

[3] See *Webster's Third New International Dictionary* (1986).

[4] T. M. Franck, *Fairness in International Law and Institutions* (Oxford, Clarendon Press, 1995), pp. 25–46.

[5] T. M. Franck, "Fairness in the International Legal and Institutional System," *Recueil des Cours*, vol. 240 (1993-III), p. 41.

[6] T. M. Franck, *Fairness in International Law and Institutions* (Oxford, Clarendon Press, 1995), p. 34.

[7] By the very nature of self-commitment, such obligations are considered equitable and must be observed by virtue of the principle of *pacta sunt servanda*: O. Schachter, *Sharing the World's Resources* (New York, Columbia University Press, 1977), pp. 16–23.

eventually led to national legislation and regulation. In any society, regulation of behavior is not necessarily through law. Community customs, practices, or usages, as well as moral standards which are generally upheld, can also exert pressure on the members of the community to observe a certain kind of behavior, sometimes more effectively than a legal rule. However, they remain effective only among the people of a certain community where these customs are practiced. Compensation for damage may not only be enforced through law, but through other ways as well, for it was deep-rooted in religious belief as well as secular thought that wrongs should be corrected.

In modern times, however, the legal system plays the most important role in regulating social conduct. The difference between a national legal system and the international legal order lies in the overall structure and the basis for the enforcement of the law. In the international context, the will or the consent of States for the recognition of the normativity of law is essential. The binding force of rules is reflected in the agreement reached by States. As is observed:

> there is no better evidence of the legal conviction of governments than those international acts and agreements in which States formulate the law to be followed by international judicial tribunals.[8]

Thus if States generally prefer to treat the transboundary damage problem as a practical and technical matter to be settled through diplomatic negotiations on an *ad hoc* basis rather than be bound by general legal rules on liability, the law will give way to this preference. If States do not believe that a certain pattern of conduct should normally be followed, they will not accept it as normative or as legally required. Liability rules require specific and concrete acceptance by States both in their scope and their terms. Even though there has been a rapid proliferation of international environmental treaties in recent years, with liability rules on various forms of transboundary damage, and though most States have adopted in their national laws the "polluter pays" principle and imposed strict liability on certain hazardous activities, these rules remain applicable only to the States concerned, not necessarily forming the basis of a general rule of international law, as claimed by some scholars.

In this regard, the International Court of Justice has discussed at length the relationship between treaty provisions and customary international law, State practice and *opinio juris*. In the *North Sea Continental*

[8] H. Lauterpacht, *Private Law Sources and Analogies of International Law* (London, Longman, Green and Co. Ltd, 1927), p. 60.

Shelf cases, the Court pointed out that to claim a treaty provision has become a general rule of international law, the State concerned should show that: (1) the provision concerned is norm-creating; (2) it has been accepted and recognized by States as part of the general principles of international law; (3) a considerable amount of State practice has demonstrated such *opinio juris*, particularly that of the States whose interests are specially affected; and (4) States in practice consider the rule legally binding on them.[9]

In relation to international liability rules, it is in principle questionable to assert that the existing treaty provisions on liability are norm-creating, outside the context of each given regime or treaty. Despite the number of treaties adopted, it is difficult to construe from treaty provisions as well as State practice that there exists such *opinio juris* among States to constitute these rules as general principles of international law.

Notwithstanding the essential need for law in the governance of a society, it is not the case that the more law, the better order. "[R]ules cannot justify themselves simply by being rules, but require justification by reference to considerations which lie beyond them."[10] On this point, one looks to the moral requirements and social needs underlying the rules. Between States, what determines the "pull" of law is often attributed to the interdependent relationship of States and the need for their cooperation. Generally speaking, this is persuasive. In the case of transboundary damage, however, the practical matter often arises as an international dispute between States concerned. How to settle or "manage"[11] the

[9] *North Sea Continental Shelf Cases (Federal Republic of Germany* v. *Denmark; Federal Republic of Germany* v. *Netherlands)*, ICJ Reports (1969), p. 4, at pp. 41–44, paras. 71, 73, 74, and 77.

[10] David Beetham, *The Legitimation of Power* (Basingstoke, Macmillan, 1991), p. 69.

[11] Sir Robert Jennings believes that international disputes, even essentially legal in nature, may not necessarily be settled by resort to court. The most important issue is how to resolve the tension and manage the situation by the most effective means available to both parties. He pointed out: "it is important to appreciate that there are large and important areas of international relations where what is wanted is not a decision based upon the law, but a decision based upon political wisdom, or even expediency, and the lessons of political or administrative experience. This might include changing the law (as it was, indeed, changed by the Antarctic Treaty, in a way that would not have been possible or desirable for a tribunal to attempt). The need for political, as well as curial decision-making is recognized, indeed, assumed to be so, within the domestic sphere of the sovereign State; and there is no reason to suppose that the position is any different in international relations." See Presentation by Sir Robert Jennings, "Contributions of the Court to the Resolution of International Tensions," in C. Peck and R. S. Lee (eds.), *Increasing the Effectiveness of the International Court of Justice* (Netherlands, Martinus Nijhoff Publishers/UNITAR, 1997), pp. 78–86, at p. 78.

dispute involves further factors. When States develop on different paths, formulating their own systems of social order, the distribution and allocation of natural resources is determined by the national domain and driven by domestic demand. The "pull" of law forcing States to coordinate with each other essentially comes from the internal force for the protection of natural resources and the environment to ensure stable national, economic and social development, rather than from the external need for harmony with neighboring States.[12] When their interests meet, States collectively provide the "pull" to reach agreement for joint action, which can be either legal regulation or some practical solution. But, as such interests vary, the latter will almost inevitably be of a specific, *ad hoc* character; indeed, in practice, so will the former. Hence the reluctance of States to accept general rules in this field.

One of the current difficulties in establishing an international liability regime for transboundary damage is that, when human capacities cannot control and avoid all injurious consequences of certain activities, the law lacks certainty in purporting to indicate the course of action States should take when pursuing or permitting such activities, and their limits. Here the difficult question is how to explain the application by international courts and tribunals in damage cases of general principles, postulates, and maxims, such as "every violation of an engagement involves an obligation to make reparation,"[13] abuse of rights,[14] good neighborliness,[15] etc. One may ask whether these principles are concrete and determinate enough to have acquired general normativity in all cases of transboundary damage. Given the many judicial decisions at hand, it may seem difficult to argue to the contrary. But if we take a closer look at these specific cases, we find that, more often than not in

[12] On this point, Schachter observes, "governments which enter into cooperative arrangements through treaties or otherwise, do so not because of their moral idealism, but because of the predicaments in which they find themselves. They face deficits, imbalances, and demands by their people which are difficult to meet. Even the richest and strongest cannot choose to 'go it alone' and depend entirely on their own resources. Hence in virtually every area of international life, but most especially in economic and communication relations, we witness the proliferation of treaty regimes and institutions." When natural resources become scarce and the protection of the environment carries such a global character, the pressure for international cooperation and regulation prevails over national action. See Oscar Schachter, "International Law in Theory and Practice," *Recueil des Cours*, vol. 178 (1982-V), p. 89.

[13] *Chorzów Factory* case, PCIJ, Series A, No. 17, 1928, p. 47.

[14] R. Bernhardt (ed.), *Encyclopedia of Public International Law* (Amsterdam, North-Holland, 1992), vol. I, pp. 4–8.

[15] Schachter, *International Law*, pp. 51–53.

transboundary damage cases, damages were awarded with the court filling gaps in the law by asserting general principles, sometimes without declaring on the issue of legal liability on the part of the source State.[16] As a general matter, even when the law is silent or obscure on a particular point, a court may not refuse to deliver a judgment on the ground that there was a lacuna in the law.[17] It was the notion of compliance with the rule of law which inspired reliance on general legal principles supposedly understood and obeyed by all States. Moreover, due to the vagueness and indeterminacy from which these principles suffered in their application to particular cases,[18] States have shown a strong desire for the adoption of international agreements on international liability for specific activities likely to give rise to transboundary damage, e.g. in the field of outer space or nuclear activities.[19] However, treaties and agreements also suffer from their narrow scope and limited participation of State parties. Therefore, there is still a role for general principles to play.

The next requirement of normativity is that the rule must be applied consistently. Again, this is one of the common qualities of law – generality. To be fair, the law must treat like alike.[20] Philosophically, this is essential for the normative force of law.[21] Practically, it reinforces

[16] The *Trail Smelter* case is an example. The award of damages was made after the two sides had reached agreement to settle the matter through arbitration. Currently, scholars differ over the issue of whether Canada had actually accepted liability for the damage.

[17] It is considered as a broad principle of law that "no court may refrain from giving judgment on the grounds that the law is silent or obscure": Schachter, *International Law*, p. 57, quoting from W. M. Reisman, "International Non-Liquet; Recrudescence and Transformation," *International Lawyer* (1968–1969), at p. 771.

[18] Jurists have also recognized the confused application of these general principles in the context of actual cases. For example, Sorensen doubts whether the doctrine of abuse of rights applies to situations such as the *Trail Smelter* case, since "[a] State substantially affecting other States by emanations from within its borders – nuclear tests, fumes, air or water pollution, diversion of waters – is not abusing its own rights, but interfering with the rights of another": Max Sorensen (ed.), *Manual of Public International Law* (London, Macmillan, 1968), p. 540.

[19] Based on the theory of risk, some of these activities are categorized as "lawful acts," and are therefore not subject to the general principles regarding abuse of rights and good neighborliness. And yet, if the maxim *sic utere tuo ut alienum non laedas*, encapsulating the customary international law duty of non-interference, were strictly adhered to, there would be no need for the theory of risk in the first place. See Sorensen, *Manual of Public International Law*, p. 540.

[20] See T. M. Franck, *Fairness in International Law and Institutions* (Oxford, Clarendon Press, 1995), pp. 38–41. Franck describes the degree of generality of the law as its "coherence."

[21] Ronald Dworkin, *Law's Empire* (Oxford, Hart Publishing, 1998), pp. 176–224. He uses the word "integrity" to describe the legislative and adjudicative coherence of the law.

voluntary compliance. Such consistency means that law must afford equal treatment to all entities in the same situation. If the law were to impose liability on some international entities and not others without justifiable reasons, the law would eventually lose its authority, or would not be accepted by States as law. When a State enters into a treaty obligation, it expects that all States parties will be treated alike. Equally, if a customary international law is generally recognized and accepted, all States should abide by it and face the same consequences for its breach.[22] Once a legal regime on State responsibility for a certain activity is established, whoever enters it is expected to behave accordingly and to bear the legal consequences of breach. In the environmental field, if the polluter pays principle is adopted as the basic principle in determining liability, it should then apply to anyone who pollutes. If one State is required to pay compensation for damage resulting from a particular activity, while another State in the same circumstances is not, the rule will lose its efficacy. For instance, in a transboundary pollution case, if a State claims for damage caused by the neighboring country on the ground of international law principles, it should be prepared to accept the same legal consequences of its own activities causing pollution damage to the other side.

The case of the uses of an international watercourse further illustrate the point. If a riparian State is situated in the middle of a river course, being both an upstream State and a downstream State, it is very difficult for it to claim absolute rights in the uses of water resources without regard to the interests of its downstream State. If such were the rule, it would obviously be in a disadvantageous position *vis-à-vis* its own upstream State. When asked about the right of a State in using its water resources shared with other States in 1895, Mr. Harmon of the United States was of the opinion that a State had the sovereign right to use its water resources unrestrained by international law. The Harmon doctrine[23] laid too much emphasis on the right of the riparian State

[22] This raises a major issue of international law: when a State denies or remains silent as to the existence of an international customary law, but its practice does not likewise point to the non-existence of the law, should it be considered bound by it? The legal effects of such a unilateral act currently are under consideration by the ILC.

[23] For a study on the doctrine, see Jacob Austin, "Canadian–United States Practice and Theory Respecting the International Law of International Rivers: A Study of the History and Influence of the Harmon Doctrine," *Canadian Bar Review*, vol. 37 (1959), p. 393, at p. 408. Disapproving the Harmon doctrine, the Legal Advisor of the Department of State of the US, discussing the uses of shared water resources with Mexico, said: "we are precluded from assuming a dog-in-the-manger attitude. In other words, we cannot with good grace answer Mexico by saying that we have captured the

to unrestricted use of its water resources, regardless of the fact that, if treated alike, the same riparian State would not necessarily accept the same behavior from its upstream State. The doctrine was not accepted as an international rule, and eventually was not even adopted by the United States in its own relations with other neighboring riparian States. The doctrine was rejected as a legal principle not only because of its "dog-in-the-manger" attitude,[24] but also because of its lacking the quality of law. The geography of the United States requires it to take into account the interests of both the upstream and the downstream. If there is no balance between rights and obligations for all players in the activity, the rule will lose its binding force. Normativity is the first and basic requirement of a legal rule. Its importance for international legal rules lies in the fact that the voluntary compliance of States with their international obligations is more essential than it is for individuals under national law, where the enforcement mechanism is much more sophisticated and institutionalized.

Equity

In allocating loss caused by damage, the first concern is to shift the loss unreasonably suffered by the victim to the tortfeasor. The inherent purpose of law is to prevent undue deprivation and protect entitlement, thereby maintaining a normal social order. Therefore, in essence, the legal remedy is intended to deal with the matter of unjust enrichment rather than the redistribution of resources. Equity in its broad sense in the present context means justice and fairness.[25] Theoretically there are two interpretations of the concept of equity. One is its application as a corrective tool to mitigate unnecessary hardship caused by the application of general principles or specific rules. The other is to consider it within the larger framework of legal theory and to impart to it the character of a source of law.

Under the classical doctrine, equity serves three functions. One function is to adapt the particular law in question to a set of facts when the fact pattern of a given case entails the choice between two reasonable interpretations of the law. Used as a means of choosing between

water and have a right to divert it within the United States regardless of Mexico's interest": Whiteman, *Digest*, vol. 3 (1964), p. 953.

[24] *Ibid*.

[25] For scholarly comments on the concept of equity, see Christopher R. Rossi, *Equity and International Law: A Legal Realist Approach to International Decisionmaking* (Irvington, Transnational Publishers, 1993), pp. 10–12.

two equally plausible interpretations, equity functions within the law (equity *infra legem*). Equity also enters when there are gaps in the system of legal rules and principles. It is employed to supplement the law and fill gaps (equity *praeter legem*). Finally, equity is very occasionally invoked to overturn or reject the application of unjust laws (equity *contra legem*), although normally under the guise of other legal techniques such as interpretation.[26]

Loss allocation according to hard and fast rules may itself be regarded as just and fair. However, the allocation of loss is seldom straightforward. Under certain circumstances, injustice may result when the law is too stringently applied. This may arise in two situations. The first is when the law itself is deficient. When States enter into agreements, they sometimes fail to anticipate problems which may be experienced later on. For example, when two riparian States conclude a treaty on the sharing of a common river course, they may only address the proportion of the water volume that the upstream State should deliver to the downstream State, without any provision on the requirement of the quality of the water. Years later, due to industrial and urban development upstream, the water flowing to the territory of the downstream State may have become so polluted that agricultural production is severely jeopardized. If the existing treaty were to be mechanically interpreted and applied, the upstream State would not be held liable for failing to ensure the quality of the delivered water, since the treaty did not explicitly require the upstream State to observe such a legal obligation. If the treaty were written at a time when people trusted entirely in the self-purifying quality of water, such a lapse by the contracting parties might be understandable. Today, when water pollution has become such a hazard to other riparian States, to insist on the letter of the treaty, regardless of obvious deficiencies, would be unjust and unfair. Equity thus plays a part in the continuous process of readjustment of the relations of the parties. According to Aristotle, "justice is a kind of proportion . . . but it is a proportion the terms and relationships of which have continuously to be readjusted."[27]

The second situation in which injustice may result from the strict application of the law is more common in State practice. It occurs where particular circumstances and interests are so overwhelming that the application of the hard rules on liability would be unjustified and

[26] *Ibid*., pp. 9–10.

[27] Cited from Monique Chemillier-Gendreau, "Equity," in Mohammed Bedjaoui (ed.), *International Law: Achievements and Prospects* (Dordrecht and Paris, Martinus Nijhoff and UNESCO, 1991), p. 271, at p. 279.

therefore exceptional considerations must be taken into account. Obviously no law can take into account all possible eventualities. In framing laws to deal with general issues, particular interests may be overlooked or even compromised. Besides, there are always exceptional situations that require special attention. When it comes to these cases, the rigor of the law has to be softened with a view to avoiding injustice. That is where equity enters, for, according to Aristotle:

> all law is universal, but there are some things about which it is not possible to speak correctly in universal terms . . . So in a situation in which the law speaks universally, but the issue happens to fall outside the universal formula, it is correct to rectify the shortcoming, in other words, the omission and mistake of the lawgiver due to the generality of his statement. Such a rectification corresponds to what the lawgiver himself would have acted if he had known. That is why the equitable is both just and also better than the just in one sense. It is not better than the just in general, but better than the mistake due to the generality. And this is the very nature of the equitable, a rectification of its universality.[28]

The necessity of applying equity and equitable principles in the adjudication of international disputes has long been recognized and accepted in international practice. On the sources of international law, Article 38(2) of the Statute of the International Court of Justice states that the enumeration in Article 38(1) of the sources of law to be applied by the Court "shall not prejudice the power of the Court to decide a case *ex aequo et bono*, if the parties agree thereto."[29] In the current practice of international law, equity occupies an increasing place in international jurisprudence,[30] arbitration[31] and treaty law.[32] The relationship between

[28] Cited from Christopher R. Rossi, *Equity and International Law: A Legal Realist Approach to International Decisionmaking* (Irvington, Transnational Publishers, 1993), p. 23, n. 11.

[29] Article 38(2) of the Statute of the International Court of Justice, reprinted in Henkin, *et al., Basic Documents*, p. 129.

[30] For example, in the Judgment in the *Barcelona Traction* case of February 5, 1970, the Court held that, in certain circumstances, equity ought to intervene to ensure a reasonable application of the law: ICJ Reports (1970), p. 3, at p. 48, para. 93. However, the Court deemed equity inapplicable in the particular circumstances of that case. In the *Case Concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya)*, the Court considered itself "bound to decide the case on the basis of equitable principles": ICJ Reports (1982), p. 17, at p. 59, para. 70. For a positive view on the application of equity in international law, see Christopher R. Rossi, *Equity and International Law: A Legal Realist Approach to International Decisionmaking* (Irvington, Transnational Publishers, 1993).

[31] For instance, in the oil arbitration of *Libyan American Oil Company (LIAMCO)* v. *Government of the Libyan Arab Republic*, the arbitrator applied equity: award of April 12, 1977, 62 ILR (1977), p. 140, at p. 175.

[32] For example, in the 1972 Convention on International Liability for Damage Caused by Space Objects, Article XII reads: "The compensation which the launching State shall be liable to pay for damage under this Convention shall be determined in accordance

law and equity is a longstanding issue, concomitant with the question of the sources of international law.[33] In applying equity in practice, rules of law may be supplemented or moderated, or in rare cases even ignored altogether, if strict application would lead to unjust results. Recourse to equity makes it possible to take into full account special circumstances while applying general rules.[34] On the question of whether equity should be applied in line with legal principles (*infra legem*), or to supplement the law when it appears inadequate (*praeter legem*), or even to reject it (*contra legem*),[35] the answer still lies in the particularity of the case in hand. The "factual matrix" as described by Judge Jiménez de Aréchaga in the 1982 *Tunisia/Libya Continental Shelf* case,[36] referring to the specific circumstances of the matter, should serve as the basis for the consideration of equity. There he said:

> the judicial application of equitable principles means that a court should render justice in the concrete case, by means of a decision shaped by and adjusted to the relevant "factual matrix" of that case. Equity is here nothing other than the taking into account of a complex of historical and geographical circumstances the consideration of which does not diminish justice but, on the contrary, enriches it.[37]

In the context of economic activity and natural resources, the element of equity is especially relevant in settling damage cases between States. On the global scale, unequal allocation and distribution of wealth, derived from historical development and reinforced by the present economic order, often makes the requirement to treat like alike practically impossible and politically unacceptable. Referring to the notion of equity in international practice, one scholar observes:

> The reason for the super-abundance of references to equity and to equitable principles (concepts which do not fall within any formal category of law and of which there is no material definition) in international law over the past thirty

with international law and the principles of justice and *equity* . . .": Moscow, London, and Washington, March 29, 1972, 961 UNTS 187; Henkin, *et al.*, *Basic Documents*, p. 695 (emphasis added). In the environmental field, the recently emerging principle of common but differentiated responsibilities of developed and developing countries requires equity to be adopted as the point of departure for international law-making on the protection of the global environment. For a factual analysis of the legal claim, see R. P. Anand, *Confrontation or Cooperation? International Law and the Developing Countries* (Dordrecht, Martinus Nijhoff, 1987), pp. 155–158.

[33] Lauterpacht, *Private Law Sources and Analogies of International Law* (London, Longman, Green and Co. Ltd, 1927), pp. 60–71; see also *ibid*., pp. 275–278.

[34] Michel Virally, "The Sources of International Law," in Max Sorensen (ed.), *Manual of Public International Law* (London, Macmillan, 1968), p. 116, at p. 152.

[35] Schachter, *International Law*, p. 57.

[36] Separate Opinion, ICJ Reports (1982), p. 100, at p. 106, para. 24.

[37] *Ibid*.

years is that we are in a period of history when the entire system is foundering upon new contradictions. The dividing-up of property and territory between the individuals and peoples of our planet and the questions of political and judicial status linked with this partition are undergoing complete redefinition.[38]

This redefinition process is still ongoing. In determining how to allocate damage, this general background is an important consideration, particularly when the impact of damage carries a global character.

Of the five categories of application of equity and equitable principles listed by Schachter,[39] three in particular can be directly applied to the economic and resource fields: (1) unjust enrichment and abuse of rights; (2) allocation and sharing of resources and benefits; and (3) distributive justice. To maintain justice, the rigors of strict law have to be tempered when necessary. With regard to transboundary damage, liability is a process of balancing the interests between the relevant parties.[40] In the opinion of Quentin-Baxter, the former ILC Special Rapporteur on the topic of international liability for injurious consequences arising out of acts not prohibited by international law, liability should be considered in connection with the shared expectations of the parties in carrying out the activity in question.[41] The basis of his theory is built on equitable principles. On that note, one may ask, if equity is so often referred to for a solution, how much remains of the normativity of the rules? In principle, equity should not be regarded in contradistinction to the rule of law, but rather as part of the law.[42] As already pointed out, the

[38] Cited from Monique Chemillier-Gendreau, "Equity," in Mohammed Bedjaoui (ed.), *International Law: Achievements and Prospects* (Dordrecht and Paris, Martinus Nijhoff and UNESCO, 1991), p. 271, at p. 281.

[39] Schachter distinguishes five uses of equity and equitable principles:

(1) Equity as a basis for "individualized" justice tempering the rigours of strict law.
(2) Equity as consideration of fairness, reasonableness and good faith.
(3) Equity as a basis for certain specific principles of legal reasoning associated with fairness and reasonableness: to wit, estoppel, unjust enrichment, and abuse of rights.
(4) Equitable standards for the allocation and sharing of resources and benefits.
(5) Equity as a broad synonym for distributive justice used to justify demands for economic and social arrangements and redistribution of wealth.

See Schachter, *International Law*, p. 82.

[40] Hans Stoll, "Consequences of Liability: Remedies," in A. Tunc (ed.), *International Encyclopedia of Comparative Law*, vol. 11, p. 3.

[41] *Yearbook of the ILC* (1982), vol. II (Part One). See the third report submitted by the Special Rapporteur.

[42] The inescapable deficiency or inadequacy of international law dictates that equity must be picked up to fill gaps or lacunae in the law. Commenting on the positivist doctrine on the notion, Lauterpacht argued that "[o]nly with the proviso that it is a

development and application of law through State practice is influenced by the element of equity, which functions either in line with, or as a corrective component to, the application of rules.[43] For the very purpose of maintaining a legal order, equity is used to realize social justice and equality. Observance of law is not an aim in itself but a means to an end. In international jurisprudence, equity was often invoked as an appeal for a higher standard of legal morality. In treaty law on international liability, equity has also been included as part of the applicable law for the settlement of damages. For example, Article XII of the 1972 Convention on International Liability for Damage Caused by Space Objects,[44] provides that:

> [t]he compensation which the launching State shall be liable to pay for damage under this Convention shall be determined in accordance with international law and the principles of justice and *equity*, in order to provide such reparation in respect of the damage as will restore the person, natural or juridical, State or international organization on whose behalf the claim is presented to the condition *which would have existed if the damage had not occurred*.[45]

The latter part of Article XII is reminiscent of the *Chorzów Factory* case in which the Permanent Court of International Justice, without resorting to equity, based its decision on the principle of reparation.[46] Under the 1972 Convention, equity is applied as a legal principle complementary to the rule of international liability. In both cases, the final objective is the same, namely, to restore the situation to its original position.

In this context, the purpose of liability is to find equitable solutions to the problem of damage. As far as the legal order is concerned, equity

customary rule of international law that rules of equity, of justice, of law, or of general principles of law should, in the absence of accepted rules of positive international law, be resorted to as a source of decision, does the usual positive statement convey a true notion." He interpreted equity within the realm of law. See H. Lauterpacht, *Private Law Sources and Analogies of International Law* (London, Longman, Green and Co. Ltd, 1927), p. 63.

[43] Schachter, *International Law*, pp. 56–57.

[44] London, Moscow, and Washington, March 29, 1972, 961 UNTS 187.

[45] *Ibid*., Article XII (emphasis added).

[46] The Permanent Court of International Justice declared in the case: "The essential principle contained in the actual notion of an illegal act – a principle which seems to be established by international practice and in particular by the decisions of arbitral tribunals – is that reparation must, as far as possible, wipe out all the consequences of the illegal act and *reestablish the situation which would, in all probability, have existed if that act had not been committed*": PCIJ (1928), Series A, No. 17, at p. 47 (emphasis added).

"enriches" the law rather than weakens it.[47] It maintains the stability of the legal order by sustaining justice and fairness, which the law pursues.

Efficiency

The term "efficiency" has a dual meaning: "(a) a capacity to produce results with a minimum expenditure of energy, time, money, or materials; (b) suitability for a task or purpose."[48] In the present study, both aspects apply. By allocating damage, liability rules are intended to serve several objectives, among which are punishment and deterrence of wrongdoing, and regulation of conduct.[49] As damage is considered a negative, wasteful use of resources, efficiency requires liability rules to be formulated in such a way that they encourage the appropriate pattern of conduct for States in carrying out the relevant activities. Thus, in theory, the occurrence of transboundary damage would be reduced to a minimum and negative uses of natural resources would be avoided to the greatest extent possible.[50] For instance, the "polluter pays" principle, which has been generally adopted in the environmental field, is intended to curb polluting activity by punishing the wrongdoer and inducing cautious and efficient planning and conduct in the use of natural resources.

Given its complexity, however, several aspects relating to the efficiency element need to be further analyzed. First, in the current state of international law, transboundary damage is subject to differing regimes, depending on the type of the activity involved and the probability of transboundary damage occurring. For a few industries, such as oil shipping and nuclear energy, compensation schemes and financial funds are established by treaties to cope with accidental damage which may be seen as highly likely and as properly factored in to the cost of the activity in any event.[51] In other areas, the development of international liability rules has proved rather difficult, e.g. liability for water pollution or air

[47] *Tunisia/Libya Continental Shelf* case, Separate Opinion of Judge Jiménez de Aréchaga, ICJ Reports (1982), p. 100, at p. 106, para. 24.

[48] *Webster's Third New International Dictionary* (1986).

[49] Among their purposes are the declaration of rights, satisfaction for the aggrieved party, punishment of the wrongdoer, actual and preventive protection of the legal order by imposing sanctions upon the deed, and deterrence and education of the wrongdoer as well as prevention of his enrichment.

[50] In the field of transnational waste management, liability is used as a supplement to minimum standards. Industry is warned of severe penalties for failure to observe the minimum standards. See Louka, *Overcoming National Barriers*, pp. 19–22.

[51] In recent years, we have seen a rapid proliferation of international agreements and actions on the establishment of liability schemes, for example, for transboundary

pollution. From an economic point of view, the underlying efficiency consideration is obvious. In choosing a mechanism for transboundary damage, States have to evaluate its financial implications as well as its institutional suitability. Hartje opines: "[w]hether a given liability law can be considered economically optimal depends on the allocation of compensation between the parties."[52] In oil spill accident cases, for example, study shows that as potential victims are not in a position to take any preventive measures to avoid accidents and damage, the question of how to give the ship owner most incentive to invest in ship safety and to avoid accidents becomes essential. If strict liability instead of fault liability is imposed, the ship owner would invest more in safety measures. To answer the efficiency question of any given liability law, one has to compare its outcome with the minimum of damage and avoidance costs. Economically, if marginal damages and avoidance costs are equal, a social optimum would be achieved. However, under liability laws, it is the compensation payments rather than the actual damages that determine the investment decisions of the ship owner. If compensation payments are systematically lower than damages, the ship owner would invest less in safety measures and thus more accidents would be likely to occur.

In an oil pollution case affecting more than one country, there are a number of factors which are likely to result in lower compensation payments. One example is transaction costs for victims. When the courts of several States – i.e. the flag State, the State of the shipping company, or the State of its holding company – may have jurisdiction, victims suffering minor damage may simply forfeit their claims as the transaction costs of seeking compensation can be much higher than the actual damages, in view of the location of the court and litigation costs in another country. This effect is amplified in cases where there are a large number of individual claimants with small damage claims, and class actions are not permitted in the State of the court with jurisdiction. Moreover, even if the claimants get the award, enforcement of foreign judgments can pose a further impediment to compensation.

In oil pollution cases, the ship owner's financial inability to cover large amounts of damage claims gives rise to the consideration of imposing compulsory liability insurance. As illustrated, "often, the capital

movement of hazardous wastes and for Antarctic activities. See in particular Chapters 2 and 6 above.

[52] See Volkmar J. Hartje, "Oil Pollution Caused by Tanker Accidents: Liability Versus Regulation," *Natural Resources Journal*, vol. 24 (1984), p. 41, at p. 44. See generally *ibid.*, pp. 44–48.

of a shipping company consists only of a ship, owned by a separate corporate entity. As a consequence of a tanker accident, this capital is lost or its scrap value too low to cover all compensation."[53] Even if the ship itself is insured, such insurance may not meet the damages, which could be much higher than the value of the ship. The liability mechanisms under the international conventions on oil pollution have taken all these elements into account. Unifying national rules on jurisdiction, applicable law and the enforcement of foreign judgments may help to reduce the transaction costs for victims to claim damages and at the same time give incentives to the ship owner to take preventive measures. Thereby the costs of compensation are dispersed through market mechanisms.

In most cases, however, the matter of transboundary damage in the final analysis is a balancing of interests between the States concerned. The element of efficiency ensures that such a balancing would result in the optimal utilization of the shared resources. This consideration is particularly pertinent when the resources in question are physically shared and States are mutually affected by their respective uses, where different uses and interests of States can be reasonably compared and accommodated on a manageable basis. At the national level, different uses may be compared and calculated on the basis of market prices[54] or determined by the same social priorities and objectives, e.g. environmental protection, fresh water conservation, etc. However, it is hard to determine the interests of States by such a means unless their activities share a common market, such as in the case of maritime transportation of oil, or pursue an agreed objective as arrived at among States, for example, protection of the ozone layer. Under these circumstances, the international community has reached the consensus that the most effective and efficient responses to the negative impact of human activities on the global environment would be either to take joint actions or to harmonize their national laws. Thus States will consider to what extent their interests in different uses can be best balanced. They will not accept any legal obligations simply because they establish an order or set up "appropriate behavior." Instead, they will consider whether it is more efficient for them to conduct the relevant activities under the legal

[53] *Ibid*., p. 47.

[54] For an economic analysis of harmful effects caused by torts arising from normal production activities, particularly on the problem of social cost in national practice, see R. H. Coase, *The Firm, the Market and the Law* (Chicago, University of Chicago Press, 1988).

obligations. In weighing the balance, of course, the individual interests of a State determine whether the State will accept the obligations. In establishing a legal regime, the efficiency element will be based on the overall consideration of the activity in question.

Practice has shown that States involved in a transboundary damage case often prefer to negotiate a pragmatic solution to the issue of damages. Instead of deciding which State should be liable, the eventual solution could be that the State in a better position to make up for damage bears the costs of restoring the situation to its original position. Such pragmatism in State relations in settling disputes arising from the use of natural resources can be attributed to a number of factors, which may well go beyond the confines of the particular case. Although the bargaining power of the States concerned may be a factor, a lasting solution can only be found in those cases where all the States involved believe that damage has been equitably and efficiently dispersed.

The dispute over the salinity of the Colorado River between the United States and Mexico is an example. The dispute was finally settled by the US undertaking to reduce the salinity of the water to a usable level.[55] As the upstream State, the United States was in a better position to address the damage it caused. Further, given its technological and financial capabilities, it was more efficient for the US to reduce the water salinity rather than to allow the infected waters to continue flowing into the neighboring country causing damage, and paying compensation for the damage later.

In the Chernobyl case, when serious consequences caused by the accident at the Chernobyl nuclear power plant were discovered and reported in the European countries, it was proposed by several governments to seek compensation from the Soviet Union for the damage. These claims were criticized as lacking in political common sense and were not pursued. In hindsight, the incident, which might be compared to a large-scale natural disaster calling for immediate rescue operations, prompts a rethink about the nature of catastrophic damage and the way in which it may be handled. The urgent requirements in the source State immediately following an accident of this scale, such as rescue operations, evacuation and resettlement of the affected residents, medical treatment of the injured, etc., place considerable financial pressures on the source State. Whether it is sensible to reallocate the limited resources available

[55] For the result of the settlement, see *ibid*., Epilogue, p. 16.

to compensate more distant injured States for their contaminated dairy food and vegetables at this time of crisis in the source State is a matter of policy. Compensation for such damage would mean allocating the resources that were needed at home for more urgent uses, and possibly in order to prevent a humanitarian catastrophe, to places where there were more resources available to cope with the relatively minor impact of the disaster.

Needless to say, with national interests at the core, allocation of resources at the international level touches on the thorny issue of sovereign rights and the interests of States. It would be too simplistic to judge what is efficient and what is not in absolute terms. If there were previously arranged financial guarantees or insurance mechanisms for nuclear accidents, the matter of compensation would be different. In the case of such large-scale damage as that caused by the Chernobyl disaster, however, imposing a general rule of international liability for transboundary damage may fail to provide any guidance as to where best to allocate the available resources. This is by no means to suggest that a wealthier country should not be entitled to remedy for damage caused by a poorer country simply because it has more resources. The point here is that liability law is only a part of the response to unexpected transboundary damage. The extent to which States can afford to spare their resources to back up such a legal regime on international liability is crucial.

Institutionally, liability rules provide predictability and certainty to the outcome of legal actions for damages. So far, most environmental disputes have been settled through negotiations between the relevant parties. For example, in the case of the crash of the Soviet nuclear-powered satellite in Canada in 1978, the Soviet Government and the Canadian Government ultimately negotiated the terms of compensation to Canada.[56] In settling damages, in some cases States refer to general principles of international law, while in others the author State explicitly denies international liability, even though it may have been ready to pay compensation *ex gratia*. This is particularly true with activities conducted by States and military operations.[57] In practical terms, negotiations could be more efficient and effective than international litigation

[56] See Alexander F. Cohen, "Cosmos 954: The International Law of Satellite Accidents," in W. M. Reisman and A. R. Willard (eds.), *International Incidents: The Law that Counts in World Politics* (Princeton, Princeton University Press, 1988).

[57] For most nuclear damage caused by military tests, the source State governments would not accept liability but made compensation *ex gratia*.

or arbitration.[58] But, as they are isolated incidents, they do not generate any normative impact on the conduct of States in general. Therefore, the adoption of international liability rules will be conducive to formulating proper rules of conduct for a more efficient and reasonable utilization of resources.

Finally, it should be pointed out that in recent years States have become increasingly aware that prevention of environmental damage is much more economically efficient and environmentally sound than reparation of damage. Instead of trying to identify who is responsible for what damage, States are beginning to focus their attention on preventive and mitigating measures. For example, in dealing with "acid rain," the 1979 Convention on Long-range Transboundary Air Pollution[59] purposely left out the issue of international liability for air pollution. It merely laid down provisions on reduction and prevention of the harmful effects of industrial fumes. The prevailing attitude appears to be that, while the sources of air pollutants and the cause of their discharge remain to be further studied, it would be inappropriate to deal with liability.

The reason for giving priority consideration to prevention rather than reparation is two-fold. First, the cost of reparation of environmental damage may be far greater than that of prevention. Worse still, in some cases the damage is irreversible no matter what remedial actions are taken. Generally it is much more efficient to prevent damage than to remedy it. Secondly, States are becoming more concerned with the protection and preservation of existing resources, such as clean air, fresh water, and land soil. They want to be compensated for damage they have suffered, but would rather have the damage cease and future occurrences prevented. In international relations, cooperation in prevention to avoid and reduce transboundary damage is considered more useful and realistic than reparation and compensation.

While general principles of international law on transboundary damage may increase States' inclination to use more sensibly and carefully the resources within their territory with due regard to the interests of their neighboring countries, in the case of particular damage, such general principles are not sufficient to provide legal grounds for damage settlement. As discussed above, certain objectives have to be met before States will accept binding rules on these subjects. The current state of

[58] On the inefficiency of litigation, see Stephen McCaffrey, "Expediting the Provision of Compensation to Accident Victims," in Handl and Lutz, *Transferring Hazowdous Technologies*, p. 199.

[59] 1302 UNTS 217; Henkin, *et al., Basic Documents*, p. 713.

the law on international liability for transboundary damage illustrates the inadequacy of legal developments in this field.

The basis of international liability

When an activity conducted in one country causes injuries in the territory of another country, what international obligation arises on the part of the source State, and on what legal basis is this obligation founded? Given the amount of literature so far written on the subject, this should not be a difficult question to answer. According to the basic notion of territorial sovereignty, a State is obligated to respect the rights and interests of other States in return for the equal respect of its own. This is a minimum requirement for the existence of a community of equal members. As Eagleton points out:

> If he desires the community to respect his rights, it is only on condition that he respect the rights of others; and thus legal rights have appeared, entailing corresponding duties which limit his theoretical freedom of action. The law which imposes upon him the obligation of respecting the rights of others, in order that his own rights may be respected, is based upon the common interest of all the members of the political group to which he belongs. If, then, an individual violates a law, he may injure another individual, or perhaps the entire society of which he is a member, with the legal consequence that he is obliged to make reparation – that is, to restore as nearly as possible the condition which he destroyed.[60]

In the modern world, this reciprocal relationship between States is further enhanced by the increasing interdependence of States facilitated by the advancement of technology and communication.

Mutuality between nations bears on the fundamental doctrine of sovereignty. In terms of territorial supremacy, the doctrine refers to the principle of territorial sovereignty and the principle of territorial integrity. The former denotes the rights and freedom of a State over its territory, the latter denotes the independence and inviolability of its territory from other States. They are two sides of the same coin. These two principles are not absolute in theory, nor have they ever been so in practice. But even in relative terms, their application still creates special legal problems and obstacles in cases of transboundary damage.

In State practice, there are a number of cases which bear directly on the issue of State responsibility for acts done in one State's territory but

[60] Eagleton, *The Responsibility of States*, p. 4.

causing damage to other States, such as the *Corfu Channel* case (*Britain/Albania*),[61] the *Trail Smelter* arbitration (*US* v. *Canada*),[62] the *Nuclear Tests* cases (*Australia/France*; *New Zealand/France*),[63] and others which relate to the use of transborder waters.[64] In the oft-cited *Trail Smelter* arbitration, the Tribunal held:

> under the principles of international law, as well as of the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequences and the injury is established by clear and convincing evidence.[65]

Thus the Tribunal propounded the general principle that a State, under international law, is prohibited from causing damage to another State, as dictated by the maxim *sic utere tuo ut alienum non laedas* ("use yours in such a way as not to injure others"). In theory, mutual respect and mutual forbearance, as determined by the reciprocity and interdependency between States, set up the legal equilibrium of their relations. When this equilibrium is broken by the occurrence of damage, the source State should restore the situation to its original position by making reparation to the injured State. If put into practice, however, the logical consequence of this theory would be absolute protection against any external disturbance. Thus, we find ourselves in a continuous loop. To make the rule of liability definite and applicable, additional criteria and considerations must be taken into account.

The first area for consideration related to transboundary damage is the regime of State responsibility,[66] which governs the responsibility and

[61] ICJ Reports (1949), p. 4. [62] RIAA, vol. III (1938, 1941), p. 1905.

[63] ICJ Reports (1973), pp. 99 and 135; ICJ Reports (1974), pp. 253 and 457.

[64] For example, the *Lake Lanoux* case (*Spain* v. *France*), RIAA, vol. XII (1957), p. 281; *Gut Dam* case (*United States of America* v. *Canada*), 8 ILM 118 (1969).

[65] RIAA, vol. III (1938), p. 1911, at p. 1965.

[66] For a long time, however, the bulk of damage cases on State responsibility primarily concerned injuries to foreign nationals. The law and jurisprudence of international courts and arbitrations centered round the status, the standard of treatment, and the diplomatic protection of aliens. There is a large amount of literature on the subject of State responsibility for injury to aliens, among which see the early codification of the item of State responsibility by the ILC between 1956 and 1960. In particular, see *Yearbook of the ILC* (1969), vol. II, pp. 229 *et seq.*; also F. V. García Amador, L. B. Sohn, and R. R. Baxter, *Recent Codification of the Law of State Responsibility for Injuries to Aliens* (Dobbs Ferry, Oceana Publications, 1974). This approach, when first adopted by the ILC upon the research and study of some distinguished institutions of international law, was repeatedly questioned and criticized by developing countries for the narrow scope of the law and its conspicuous favoritism towards industrial powers. They deemed the

liability of States for unlawful acts. The fundamental premise is that "[e]very internationally wrongful act of a State entails the international responsibility of that State."[67] According to Article 2 of the ILC's Articles on State Responsibility, there are two elements of an internationally wrongful act of a State.[68]

The first element is that there should be a breach of an international obligation of the State. If a State by its act or omission breaches an international obligation it has undertaken either by treaty or under customary international law, it incurs international responsibility. The obligation concerned should be valid for the acting State at the time when the wrongful act takes place.[69] The characterization of an act of a State as internationally wrongful is governed by international law, even if such an act is lawful under internal law.[70] The State in violation of its

approach unjust, inequitable, and essentially colonial in character, and therefore, to a large extent, obsolete. One of the objections to the law was that the rules were without universality, based purely on the custom of imperialist countries formed during the eighteenth and nineteenth centuries. See the study on State Responsibility for Aliens produced by the Harvard Institute of International Law; Guha Roy, "Is the Law of Responsibility of States for Injuries to Aliens a Part of Universal International Law?," *American Journal of International Law*, vol. 55 (1961), p. 863, at pp. 888–890; Henkin *et al.*, *International Law*, pp. 683–686. After a long and controversial debate on the basic principles of State responsibility, the ILC ultimately developed a new approach: it extended the scope of the law to any breach of international obligation, thus rendering it "a general and independent category in international law." See R. Lillich (ed.), *International Law of State Responsibility for Injuries to Aliens* (Charlottesville, University Press of Virginia, 1983); Francisco V. Garcia-Amador, "State Responsibility and Some New Problems," *Recueil des Cours*, vol. 94 (1958-II), pp. 369–487; Report of the ILC on its Thirtieth Session, *Yearbook of the ILC* (1978), vol. II (Part Two), p. 74; Philip Allott, "State Responsibility and the Unmaking of International Law," *Harvard International Law Journal*, vol. 29 (1988), p. 1.

[67] Article 1 of the ILC's Articles on State Responsibility annexed to General Assembly Resolution 56/83 of December 12, 2001. At its forty-eighth session in 1996, the ILC completed the first reading of the Draft Articles on State Responsibility and decided to submit them to the State governments for their comments and observations. At its forty-ninth session, the ILC established a working group to address matters dealing with the second reading of the topic. At its fifty-third session in 2001, the ILC adopted the Draft Articles on second reading. For an historical review of the work by the ILC on the topic, see Report of the International Law Commission on the Work of its Fifty-First Session (May 3–July 23, 1999), GAOR, Fifty-Fourth Session, Supp. No. 10 (A/54/10), pp. 91–95. See also Crawford, *Articles on State Responsibility*, Introduction, pp. 1–60, and Appendix 1, Drafting History, pp. 315–347.

[68] Article 2 of the Articles on State Responsibility reads as follows: "There is an internationally wrongful act of a State when conduct consisting of an action or omission: (a) Is attributable to the State under international law; and (b) Constitutes a breach of an international obligation of the State."

[69] *Ibid.*, Article 13. [70] *Ibid.*, Article 3.

international obligation must cease the unlawful act and fulfill its international obligation.[71] The delinquent State is responsible for making reparation for damage caused to the injured State.[72] The rules of State responsibility therefore govern the legal relations derived from the breach between the injured State and the delinquent State, as distinct from the rules that determine the legality or illegality of the conduct of a State. In the words of Ago, the former Special Rapporteur for the topic:

> it is one thing to define a rule and the obligation it imposes, and another to determine whether there has been a breach of that obligation and what should be the consequences of the breach. Only the second aspect comes within the sphere of responsibility proper.[73]

In his terminology, the rules of conduct are the "primary rules," while the rules of responsibility are the "secondary rules."[74] If a State breaches its international obligation undertaken under the primary rules of conduct, the secondary rules of international responsibility will come into play. The injured State to which the acting State owes the obligation has the right to request that the obligation be fulfilled or to resort to proper recourse, either legal or political, for reparation.

The second element of an internationally wrongful act of a State is that the act or omission that constitutes a breach of international obligation should be attributable to the State and the act should thus be considered the act of the State.[75] According to the doctrine of attribution, a State must take responsibility at the international level for acts not in conformity with its international obligations conducted by members of its "organization" – its organs or agents.[76] Although "[a] State

[71] *Ibid*., Articles 29 and 30. [72] *Ibid*., Article 31.

[73] *Yearbook of the ILC* (1973), vol. II, p. 170. [74] *Ibid*., p. 169.

[75] See Part One, Chapter II of the Articles on State Responsibility, entitled "Attribution of Conduct to a State." Note the conceptual difference between the notion of an act of the State under the rules of State responsibility, and the "act of State" doctrine as practiced in some national laws, e.g. the United States and the United Kingdom. The latter refers to the principle whereby the State or the sovereign may claim judicial immunity from the jurisdiction of its national courts for certain acts. For a general introduction to the concept of "acts of State" under national laws, see R. Bernhardt (ed.), *Encyclopedia of Public International Law* (Amsterdam, North-Holland, 1992), vol. 1, pp. 17–20. In the final Articles on State Responsibility, the term was changed to the "conduct of the State."

[76] Chapter One, Part II of the Draft Articles provides the specific rules of attribution on the conduct of State organs, officials, international organizations, etc. The gist is that the acts must be done with the authority, or with the authorization, of the State, or under the control of or in fact on behalf of the State. The internal legal aspects regarding the position, empowerment, or competence of the actor is irrelevant in international law.

owes at all times a duty to protect other States against injurious acts by individuals from within its jurisdiction,"[77] a State is only responsible for acts of its own under international law.

In the literature, this responsibility incurred by the State itself is termed "original responsibility," in contrast to "vicarious responsibility" which refers to State responsibility for unlawful acts perpetrated by individuals in their private capacity. Although the State plays no direct part in the action, circumstances may suggest that under international law it should be held accountable for failing to take preventive measures and therefore be indirectly responsible for the act.[78] The theory was popular at a time when the regime of State responsibility was primarily concerned with the treatment of aliens. In contemporary legal practice, when the rules of State responsibility become secondary to the rules of conduct, the categorization is of little practical value.[79]

The approach adopted by the ILC consequently has a direct bearing on the question of transboundary damage. By placing the origin of State responsibility on a breach of international obligation committed by an act attributable to the State, the content of the primary rules becomes essential for the determination of responsibility. What constitutes a breach depends on what obligations international law imposes on the acting State.[80] In the Draft Articles on first reading four types of general obligations were identified: first, the international obligation that a particular course of conduct should be adopted;[81] secondly, the international obligation that a specified result should be achieved;[82] thirdly, the international obligation to prevent a given event;[83] and, finally, the international obligation to provide local remedies to aliens.[84] Being secondary

[77] Eagleton, *The Responsibility of States*, p. 80.

[78] R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (9th edn., Harlow, Longman, 1992), vol. I, pp. 501–502.

[79] The theory was not accepted by the ILC in its Articles on State Responsibility. Apparently, once the duty to take preventive measures against injury to the interests of a foreign State is established, the State is obliged to do so. Failure to take action is an omission of the State itself and thus gives rise to the international responsibility of the State. Therefore, it is not necessary to draw the distinction between original and vicarious responsibility.

[80] Brownlie is right in saying that "[i]t must always be borne in mind that the rules relating to State responsibility are to be applied in conjunction with other, more particular, rules of international law, which prescribe duties in various precise forms": Brownlie *System of the Law of Nations*, p. 40.

[81] See Article 20 of the Draft Articles on State Responsibility, A/CN.4/L.528/Add.2, p. 9; Report of the ILC on its Thirtieth Session, *Yearbook of the ILC* (1978), vol. II (Part Two), p. 80.

[82] *Ibid*., Article 21. [83] *Ibid*., Article 23. [84] *Ibid*., Article 22.

rules, these provisions simply refer to the *kinds* of international obligation without stating what *exactly they are.* Such elements as fault,[85] damage,[86] and injury are thereby dissociated from the rules of State responsibility. On second reading, this characterization of international obligations was accordingly deleted.[87]

In defining the rules of international liability for transboundary damage, arguments differ over one crucial point: whether responsibility should devolve by virtue of conduct or result. In the former scenario, a State must fail to perform certain conduct as required by its undertaking under international law before it incurs international responsibility, whereas, in the latter, the injurious consequences alone suffice to give rise to international responsibility of the author State, provided that agency and causal connection are established.[88] With the new approach to the regime of State responsibility, the issue of transboundary damage may have to be re-examined under both primary rules and secondary rules. On the one hand, international liability primarily concerns reparation for transboundary damage: "State responsibility as a matter of

[85] For quite some time, the concept of fault in State responsibility has been rather confusing. In national laws, it contains both the subjective aspect of the actor (willful or negligent) and the objective aspect (breach of law) of the wrongfulness of the act. With regard to an international person – that is, a State – it is hard to determine the subjective element in many circumstances. In addition, the willful misconduct of the agent who actually performed the act in question may or may not be attributable to the State. Later, the ILC left aside the notion of fault and used instead the term "breach of international law."

[86] *Yearbook of the ILC* (1973), vol. II, p. 183; also Bernhard Graefrath, "Responsibility and Damages Caused: Relationship Between Responsibility and Damages," *Recueil des Cours*, vol. 185 (1984-II), pp. 9–150. Opposing views to Ago's theory to establish State responsibility purely on the breach of international obligation, thus dismissing elements such as fault and damage, are also not lacking. Jiménez de Aréchaga and Tanzi argue: "The requirement of damage is really an expression of the fundamental legal principle that no one can maintain an action unless he has an interest of a legal nature. It is always the element of damage suffered by one State that entitles that particular State to claim against the State which caused the damage, and demand redress": Eduardo Jiménez de Aréchaga and Attila Tanzi, "International State Responsibility," in Mohammed Bedjaoui (ed.), *International Law: Achievements and Prospects* (Dordrecht and Paris, Martinus Nijhoff and UNESCO, 1991), p. 347, at p. 349.

[87] Report of the ILC, Fifty-Second Session, May 1–June 9 and July 10–August 18, 2000, GAOR, Fifty-Fifth Session, Supp. No. 10 (A/55/10), p. 127.

[88] Brownlie states that "[t]echnically, objective responsibility rests on the doctrine of the voluntary act: provided that agency and causal connection are established, there is a breach of duty by result alone . . . It is believed that the practice of States and the jurisprudence of arbitral tribunals and the International Court have followed the theory of objective responsibility as a general principle (which may be modified or excluded in certain cases)": Brownlie, *System of the Law of Nations*, pp. 38–39.

law is, and in principle should be, limited to the obligation to make reparation, to compensate."[89] However, on the other hand, if secondary rules are followed under the current law, the activity that gives rise to transboundary damage may have to cease altogether, which goes beyond the obligation to make reparation. Again the exact content of the obligation as provided under the primary rule becomes determinative in invoking international liability. In this connection, two issues relating to the basis of international liability – the notion of fault and the concept of strict liability – should be examined.

The notion of fault

The principle of fault in international law is based on the Roman law doctrine of liability as dependent on *culpa* and was introduced by Grotius. While it serves a valuable purpose, the concept is not free from problems in international law. The figurative personality of States as subjects of international law poses difficulties with regard to the subjective fault of the person who actually carries out the conduct and the fault on the part of the State.[90] In principle, malicious intent or culpable negligence of officials acting on behalf of their State does not necessarily constitute a component element of the fault of the State. Provided there is a breach of an existing international obligation, the State should be held internationally responsible, no matter whether there is any wrong on the part of the officer who actually carried out the act in question.

Even though it is generally accepted as the common denominator entailing liability for injury in municipal laws, fault is a troublesome notion in private law. It has different connotations under different legal systems,[91] and changes with time and place as the social relations it governs change.[92] Its complexity is responsible to some extent for the current confusion among scholars over the basis of international liability.

[89] *Ibid*., p. 33 (emphasis added).

[90] H. Lauterpacht, *Private Law Sources and Analogies of International Law* (London, Longman, Green and Co. Ltd, 1927), p. 134. In cases concerning injuries to aliens, this element has a direct and often important bearing on the law: *ibid*., pp. 135–136.

[91] For an analysis, see Karl Zemanek, "Causes and Forms of International Liability," in B. Cheng and E. D. Brown (eds.), *Contemporary Problems of International Law*: *Essays in Honor of Georg Schwarzenberger on His Eightieth Birthday* (London, Stevens and Sons, 1988), p. 319.

[92] See Wex S. Malone, "The Role of Fault in the History of Negligence," in Wex S. Malone, *Essays on Torts* (Baton Rouge, Louisiana State University, 1986), pp. 1–38.

Fault denotes a breach of the duty of reasonable care owed to those who, one may or ought to anticipate, will be injured by a failure to observe that standard of care. It occurs either by an intentional act or through an act of negligence. The plaintiff is required to prove the culpability (*culpa*) of the defendant for tort liability under Anglo-American common law.[93]

In his study on fault from an historical perspective, Malone observes that the eventual emergence of the notion of fault for damage was the result of the separation of crime and tort in early English law. In earlier centuries, when wrongful or blameworthy conduct was distinguished from injurious acts with legally accepted justifications, this indicated that society used court decisions to inject social values into private conduct.

> the element of "wrong" means no more than a default in performance of the unqualified duty to keep safely. The defendant is sued, not because he has been a careless wrongdoer, but because where he should have followed the exacting requirements of the *custom*, he did not do so.[94]

At the same time, strict liability was also imposed on some acts, e.g. the escape of fire, and damage to crops occasioned by the trespass of domestic animals, due to the prevailing social concerns about these acts at that time.[95] However, it was not until the advent of the Industrial Revolution in the eighteenth century that the problem of inadvertent injury attracted much legal attention. Previously "there were comparatively few ways in which one person could suffer an injury because of the mere neglect or inadvertence of another."[96] The appearance of firearms, industrial machinery, dangerous substances, and congested traffic eventually changed the course of tort law. The concept of negligence was adopted by court decisions, but the definition of negligence as a failure to use

[93] Two elements are required to establish fault: intentional or negligent wrong, and the breach of a legal duty. This can be seen from the English court ruling: "The mere fact that a man is injured by another's act gives in itself no cause of action: if the act is deliberate, the party injured will have no claim in law even though the injury is intentional, so long as the other party is merely exercising a legal right: if the act involves a lack of due care, again no case of actionable negligence will arise unless *the duty* to be careful exists": *Grant* v. *Australian Knitting Mills Ltd* [1936] AC 85, at p. 103, cited from R. W. M. Dias and B. S. Markesinis, *The English Law of Torts* (Brussels, E. Bruylant, 1976), p. 29.

[94] Wex S. Malone, "The Role of Fault in the History of Negligence," in Wex S. Malone, *Essays on Torts* (Baton Rouge, Louisiana State University, 1986), p. 19, n. 71 (emphasis added).

[95] *Ibid*., p. 12. For an interesting explanation of the legal considerations relating to the social conditions and needs of the time, see *ibid*., p. 22.

[96] *Ibid*., p. 14.

the care of a reasonable prudent man was a later development. For some time, there was no agreement on a single basis for damages, whether to start with fault or with no fault. Until the twentieth century, the proof of a defendant's negligence or intention was generally accepted as an essential requirement for recovery. Malone concludes that:

> The conception of negligence or liability upon a flexible standard of care is not likely to come into being until society has reached a stage where diverse economic and social needs have emerged and are in lively competition with each other. The formation of a mature set of values of this kind must await the appearance of certain clearly definable human activities in each of which an appreciable number of human beings are engaged.[97]

Malone goes on to say that it is only when the different interests of such social groups are in conflict that the balancing of interests by the court becomes necessary.

The notion of fault in civil law evolved in a similar fashion over time. Delictual liability, originating in Roman law, was grounded in fault. Grotius stated: "Pure misfortunes do not deserve punishment, nor do they obligate anyone to make good the damage. Wrong acts do both."[98] Under Article 1382 of the French Civil Code,[99] a finding of fault does not merely require evidence of intention or negligence but also requires that the conduct complained of must be in violation of a societal norm.[100] One school of thought considers fault to be a breach of a preexisting obligation, either written into a specific statute, or contained in a general legal principle.[101] Another considers that fault is an error of conduct.[102] Delictual fault is a concept based on law and not on fact.[103]

In the German civil law,[104] as in the common law, there is no legal duty to act in the interest of another. Consequently, while every act that infringes a protected right is unlawful, omissions are unlawful only if

[97] *Ibid*., pp. 23–24.

[98] See Izhak Englard, *The Philosophy of Tort Law* (Aldershot, Dartmouth, 1993), p. 93.

[99] Under the French Civil Code, there are five articles relating to civil liability, Articles 1382–1386. Article 1382 provides that "every single act of man which causes damage to another obliges him through whose fault it occurred to make it good." Article 1383 reads: "everyone is answerable for the damage caused not only by his act but also by his carelessness or imprudence": cited from Pierre Catala and John Antony Weir, *Delict and Torts: A Study in Parallel* (New Orleans, Institute of Comparative Law of Tulane University, 1965), p. 606.

[100] Dias and Markesinis, *The English Law of Torts*, p. 56.

[101] Pierre Catala and John Antony Weir, *Delict and Torts: A Study in Parallel* (New Orleans, Institute of Comparative Law of Tulane University, 1965), p. 607.

[102] *Ibid*. On the notion of fault, see *ibid*., pp. 607–611.

[103] *Ibid*., p. 611.

[104] Section 823 of the *Burgerliches Gesetzbuch* (BGB); Dias and Markesinis, *The English Law of Torts*, p. 57.

there is a legal duty to act.[105] The German, Austrian, and Swiss civil codes demand proof of fault to establish liability, i.e. a general requirement of negligence.[106] For certain abnormally dangerous activities, these laws directly impose strict liability on the actor, coupled with insurance requirements.[107]

This tracing and comparison of the concept of fault in different legal systems indicates two important issues. First, fault needs a precise agreed definition to be applied in international law, as different connotations in various municipal laws might lead to confusion. If the notion means merely a breach of a legal obligation, the content of that obligation should dictate under what conditions liability should arise. If the injurious act constitutes a breach of an obligation under international law, the act *per se* is a fault on the part of the actor. The notion of *culpa*, the subjective condition of wrongfulness of the actor, therefore, would have no part in determining liability. On the other hand, if the notion *culpa* is to be adopted in international law, the concept of fault should be defined as such. The basis of liability would then constitute both the fault of the actor and the breach of an international obligation (*culpa* and *dolus*).

Secondly, domestic legal developments on the notion of fault demonstrate that fault is not only a useful denominator for liability, drawing the line between what is legally protected and what is not, but more importantly it is also a useful tool to balance different social interests. In the international context, the debate over the notion of fault is not a theoretical issue but a policy question on how strict rules of international liability should be imposed on States for transboundary damage. In this regard, the balance of interests ultimately boils down to two aspects of the doctrine of sovereignty: in accordance with the principles of territorial sovereignty, the acting State would insist on its right to conduct activities within its territory, while the injured State would invoke the principle of territorial integrity to contend that the acting State has the duty to pay compensation for damage it caused outside its borders. If fault comprises the notion *culpa*, the acting State would not be held responsible for transboundary damage *per se* unless it is proved that the

[105] Under German law, there are generally four categories of duty: duties arising from family relations, from contractual relations, from the law, and from preceding dangerous activities. *Ibid*.

[106] Germany, section 823 of the BGB; Austria, section 1053 of the Civil Code; Switzerland, Article 41 of the *Code des Obligations*, which corresponds to the content of Article 1382 of the French Civil Code: see Hardy, "Nuclear Liability," p. 235, n. 3.

[107] *Ibid*.

State has intentionally or negligently failed to fulfill its international obligation. If the notion only refers to a legal duty under international law, the content of the duty would determine to what extent the acting State should be liable for its action. In both cases, the injured State has to prove at least two things: first, that there is a legal duty on the acting State in carrying out the activity to avoid causing damage to other States; and, secondly, that the acting State has failed to observe this obligation. On the first point, the injured State tends to invoke the principle of territorial integrity to claim that the acting State is under an international obligation not to cause transboundary damage.

But, as mentioned above, this principle alone is not sufficient to ascertain exactly what is permissible and what is not under international law. In analyzing the concepts of a lawful act and an unlawful act, Akehurst takes the view that:

> The fact that operating a smelting plant is permitted by international law does not necessarily mean that all acts committed in the course of that activity are permitted by international law; the *activity* of operating a smelting plant is lawful, but the *act* of discharging fumes from that plant is not lawful.[108]

In practice, however, it is hard to presume that any smelter can operate without discharging industrial fumes. The degree of permissible discharge is a technical criterion, which may differ from time to time and between States, given the level of industrial development. Consequently we cannot say that international law permits both lawful acts *and* unlawful acts, but must ask to what extent the discharge of fumes may constitute an unlawful act. For the purpose of imposing international liability, therefore, legal rules must be precise and concrete, and directed particularly at the activity concerned.

Strict liability and liability for risk on the international plane

As stated above, strict liability is not a recent legal development for tortious injury, nor is it uncommon.[109] The purpose of imposing strict

[108] M. B. Akehurst, "International Liability for Injurious Consequences Arising Out of Acts not Prohibited by International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 8. This is quite a different interpretation from what the ILC perceived. According to Akehurst's theory, the causation of harm is an unlawful act, thus the rules of State responsibility can readily apply.

[109] For a survey on the adoption of the rule of strict liability in municipal legal systems, see a study prepared by the legal division of the Secretariat of the United Nations at the request of the ILC for the deliberations on the topic of "International Liability for

liability in the common law is primarily to overcome the unfair situation where a victim who suffered a damage from certain hazardous activities could not obtain compensation simply because he was unable to prove intent or culpable negligence on the part of the defendant. Strict liability is used to shift the burden of proof. Under French law, according to Article 1384(1) of the French Civil Code,[110] the plaintiff has only to show that he has suffered harm from an inanimate object in the defendant's keeping. In order to rebut the presumption thus placed upon him, the "guardian of the thing" must then define the circumstances so as to prove that the accident was caused either by the intervention of *force majeure*, or by the act of the plaintiff himself, or by the unforeseeable and irresistible act of a third party. If he fails to do so, the victim recovers in full. In other words, so long as the injurious act is not caused by force beyond the control of the defendant, he should be liable, thus transforming the notion of fault into the notion of a breach of duty, without any judgment on the subjective condition of the actor. In this way, French law managed to cope with ultra-hazardous activities without providing for strict liability.[111] So long as the plaintiff proves the damage he suffers and the causal relationship between the damage and the act of the defendant, he may recover compensation.

In some cases, even when the actor has exercised utmost care by taking preventive measures, damage may nevertheless occur, due to the intrinsic nature of the activity. Therefore, strict liability in one form or another is imposed in many legal systems for damage caused by this kind of activity. Generally speaking, strict liability is "the public response that is to be expected whenever the society of a given time and place

Injurious Consequences Arising from Acts not Prohibited by International Law," *Yearbook of the ILC* (1985), vol. II (Part One) (Addendum), pp. 77–82. It illustrates that there is no single theory of the basis of strict liability. The important point is that, in general, fault liability is the main form of tortious liability.

[110] For the French reference, see H. Mazeaud, L. Mazeaud, and A. Tunc, *Responsibilite Civile* (5th edn., 1958), vol. 2, p. 342; A. Tunc, *La Responsabilité Civile* (2nd edn., Paris, Economica, 1989).

[111] At the turn of the century, when industrialization and technological development called for stricter rules of liability, the notion of risk was proposed as the basis for objective liability. See a special study of one important theory on risk in Daniel Jutras, "Louis and the Mechanical Beast or Josserand's Contribution to Objective Liability in France," in Ken Cooper-Stephenson and Elaine Gibson (eds.), *Tort Theory* (North York, Captus University Publications, 1993), pp. 317–341. Josserand proposed the risk–profit theory, believing that law has to respond to the changing needs of society. Without altering the notion of fault, he advocated an additional basis of liability, which is more social in character and was meant to cover different instances. In his view, objective liability was a socio-economic concept. See *ibid*., p. 334.

must deal with specific perils which it has come to recognize as serious threats to its welfare."[112]

Historically, the rule of strict liability in the Anglo-American common law represents a special concern of society that the necessity for a moral argument of fault must be overridden in some cases. In the early cases of strict liability, the rule was limited to the escape of wild animals, or the "unnatural use" of land. In this respect, an often-cited English case is *Rylands* v. *Fletcher*.[113] There, the defendants employed independent contractors to construct a reservoir on their land, which was separated from the plaintiff's colliery by intervening land. Unknown to them, beneath the site of the reservoir there were some disused shafts connecting their land with the plaintiff's mines. The independent contractors were negligent in failing to discover this. Water from the reservoir burst through into the shafts and flooded the plaintiff's mines. The defendants were held personally liable, despite the absence of fault. This case opened a new chapter in the law of torts on the theory of strict liability,[114] but the dominant faith in fault liability as a moral imperative was evident in later nineteenth-century court decisions.[115] It was only when later industrialization and technology, with their manifold risks and dangers, posed serious social problems that the rule of strict liability was given a greater role to play to counterbalance the negative aspects of these socially desirable, but inherently dangerous, activities.

Strict liability for certain ultra-hazardous activities is adopted by many municipal legal systems. For example, the American Law Institute's *Restatement of the Law of Torts* imposes strict liability for ultra-hazardous activities. Section 519 reads:

1. One who carries on an abnormally dangerous activity is subject to liability for harm to the person, land or chattels of another resulting from the activity, although he has exercised the utmost care to prevent the harm.
2. This strict liability is limited to the kind of harm, the possibility of which makes the activity abnormally dangerous.[116]

[112] Wex S. Malone, "The Role of Fault in the History of Negligence," in Wex S. Malone, *Essays on Torts* (Baton Rouge, Louisiana State University, 1986), p. 23.

[113] (1865) 3 H and C 774; (1868) LR 3 HL 330 (House of Lords).

[114] Dias and Markesinis, *The English Law of Torts*, p. 180.

[115] From the outset there was a concomitant desire on the part of the court to restrain the ambit of the application of *Rylands* v. *Fletcher*: *ibid*.

[116] American Law Institute, *Restatement of the Law (Second): Torts 2d* (St. Paul, American Law Institute, 1977), vol. 3, section 519. Section 520 provides that:

Coupled with the tightened rules of liability, statutory laws on strict liability and insurance for industrial risk also developed in Germany,[117] Austria,[118] and Switzerland.[119] In Chinese civil law, while fault liability is the main form for an act or omission unlawfully infringing the rights of another person,[120] strict liability is also provided for ultra-hazardous activities. In the environmental field, the Chinese statutory laws enacted in recent years do not require proof of fault on the part of the actor.[121] The basis for strict liability for such activities is that they pose a risk to society. Again, it is a matter of balancing interests between the victims and the industry. As it is the industry which, in the ordinary course of events, reaps the profits of the activities and therefore has the deeper pockets, it is not unreasonable to expect it to bear the loss. Besides, through the insurance mechanism, and through the pricing of its products, industry can eventually spread the loss to those who enjoy the benefits of their activities, namely, their customers, or the consumer.

Based on the same policy considerations, jurists propose that, by analogy, strict liability should be imposed on States as a general international principle when transboundary damage is caused by abnormally dangerous activities. Several theories of strict liability support this reasoning.

First, the theory of liability for risk proposes to impose strict liability for transboundary damage caused by ultra-hazardous activities. Among

> In determining whether an activity is abnormally dangerous, the following factors are to be considered:
>
> (a) existence of a high degree of risk of some harm to the person, land or chattels of others;
> (b) likelihood that the harm that results from it will be great;
> (c) inability to eliminate the risk by the exercise of reasonable care;
> (d) extent to which the activity is not a matter of common usage;
> (e) inappropriateness of the activity to the place where it is carried on; and
> (f) extent to which its value to the community is outweighed by its dangerous attributes.

[117] Germany, section 823 of the BGB, cited from Hardy, "Nuclear Liability," p. 235, n. 3.

[118] Austria, section 1053 of the Civil Code, cited from *ibid*.

[119] Switzerland, Article 41, Code des Obligations, cited from *ibid*.

[120] Article 106 of the General Principles of Chinese Civil Law provides: "when a citizen or legal person through fault interferes with and causes damage to State and collectively owned property, or to the property or person of another, he shall bear civil liability." The elements of a tortious act are the duty of care, damage, unlawful conduct, and causation.

[121] Article 124 of the General Principles of Civil Law provides that, when there is no fault, but the law mandates that there must be civil liability, the party must bear civil liability.

the first proponents of this theory was the distinguished English scholar C. Wilfred Jenks.[122] His theoretical basis, later shared by others, is that, with the advancement of technology, these activities pose an abnormal risk to the public, and to other countries. Procedurally, in practice, because of the intrinsic nature of these activities, it is often impossible for the victims to prove intent or negligence on the part of the foreign defendant, posing an obstacle to recovery. As a matter of equity and justice, the burden of proof should be shifted to the other side, by imposing strict liability on the defendant. By exposing the public to high risk, the industry concerned should shoulder the burden of liability for harm caused by its activities.[123] Furthermore, since the activity takes place under the jurisdiction of the national government of the actor, the State to which the actor belongs rather than the chance victim should be held responsible for the consequences.[124]

The notion of risk serves as the basis of liability. The ultra-hazardous nature of the activities is emphasized by a variety of labels: "abnormally dangerous," "ultra-hazardous," "high risk." Another vehement advocate for the adoption of strict liability in international law, L. F. E. Goldie, suggested that a connection between strict liability and risk-creation as expropriation may be discerned:

> Perhaps a principle may be seen as emerging whereby an enterprise which, in the course of its [ultra-hazardous] business, engenders the possibility of injuries to the members of the public who consume its wares or come into contact with its operations, is liable for damage arising from the risk it creates. To [impose on] an enterprise [mere fault liability] would have the effect of enabling it to conduct its operations at the expense of others and to throw a valid operating cost onto the shoulders of its neighbors, or onto those of the ultimate consumers of its products or services.[125]

[122] C. Wilfred Jenks, "Liability for Ultra-Hazardous Activities in International Law," *Recueil des Cours*, vol. 117 (1966-I), pp. 105–196.

[123] John M. Kelson, "State Responsibility and the Abnormally Dangerous Activity," *Harvard International Law Journal*, vol. 13 (1972), p. 197.

[124] C. Wilfred Jenks, "Liability for Ultra-Hazardous Activities in International Law," *Recueil des Cours*, vol. 117 (1966-I), pp. 105–196, at p. 152.

[125] L. F. E. Goldie, "Pollution from Nuclear Accidents," in D. Magraw (ed.), *International Law and Pollution* (Philadelphia, University of Pennsylvania Press, 1991), p. 196, at p. 206, quoting from his earlier work, "Liability for Damage and the Progressive Development of International Law," *International and Comparative Law Quarterly*, vol. 14 (1965), p. 1189, at pp. 1212–1213. See also L. F. E. Goldie, "Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 175.

Goldie labels such risk-based liability, liability of "conditional fault," or "contingent blameworthiness," in the sense that the activity creates a risk of damage to others.[126]

This theory has become increasingly popular among scholars, as they go even further to apply it to transboundary environmental damage in general. Also called the "pure causality" theory, it bases liability simply on the actual occurrence of significant transboundary damage.[127] By the general principles of international law, such as those laid down in the *Corfu Channel* case, namely, that it is "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States,"[128] a State should be liable for damage it causes to other States.

The second school of thought on the theory of strict liability for certain accidental transboundary damage caused by ultra-hazardous activities is represented by G. Handl, one of the leading scholars in the field.[129] In an analysis of the theoretical issues concerning the imposition of strict liability as a general principle of international law for transboundary damage caused by ultra-hazardous activities, Handl endeavors to maintain a theoretical distinction between injurious consequences that should be governed by the secondary rules of the regime of State responsibility, and injurious consequences to which primary rules should apply, in other words, international liability for lawful acts. In his view:

If "significant risk" were to imply a high probability but a low consequence factor, the carrying on of the activity concerned would either amount to an

[126] Goldie stated that:

> "Conditional fault" means that, in undertaking his ultra-hazardous activity or venture, the defendant has already created a risk for others for which he will be held accountable in the event of his conduct or his products causing harm to others. Hence the idea of conditional fault should be characterized as a legal fiction. It imputes a contingent blameworthiness (or fault) on the part of the risk-creating enterprise for engaging in its business activities . . . [T]hat activity should be seen as without fault but also as involving a compensable expropriation of amenities and of personal security when, as a result of that permission, personal or property harm occurs.

See L. F. E. Goldie, "Concepts of Strict Liability and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 175, at p. 189.

[127] OECD Reports on Responsibility and Liability of States in Relation to Transfrontier Pollution, *Environmental Law and Policy*, vol. 13 (1984), pp. 122–125.

[128] ICJ Reports (1949) p. 4, at p. 22.

[129] For an example of his work, see G. Handl, "Liability as an Obligation Established by a Primary Rule of International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 49.

intentional infliction of transnational harm or a negligent one depending on the probability value. In either case, the State conduct involved would be deemed internationally wrongful.[130]

With regard to strict liability in international law, Handl observed that, in most treaty regimes which provide for liability irrespective of wrongfulness, and in virtually all reported cases of similar extra-conventional State practice, accidental harm is the *leitmotiv*. He argues that "only cases of loss-shifting in which transnational harm is *inherently accidental* and there is no *evident failure* on the part of the source State to act with due diligence, can be characterized as intrinsically representing instances of 'liability irrespective of wrongfulness'," that is, strict liability.[131] Handl narrows down the scope of the application of strict liability to a qualified category of ultra-hazardous activities, thus making it, he claims, "a limited phenomenon, complementary to the system of State responsibility."[132]

The third theory is State responsibility for the consequences of ultra-hazardous activities. This view is based primarily on the assumption that by virtue of the very nature of ultra-hazardous activities and by their harmful consequences, which should be deemed the abusive and unlawful exercise of a right, the author State should assume responsibility and liability for any consequent transboundary damage.[133] The difference between this position and the pure causality theory is that this theory is mainly confined to the regime of State responsibility, without any distinction between the responsibility of States for wrongful acts and lawful acts. According to this view, the *Corfu Channel* case is a case of international liability for wrongful acts, because the Albanian Government failed to exercise due diligence by informing the arriving British warships of the existence of the mines laid in its territorial waters, a fact of which it presumably was or should have been aware.[134] According to this view, most of the cases under the consideration of the ILC for international liability are not actually true cases of lawful acts as categorized by the Commission.[135]

In general, the argument for stricter rules of liability for transboundary damage meets with the growing concern of the international

[130] *Ibid*., p. 70. [131] *Ibid*., p. 60 (emphasis added). [132] *Ibid*., p. 70.

[133] R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (9th edn., Harlow, Longman, 1992), p. 510.

[134] Brownlie, *System of the Law of Nations*, p. 50.

[135] See M. B. Akehurst, "International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 3.

community over damage caused by ever-expanding industrial and technical activities, not only to other countries, but also to the environment at large. The reaffirmation of the principles of State responsibility and liability for environmental damage by the Rio Declaration on Environment and Development manifests the political will of the international community.[136] But to make a normative claim to impose strict liability for transboundary damage arising from ultra-hazardous activities, one has first to explain why strict liability has not yet been introduced into international law as a general principle, when so many municipal legal systems have already accepted it.

In deciding whether to adopt private law sources in international law, what we should look at is not the rule itself but the policy considerations behind it. As Lord McNair said, "[t]he way in which international law borrows from this source is not by means of importing private law institutions 'lock, stock and barrel', ready-made and fully equipped with a set of rules."[137] As we are aware, strict liability is a socially contextual legal rule, designed to address certain special legal problems of public concern. As shown by domestic legal practice, the rule applies only to specific acts. Apart from that, fault liability remains the general form of liability. Although strict liability is not unknown in international law, it is so far only prescribed in treaties, where the policy objectives in shifting the loss to the actor are specifically shared by the State parties. As is aptly pointed out:

> Underlying the whole body of tort law is an awareness that the need for compensation, alone, is not a sufficient basis for an award. When a plaintiff receives a defendant's payment in satisfaction of a judgement obtained in court, loss is not compensated in the sense that it is somehow made to disappear. It is only shifted.[138]

[136] See Principles 2 and 13 of the Rio Declaration on Environment and Development (UN Doc. A/CONF.151/26 (vol. I)), in Henkin, *et al., Basic Documents*, pp. 710 and 712.

[137] The oft-quoted opinion of Lord McNair is as follows:

> International law has recruited and continues to recruit many of its rules and institutions from private systems of law . . . The way in which international law borrows from this source is not by means of importing private law institutions "lock, stock and barrel," ready-made and fully equipped with a set of rules . . . In my opinion, the true view of the duty of international tribunals in this matter is to regard any features or terminology which are reminiscent of the rules and institutions of private law as an indication of policy and principles rather than as directly importing these rules and institutions.
>
> See *Advisory Opinion on the International Status of South-West Africa*, ICJ Reports (1950), p. 127, Separate Opinion by Sir Arnold McNair, at p. 148.

[138] R. Keeton and J. O'Connell, *Basic Protection for the Traffic Victim: A Blueprint for Reforming Automobile Insurance* (Toronto, Little, Brown and Co., 1965), p. 242.

The policy objective behind shifting the loss to the actor must be based on a need that will be judged by reference to the socio-economic context of the particular society. The interests of the community must be specific and certain. In other words, the balance of interests between the need to develop industry and the interests to be protected from the possible harm caused by the activity has to be weighed on a concrete basis. This is a prerequisite for any meaningful argument for loss-shifting.[139]

To further the argument on the concept of community, if it is agreed that the loss would be spread through financial mechanisms such as insurance policies, it is essential to determine the size of the community envisaged so that the apportionment of liability among the possible defendants would become possible.[140] To make sound the economic theory of distributing risk, the whole idea must be built within a tangible sphere. Taking nuclear liability systems for example, States parties to the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy[141] and the 1963 Vienna Convention on Civil Liability for Nuclear Damage[142] are rather limited in number. The former Convention only concerns Western European countries. The latter, although its membership spans several regions, covers only a few nuclear activities. The coverage of the two conventions differs significantly: before the 1990s, out of approximately 417 nuclear power plants worldwide, three were covered by the Vienna Convention and more than 120 were subject to the Paris Convention. One of the reasons for such a disparity in coverage between the two conventions is the fact that Western Europe, as a special community, has a genuine need for such an international liability regime. Both the geographic proximity of the countries and the condensed development of nuclear activities in the region require a reliable liability regime to respond to any nuclear accident.[143] Both in

[139] In explaining the underlying reasons for the undeveloped state of international law in the field of liability for risk and pollution, Zemanek attributed it to two factors: State sovereignty; and the diversity of national values and goals. See K. Zemanek, "Causes and Forms of International Liability," in B. Cheng and E. D. Brown (eds.), *Contemporary Problems of International Law: Essays in Honor of Georg Schwarzenberger on His Eightieth Birthday* (London, Stevens and Sons, 1988), p. 319, at p. 322.

[140] Hardy, "Nuclear Liability," p. 240.

[141] Paris, July 29, 1960), 956 UNTS 251.

[142] Vienna, May 21, 1963), 1063 UNTS 265.

[143] The parties to the 1960 Paris Convention, which was subsequently amended by an Additional Protocol of January 28, 1964 and a Protocol of November 16, 1982, are: Belgium, Denmark, Finland, France, Federal Republic of Germany, Greece, Italy, the Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Turkey, and the United Kingdom. The parties to the 1963 Vienna Convention, are: Argentina, Armenia, Belarus, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cameroon, Chile, Croatia, Cuba, Czech Republic, Egypt, Estonia, Hungary, Latvia, Lebanon, Lithuania, Mexico,

law and in practice,[144] it is possible to impose strict liability on nuclear damage in the area. It is concluded that:

> In Western Europe, with but few exceptions, there is a long-established tradition of legislative action or judicial interpretation that a presumption of liability for hazards created arises when a person engages in a dangerous activity. Because of the special dangers involved in the activities within the scope of the Convention and the difficulty of establishing negligence in view of the complex techniques of atomic energy, this presumption has been adopted for nuclear liability. Absolute liability is therefore the rule; liability results from the risk irrespective of fault.[145]

By the same token, due to the manageable scope of the industry or market, the strict liability rule found little difficulty in being accepted in the areas of international civil aviation, maritime oil-shipping, international railway services, etc., where allocation of risk can be measured and calculated with precision by reference to their operation, service, or market, e.g. the number of customers, or tonnage of cargo.

The financial mechanism to guarantee the spreading of loss is equally important in an international context. This is partly because those activities which are defined as ultra-hazardous under national law, such as nuclear energy, space activities, and civil aviation, are usually high-cost. Without a proper financial scheme to cope with accidental damage, the operator might not be able to survive the costs of damage under certain circumstances.[146] At the international level, protection granted to the

Niger, Peru, Philippines, Poland, Republic of Moldova, Romania, Saint Vincent and the Grenadines, Slovakia, Slovenia, the Former Yugoslavian Republic of Macedonia, Trinidad and Tobago, Ukraine, Uruguay, and Yugoslavia. In order to enlarge the coverage of the two conventions, after the Chernobyl accident, the Joint Protocol Relating to the Application of the Vienna Convention on Civil Liability for Nuclear Damage and the Paris Convention on Third Party Liability in the Field of Nuclear Energy (Vienna, September 21, 1988), 1672 UNTS 301, was adopted to join the two conventions. See P. Reyners and E. Lellouche, "Regulation and Control by International Organizations in the Context of a Nuclear Accident: The International Atomic Energy Agency and the OECD Nuclear Energy Agency," in Cameron *et al*., *Nuclear Energy Law*, p. 1, at p. 15.

[144] For an analytical study of nuclear activities and legal practice in this field, see Cameron *et al*., *Nuclear Energy Law*, and, in particular, Jürgen Grunwald, "The Role of Euratom," in *ibid*., p. 33.

[145] See the revised text of the Exposé des Motifs of the Paris Convention, approved by the OECD Council on November 16, 1982, No. 14, cited from Norbert Pelzer, "Concepts of Nuclear Liability Revisited: A Post-Chernobyl Assessment of the Paris and Vienna Conventions," in Cameron *et al*., *Nuclear Energy Law*, p. 97, at p. 100.

[146] The shrinking of the nuclear energy industry in Western Europe indicates a changing attitude of the public towards the industry and the high cost and risk in running the business.

industry and security against accidental damage to the public also have to be arranged in a workable framework. Either domestically or internationally, such issues as financial guarantees, governmental responsibility, liability ceilings, and insurance schemes all have to be evaluated against the policy objectives pursued by States in carrying out the relevant activity. In each accident, if damage exceeds the fixed ceiling on the indemnity and insurance, the loss lies where it falls. The allocation of loss, in this case, occurs as between industry, the government and the public. On the international plane, without a concrete economic linkage between the acting party and the potential victims, the ground of good neighborliness is not sufficient to attract the financial resources necessary for the imposition of strict liability on the operator. It is equally doubtful that the State would expose its revenue without any limitation for such liability.

One may wonder why States have accepted absolute liability for space activities under treaty provisions. Several considerations account for this acceptance. Space activities by their nature are not typical activities carried out within a national territory. Instead, they use and explore the resources common to all States, as explicitly stated in the Outer Space Principles Treaty.[147] In the initial stages, due to their nature, space operations were exclusively conducted and controlled by States and remain largely so even today. Space States are the primary beneficiaries.[148] In addition, by flying over virtually all States, satellites pose a constant risk internationally. As the major players, States should be held directly answerable for the injurious consequences arising from the conduct of space activities under their jurisdiction or control.

As a matter of mutual and reciprocal rights and duties, space States undertake responsibility for their own acts affecting other States,[149] in return for the right to the exploration and use of common resources and for the protection and return of their space objects and astronauts

[147] Moscow, London, and Washington, January 27, 1967, 610 UNTS205; 6 ILM 386 (1967). According to Articles I and II, the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries. Outer space is not subject to national appropriation by claim of sovereignty.

[148] This benefit was expressly recognized by the US when it entered into an agreement with Canada concerning liability for loss or damage from certain US rocket launches from Canadian territory in 1974. By the same token, by using the common property of air space to and from outer space, the duty of liability should be equally established.

[149] Articles IX and XII of the 1972 Convention on International Liability for Damage Caused by Space Objects (London, Moscow, and Washington, March 29, 1972), 961 UNTS 187; 10 ILM 965 (1971); entered into force on September 1, 1972.

should they fall into the territory of other States.[150] These conditions, in short, constitute the basis for a separate legal regime of liability different from that attached to any other activity. It may not be appropriate to attempt to extend these principles to other activities conducted by States.

The theory of risk primarily seeks to impose strict liability for certain hazardous activities.[151] In the case of air and river pollution, specific risk is identified with certain substances by quantitative and qualitative standards.[152] This is primarily owing to the fluid character of the substance, water or air, which, despite the artificial demarcation of national boundaries, by and large is a physical unity in its own right. Any dumping or emission of harmful substances into a river or the air from any source State affects the resource as a whole. In other words, to achieve a meaningful result of prevention of damage to such resources, the risk of harm must be measured at the international level rather than the national level.

Apart from these cases, when an activity is carried out totally within the territory of a country, the element of risk to other States becomes contextual. For instance, in constructing a smelter, nuclear plant, or processing factory, the extra-territorial impact may not be tied up with the activity itself, but rather influenced by the circumstances in which it is to be operated. In the *Trail Smelter* case, for example, the geographical location and the weather conditions proved crucial factors in rendering the industrial fumes harmful to persons and property on the other side of the border.

When such contextual conditions become determinative, it may invalidate the whole argument of risk as the basis of international liability for the dangerous nature of the activity. The notion of significant risk, "a high probability value as well as the prospect of serious

[150] Under Article V of the Outer Space Principles Treaty, astronauts are regarded as "envoys of mankind in outer space." In 1968, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space was concluded (London, Moscow, and Washington, April 22, 1968), 672 UNTS 119.

[151] See generally L. F. E. Goldie, "Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 175; Ken Cooper-Stephenson and Elaine Gibson (eds.), *Tort Theory* (North York, Captus University Publications, 1993).

[152] See, for example, the 1979 Convention on Long-Range Transboundary Air Pollution, 1302 UNTS 217; 18 ILM 1442 (1979); and the 1984 Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Long-Term Financing of the Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (Geneva, September 28, 1984), 1491 UNTS 167; 24 ILM 484 (1985).

consequences,"[153] to use Handl's terminology, is not necessarily determinative for the consideration of imposing international liability. The danger of an activity to other countries could be derived from various sources. Once such conditions for the determination of risk become circumstantial and contextual, the criterion of risk as a denominator loses its foundation, and therefore the justification for the imposition of strict liability for such activities becomes questionable.[154]

Suppose there are two projects. One is the construction of a nuclear power plant in a remote area far from the boundary. The other is the setting up of a food factory in the border area. By its nature, it is obvious that the former is much more dangerous to the public than the latter. But in terms of risk of pollution damage to the neighboring State, the case may be the other way around. The latter poses an apparent risk of damage to the other State. However, it is true that in any case the more hazardous the activity in question, the more preventive measures should be taken by the author State.

Handl's theory highlights the dichotomy evident in the *Trail Smelter* arbitration between "the typical case of transboundary harm from pollution being caused intentionally (or negligently), thus entailing liability as a secondary obligation, and the rather exceptional situation of such harm being caused accidentally and non-negligently, thus giving rise to liability as a primary obligation."[155] In assessing liability for past pollution caused by the Trail Smelter, the Tribunal imposed liability for internationally wrongful conduct by Canada. However, after the Tribunal had determined the proper balance of rights and obligations between the two countries and established an operational regime to maintain

[153] G. Handl, "Liability as an Obligation Established by a Primary Rule of International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 49, at p. 70.

[154] From the following instances of the casualties of different disasters resulting from abnormally dangerous activities, we can see the relation between the nature of the activity and the potential scope of accidental damage caused by the activity. There were thirty-one deaths in the Chernobyl accident, according to the figures presented by the Soviet delegation to the International Atomic Energy Agency (IAEA) meeting in August 1986. "Most of the victims were firemen exposed to fires started by incandescent nuclear fall-out. Three disasters involving fossil fuels produced much larger death tolls in the 1980s: the collapse of the Alexander Kielland oil rig in 1980 (123 deaths), the explosion of a liquified petroleum gas store in Mexico City in 1984 (600 deaths), and the destruction of the Piper Alpha oil rig in the North Sea in 1988 (at least 166 deaths)": Peter Cameron, "The Vienna Conventions on Early Notification and Assistance," in Cameron *et al*., *Nuclear Energy Law*, p. 19, at p. 20, n. 7.

[155] G. Handl, "Liability as an Obligation Established by a Primary Rule of International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 49, at p. 61.

this balance, Handl considered liability for future pollution damage despite the regime in terms of liability as a primary obligation. Appealing as it may be, this theory remains problematic in its legal consequences, because it does not change the essence: on a balance of interests, Canada was required to pay compensation based on the Tribunal's decision. In other words, the Tribunal's regime that raised standards of conduct did not change the nature of the Trail Smelter's activity from wrongful to lawful. As long as its harmful effects exceeded a certain permissible level, damages were required to be paid. That is the essence of the Tribunal's award. Notwithstanding the weakness of the notion of risk as the basis for strict liability, it remains a useful denominator for preventive measures and other concomitant duties.

The procedural argument for the imposition of strict liability in international law, namely, the undue burden of proof on the plaintiff for recovery, as Jenks has argued, is not totally convincing either, for the matter is one of the common issues in private international tort actions rather than a particular problem with this type of transboundary damage claim.[156] In the Bhopal case, the collection of evidence was difficult for both parties. Moreover, jurisdiction, applicable law, and the recognition and enforcement of foreign judgments are equally problematic to say the least, and these might still impede the plaintiff's chance of success.[157]

The basis of State responsibility and liability in the present context

The basis of international liability for transboundary damage remains an unresolved issue. If the premise remains true that society bears the cost of certain mishaps resulting from activities that make a beneficial contribution to the welfare of the majority of members of the community, liability should be a relative legal obligation. In international law, as already discussed, such relativity serves to measure which adverse effects should be compensated and which should lie where they fall. In domestic legal theory, the rules of remedy are primarily built on two

[156] For a study on the issues, see Stephen McCaffrey, *Private Remedies for Transfrontier Environmental Disturbances* (ICUN Environmental Policy and Law Paper No. 8, Morges, Switzerland, International Union for the Conservation of Nature and Natural Resources, 1975).

[157] For a study on enforcement of foreign judgments in several States including the US, Australia, India, Japan, the Republic of Korea, France, and Germany, see Charles Platto and William G. Horton (eds.), *Enforcement of Foreign Judgments World-wide* (2nd edn., London, Graham & Trotman, 1993).

grounds – moral justification and economic theory. When a human act causes injury, the actor is deemed answerable. The maxim that "between the two innocents, he who causes damage should bear the loss," is a moral argument. This is largely applied in State relations, since an act which causes damage to a neighboring State is regarded as an unfriendly act, contrary to the principle of good-neighborliness. The moral argument, however, can also operate in reverse, namely: no fault, no responsibility; therefore, no liability. According to Oppenheim, a State's international responsibility

> has been said [either] to be essentially delictual and based on fault, requiring either intentional or negligent conduct on the part of the State before a breach by it of an international obligation can be established; or to be strict or objective, conduct and result alone establishing the breach of an obligation . . . Generally, considerations of State sovereignty reinforce a certain reluctance to impose strict responsibility upon States for their conduct.[158]

Under economic theory, accident law in general aims at two purposes: the regulation of behavior, and the best allocation of resources.[159] In an international context, however, the cost–benefit analysis would touch on multiple economies, where such factors as technological capacity, financial and human resources, and managerial ability may vary enormously from State to State. As is rightly pointed out, "[t]he assessment of risk in political as in personal life cannot be entirely separated from value-judgments concerning the cost of measures to reduce the risks."[160] Therefore, even if it is generally agreed that stricter rules should be imposed on States when their activities may cause transboundary harmful effects, general agreement on the appropriate rules of conduct is still lacking.

Thus we still cannot rebut the proposition that the duty of prevention of injury is not an absolute one.[161] The element of fault, being understood as a breach of an international obligation, is required not only for the sake of moral argument, but also on a more practical basis. In the course of utilization of national resources, the repercussions of one State's activity tend unavoidably to "escape" human boundaries. This

[158] R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (9th edn., Harlow, Longman, 1992). This position is currently under criticism, particularly in the environmental field for injurious acts not prohibited by international law.

[159] For a general reference on the thinking behind tort accident law, see Henry J. Steiner, *Moral Argument and Social Vision in the Courts: A Study of Tort Accident Law* (Madison, University of Wisconsin Press, 1987).

[160] Schachter, *International Law*, p. 368.

[161] Eagleton, *The Responsibility of States*, p. 88.

is due to the very state of coexistence and interdependence of nations. What has changed today is the frequency and momentum of such repercussions. This change has not, however, altered the nature of this relationship. Mutual respect and mutual forbearance in this context are measured by the extra-territorial effects produced by the activities carried out within the territory of the author State.

Internationally, the European Community countries as a whole have adopted the strictest rules of international liability for environmental damage so far. Even so, the OECD still contends that:

> International liability for transfrontier pollution derives from general legal principles. It is engaged by a failure to comply with a customary or treaty obligation. In the opinion of most member countries, this liability remains based on a State's failure to comply with an international obligation embodied in the abovementioned rule concerning due diligence, the origin of which may be found not only in treaty law (violation of the terms of a bilateral or multilateral treaty) but also in customary law.[162]

In other words, it is posited that harmful consequences to other States would not give rise to international liability unless they resulted from a failure on the part of the acting State to observe its international obligations.

Focusing on transboundary damage, this classic position seems to be suffering from the progressive development of its own regime. As one scholar pointed out, if the rules of State responsibility apply to these cases, it would open the door to injunctive relief (provisional measures) against operations bearing a high risk of transboundary damage.[163] This is because, under the Articles on State Responsibility adopted by the ILC, once a State has failed in carrying out its international obligation, thus invoking its responsibility, it is required by international law to cease the wrongful act.[164] If this were to hold in the present case, it would undermine the very purposes and objectives of the rule of liability, which is to permit socially desirable and beneficial activities while charging the actor with liability for the unavoidable consequences injurious to others.

[162] In October 1984, the Environment Committee of the Council of the OECD filed a report entitled "Responsibility and Liability in Relation to Transfrontier Pollution," which stated the positions of the member States of the OECD on the issue. See the report, p. 7.

[163] G. Handl, "Liability as an Obligation Established by a Primary Rule of International Law," *Netherlands Yearbook of International Law*, vol. 16 (1985), p. 49, at p. 65.

[164] Article 30 of the Articles on State Responsibility.

This argument is persuasive in its practical application. In reality, as often as not, when a State's activity produces harmful effects to a territory of the neighboring State, the initial reaction of the injured State to the activity is not a demand for compensation, but rather a request that the source State cease the activity altogether. For instance, if a processing factory causes serious air pollution in a neighboring State, the latter will request a shutdown of the factory, regardless of its economic benefits to the region of the source State and the monetary compensation the source State would prefer to offer.[165] With a watercourse, such a conflict could be even more acute. If a dam in one riparian State holds a substantial volume of water, thereby seriously jeopardizing the agriculture of other riparian States, then the injured States would naturally demand a reduction of the volume of water in the dam to an extent acceptable to them.[166] For ultra-hazardous activities, even if compensated, the injured State may still insist on the cessation of the activity, for example nuclear military tests on the high seas, pending resolution of the issue of the legality of the act.[167]

In essence, we are still struggling with the question of the right to carry on certain activities and the duty not to harm. If we put the liability theory in absolute terms, we may reach the conclusion that the source State is permitted to undertake the activity, provided it pays its way. In the final analysis, this means that the source State can do whatever it deems appropriate and necessary, provided it is not forbidden by international law and as long as it can afford to pay damages.[168] This, of course, contravenes the policy goal of the rule as originally envisaged.

[165] A case in point is that of Peyton Packing and Casuco, two American processing plants located near the Mexican border, whose activities were producing gaseous fumes detrimental to the citizens of Mexico. In the initial intervention, Mexico asked for a shutdown of the plants. Upon an exchange of notes, the two sides made arrangements that would include phasing out some operations, changing working hours and establishing systems of disinfection. See Whiteman, *Digest*, vol. 6, pp. 256–259.

[166] For example, see the *Lake Lanoux* case between Spain and France over the uses of the lake, Award of November 16, 1957, RIAA, vol. XII (1957), p. 281. For a summary in English, see 24 ILR (1957), p. 101.

[167] See *Nuclear Tests* cases, *Australia* v. *France* and *New Zealand* v. *France*, Judgments of December 20, 1974, ICJ Reports (1974), pp. 253 and 457.

[168] This touches on a fundamental issue of legal philosophy of international law, namely, whether international law is a formally complete discipline, stating all the acts that are permissible or forbidden. The PCIJ in the *Lotus* case enunciated that States are legally free to act as they please if there is no rule of conventional or customary law imposing an obligation on them in the given circumstances, but some States disagreed with the Court's opinion. See PCIJ, Series A, No. 10 (1927).

Even for specially categorized activities, such as ultra-hazardous operations, for example nuclear energy uses, space exploration, and uses of chemical and toxic substances, permission to act does not mean that their injurious consequences are justifiable as long as they are compensated. They are excusable by the law only in the sense that current human capabilities cannot control them. Just like a natural disaster (the so-called "act of God"), they have to be borne by the society as a whole. The duty to compensate is part of the balancing, but not the sole condition for the permission to carry out ultra-hazardous activities. The ultimate goal is to prevent damage to the greatest extent possible, improving and increasing preventive measures as human capacity to do so develops.

In the aftermath of damage, the States parties concerned are inclined to either readjust their legal rights and duties with regard to the damage,[169] or to tighten their control on the conduct of the activities.[170] Apart from the mechanisms specially arranged for some types of activities, rules of conduct determine the extent of responsibility of the actor, including the extent of its liability for the injurious consequences. For international law to work, a State cannot refuse to accept the consequences of the breach of an international obligation it has undertaken to fulfill. This is the current state of the law, and it is the logical outcome of a legal system where the law is built on the will of equal members, and on the factual coexistence of these equals.[171]

[169] This is more common in State practice. When the terms of uses are changed in the light of the current problems and conflicts of uses between the States concerned, the rights and duties are changed too, as are their relations.

[170] This is more than obvious in the situation of marine pollution and nuclear accidents. In the aftermath of each major accident, e.g. oil spill or nuclear disaster, the relevant international organizations, i.e. the IMO, the IAEA, and Euratom in particular, would endeavor to adopt further rules on the safety and security of the operation of the relevant activities.

[171] Such coexistence of States is also manifested in the way States regard the limit of their international obligations. They accept them not as an absolute term of justice, but rather relative to the latitude which each State affords each other. For example, under the Canadian Environmental Protection Act, regulation of international air pollution control for preventing or controlling Canadian sources that create air pollution in a country other than Canada will be issued *only* if that country has granted Canada reciprocal rights with respect to the prevention or control of air pollution originating in that country. See Schlikman, McMahon and van Riel, (eds.), *International Environmental Law and Regulation* (Butterworths, 1994), vol. 1, Canada, section 2.1.A(ii).

9 Conclusions

At the 1972 Stockholm Conference on the Human Environment, development of rules of international liability for environmental damage was called for.[1] The participating States undertook to "develop further the international law regarding liability and compensation" for environmental damage caused to the territory of other States or areas beyond national jurisdiction or control.[2] In the years that followed, State governments tackled the matter on a much broader basis with commendable achievements, both nationally and internationally. The existing laws on transboundary damage reviewed in this study bear out such efforts.

An appraisal

For accidental damage, international liability rules are largely influenced by the risk or hazard posed by the activity in question. The tendency discerned from the existing regimes points to more harmonized and standardized international regulations in the future and damage rules based increasingly on the substantial practice of States. To date, the international regulation of hazardous activities generally provides for civil liability of the operator, while States undertake the responsibility to regulate such high-risk activities by establishing standard rules of conduct and by imposing compulsory financial mechanisms on the industry for the purpose of compensation in the event of an accident. The

[1] See, in particular, Principles 21 and 22 of the Declaration of the United Nations Conference on the Human Environment, in *Report on the United Nations Conference on the Human Environment*, UN Doc. A/CONF.48/14 (Stockholm, June 5–16, 1972), reproduced in 11 ILM 1416 (1972).

[2] *Ibid*., Principle 22.

existing regime of strict but limited liability imposed on the operator of an intrinsically hazardous activity has proved effective in providing timely compensation to victims in practice and thereby maintaining public confidence in the industry. Insurance and other financial guarantee mechanisms serve as useful tools to help disperse the costs of the activity to the consumer through the pricing of products, ultimately achieving a balance between the individual interests of the operator to continue his production and the societal interests in safety.

Procedurally, substantive rights and obligations relating to international liability are ensured by the unification of national rules on jurisdiction, applicable law, and the recognition and enforcement of judgments rendered by the courts of other States parties. Such international cooperation can help to overcome the difficulties that a single State usually faces in dealing with transboundary damage. On the other hand, we must admit that States and their governments remain basically crisis-oriented. In addition, to what extent a State can afford to accept such a comprehensive liability mechanism that adopted, for example, for the nuclear energy industry, very much depends on its financial capacity and a sophisticated domestic market to absorb the costs of the activity. Perhaps that explains why to date the number of States parties to the existing legal regimes on civil liability for transboundary damage caused by ultra-hazardous activities is still so limited. For the most part, States are not yet ready to approach the matter through liability mechanisms.

The existing regimes possess a few common features:

1. By proper channeling, strict liability is imposed on the operator of the given activity, with certain exculpatory conditions. By a presumption of fault, the burden of proof is shifted from the victims to the actor. Unless the actor proves that the damage was caused by the victims or a third party, or was due to *force majeure*, the actor is liable.
2. Strict but limited liability is sustained by available financial guarantees. The level of liability marks the stringency of the rules. The dilemma between limited insurability and unlimited liability currently facing several industries reflects the financial limits on the political desire for full recovery.
3. Liability properly channeled to the right target for control is maintained by the individual approaches to specified damage. Upon a balance of interests, the choice of the party to be held strictly liable should be effective for the imposition of the rules. If the target is not explicit, or if there are multiple targets, effective channeling can be difficult.

4. Expeditious provision of compensation should be realized through the unification of procedural rules. As demonstrated in such cases as Bhopal and Chernobyl where massive damage occurred, the procedural barriers to local recourse in the source State can be insurmountable if no unified rules on jurisdiction, applicable law, or the recognition and enforcement of foreign judgments are laid down in advance.

Apart from the above features, the existing regimes take different forms: State liability, civil liability with residual State responsibility, and civil liability only. The ways in which compensation may be obtained differ under the various treaty provisions: diplomatic channels, third party settlement, or national courts.

Apparently the approach to transboundary damage does not lie in one legal model. Liability in general is a responsive rule, reacting to existing damage problems. Between States, international liability is usually not a simple matter of recovery, but more often a process of the settlement of disputes, where not only the individual rights of the victims are involved, but national interests also must be accommodated. The bottom line for the process is often a balancing of interests identified with the particular activity. The current state of the existing conventional regimes on transboundary damage indicates the boundaries and limitations of international action, and the extent to which States have been prepared to agree upon the rules of international liability for certain socially desirable but inherently risky activities.

In formulating international liability rules, a few considerations should be taken into account. First, international action should tackle activities that truly possess foreseeable and predictable risks to other countries. The intrinsically dangerous nature of the activity, usually labeled "ultra-hazardous," is only one of the elements for legal consideration in international law. In other words, the scale of the activity and the scope of its impact must entail an international dimension, without which the matter would rest within national jurisdiction.

Secondly, the extent of liability must be plausible and realistic, taking into account the interests of both the injured party or parties and the industry concerned. The extent of liability as laid down in international treaties reflects the working out of such a balance among the contracting States. Under conventional rules, the potential victims are guaranteed at least a limited compensation while industrial and technological activities that would be likely to give rise to transboundary damage can continue to operate. Liability rules may be readjusted from

time to time as the nature and scope of these activities continue to develop, but the core of the issue remains unchanged: how do we balance the interests between the safety of the public and the continued development of necessary industries?

Thirdly, to sustain the liability regime, financial security is an indispensable prerequisite. Practice shows that activities with extensive and regular business operations, such as international transport industries, have accepted the rules of liability with less difficulty, because their insurance system is sophisticated enough to absorb and spread the business costs. The heavy financial burden of insurance on the nuclear industry may explain the current state of the law and the reluctance of States with nuclear activities to join the treaties on nuclear civil liability.

Fourthly, rules of conduct are determinative for invoking international liability. The existing treaty regimes sustain the general proposition for the regime of State responsibility, namely, that States are responsible for their own acts and for acts that are not in conformity with their international obligations.

With regard to general activities that may produce non-accidental but appreciable harm to other States or the environment at large, the policy objectives should emphasize the formulation of rules of conduct; for instance, environmental assessment, notification, consultation, negotiation, and settlement of disputes. In this respect, there are two issues requiring careful consideration. One is the relationship between procedural rules and substantive rules, which bears on the substantial balancing of interests between the acting State and the affected State. The other is the status of international standards: should they be deemed as minimum or maximum requirements for State conduct? Experience tells us that the more transboundary effects an activity carries, the more States are willing to cooperate. States' attitudes towards international waters are a typical example in this regard. The recent development of international water law reveals the general willingness of States to enhance international cooperation in their national development schemes when transboundary adverse effects are envisaged. On the other hand, State practice also shows the undisguised reluctance of States to subject their actions to greater international scrutiny and legal restraint in the utilization of their natural resources. The current efforts made by the ILC on the topic of international liability for injurious consequences arising from acts not prohibited by international law are aimed at formulating general rules of prevention as well as rules of compensation for damage caused thereby. So far, the ILC has made some progress with preventive

rules,[3] but little headway with liability rules.[4] This is partly due to the fact that international practice in this field consists primarily of bilateral or regional arrangements based on the attendant circumstances and conditions. To harmonize such arrangements on a global basis requires more consistent State practice and further development of international law on international liability in each and every field concerned. However, as demonstrated by the *Trail Smelter* case, the balance between developmental needs and environmental protection will remain an invariable theme of the legal process for the settlement of transboundary damage.

Protection of the global common areas has undergone a long process of development. From piecemeal actions on the protection of living resources in the common areas to the general maintenance of the ecological conditions of the world environment, the international community has seen a most dynamic progress of international regulations on the activities conducted in the common areas in the last two decades.

In 1992, the UN Conference on Environment and Development (the Rio Conference) set up policy goals and guidelines on environmental protection and its relationship with development.[5] It is generally recognized that environmental problems and potential remedies are global and multidimensional in nature. These problems call for global efforts and responses. The notion of the "common concern of humanity"[6] for the world environment is regarded not only as a political expression calling for action, but also as representative of the need for a departure

[3] At its Fifty-Third session, the ILC adopted the text of the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, Report of the ILC, Fifty-Third Session, April 23–June 1 and July 2–August 10, 2001, pp. 370–377.

[4] The ILC decided to divide the topic into two phases, and thus to adopt the preventive rules first, while considering liability rules at a later stage: *ibid*., pp. 366–370. During the deliberations of the Sixth Committee at the fifty-sixth session of the General Assembly, some delegates expressed the view that the ILC should be cautious with its approach to liability rules, as they would be better dealt with on a regional and sectoral basis. See the statements made by the US and UK delegations. At the same time, some other delegates held a different position and considered it necessary for the ILC to commence work on liability rules. See the statements made by the Netherlands and Hungary.

[5] During the Conference, five important documents were adopted, namely, the Rio Declaration on Environment and Development (UN Doc. A/CONF.151/26 (vol. I)); the Convention on Biological Diversity (31 ILM 818 (1992); UN Doc. UNEP/BIO.Div/N7-INC.5/4); the Framework Convention on Climate Change (1771 UNTS 107); Agenda 21 (UN Doc. A/CONF.151/26 (vol. II)); and the Forest Principles Declaration. For a descriptive analysis, see Kiss and Shelton, *International Environmental Law*, Chapter II, p. 23.

[6] This expression found its way into several instruments adopted during the UNCED. See Kiss and Shelton, *International Environmental Law*, pp. 2 and 23–29.

from traditional legal methods in order to develop innovative rules to address environmental damage. Along with this development, a number of international principles directly related to environmental damage are gaining importance and general acceptance by States.

The principle of prevention

By their very nature, liability rules are responsive to damage. Some environmental damage, however, may not be remediable or reversible. For the purpose of environmental protection, therefore, preventive and mitigating measures should receive priority.[7] Consequently, a host of legal instruments on information, environmental impact assessment, notification, cooperation in case of emergency, etc., have been adopted at the international, regional, and sub-regional levels.[8]

On the principle of prevention, the Rio Declaration recognizes the need for precautionary measures, which implies that, even without full scientific knowledge or certainty, States should take a precautionary approach in cases where serious or irreversible damage is envisaged or likely to occur.[9] Legal instruments are being negotiated on the basis of the best available scientific knowledge, necessitating the development of instruments that are flexible and capable of accommodating changes as scientific evidence becomes clearer.[10] As a novel concept directed to the environmental field in particular, the principle of prevention has been taken up by a number of international treaties in a surprisingly short time span.[11]

[7] Schachter, *International Law*, p. 376.

[8] See Kiss and Shelton *International Environmental Law*.

[9] Kiss and Shelton, *International Environmental Law*, p. 64.

[10] See Sun Lin and Lal Kurukulasuriya, *UNEP's New Way Forward: Environmental Law and Sustainable Development* (Nairobi, United Nations Environment Programme, 1995), p. XI.

[11] For instance, Article 3(3) of the United Nations Framework Convention on Climate Change (1771 UNTS 107) provides:

> The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures.

Similar clauses mentioning the principle are also contained in: the Biodiversity Convention; the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic; the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area; and the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. For further information

The polluter pays principle

The polluter pays principle was conceived in the 1970s, when air pollution, water pollution, and land wastes caused by industrial processes gave rise to mounting complaints of environmental degradation. The market failure in the protection of the environment called for a re-examination of traditional economic theories with regard to natural resources and the environment. In the production process, market prices do not actually represent the real costs of production. For example, such costs as the deterioration of terrestrial or aquatic environments, health effects, material damage, or even the diminution of aesthetic values are not included in prices as costs of production. Instead of being borne by the producer, however, they are borne by society as a whole ("social costs") and are considered in economic terms as "externalities" to production. In the pursuit of larger profits, the producer would rather transfer the costs to society by emitting the deleterious substances into the air or water or onto the land than change the production process or build in abatement technology. In addition, environmental resources are often regarded as "public goods," without a market value. The producer would not unilaterally take into account damage to the environment but would wait for others to pay the price so that he can use the public goods without expense (the "free-rider theory"). The theory behind the polluter pays principle is that, by imposing abatement costs on the polluter/producer as a marginal cost of production, the polluter/producer will tend to cut back on pollution in order to minimize production costs and enjoy greater profits, thus internalizing social costs.[12]

The polluter pays principle is designed both to prevent and to redress damage to the environment. It has been adopted by several States in their national laws on the environment. In recent years, it has found its way into an increasing number of international legal instruments on the environment.[13]

on the precautionary principle, see D. Freestone and E. Hey, *The Precautionary Principle and International Law* (The Hague, Kluwer Law International, 1996).

[12] R. Coase, "The Problem of Social Cost," in Robert and Nancy Dorfman (eds.), *Economics of the Environment: Selected Readings* (3rd edn., New York, Norton, 1993), pp. 109–139. See also A. Sandmo, *The Public Economics of the Environment* (Oxford, Oxford University Press, 2000).

[13] For example, Principle 16 of the Rio Declaration on Environment and Development reads:

> National authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the

The principle of common but differentiated responsibilities

One of the major developments of international environmental law achieved at the Rio Conference was the formal proclamation of the principle of "common but differentiated responsibilities" between developed and developing countries,[14] which recognizes the limits on the principle of equality of States in coping with environmental deterioration. As a normative duty, the principle embraces an essential and indispensable aspect of international cooperation between the rich North and the poor South, i.e. financial assistance and the transfer of technology.[15] So far, it has been accepted in certain areas of common concern, such as the depletion of the ozone layer, climate change, and other related global environmental issues currently being considered by the United Nations.[16] Based on historic justice, the principle of common but

polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

Other conventions containing such a clause include: the Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris, September 22, 1992), 32 ILM 1069; the Convention on the Protection of the Marine Environment of the Baltic Sea (Helsinki, April 9, 1992), 22 *Law of the Sea Bulletin* 54; and the International Convention on Oil Pollution Preparedness, Response, and Cooperation (London, November 30, 1990), 1891 UNTS 77. Some scholars even claim that the polluter pays principle has become "a general principle of international environmental law": see Kiss and Shelton, *International Environmental Law*, pp. 62–63. See further H. Smets, "The Polluter Pays Principle in the Early 1990s," in L. Campiglio, L. Pineschi, D. Siniscalco, and T. Treves (eds.), *The Environment After Rio: International Law and Economics* (London, Graham & Trotman, 1994), p. 131.

[14] Article 3(1) of the Framework Convention on Climate Change, adopted during the Rio Conference, provides:

The parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

[15] Since the Rio Conference, the most problematic aspect of the negotiations relating to the three key conventions (i.e. on biological diversity, climate change, and desertification) has been the arrangements on financing and technological cooperation. The Convention on Biological Diversity and the Framework Convention on Climate Change were adopted during the Rio Conference, while the Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, October 14, 1994), 1954 UNTS 107, was adopted as a result of calls during the Rio Conference for the UN General Assembly to set up an Intergovernmental Negotiating Committee to prepare a legally binding instrument by June 1994.

[16] The principle is well specified in the UN Framework Convention on Climate Change, where the duty of the developing States parties to the Convention to implement its

differentiated responsibilities on the one hand recognizes the common interests and duties of the international community as a whole to protect the environment. On the other hand, it emphasizes the responsibility of developed countries for the current state of the world's environmental problems and the duty to redress them. The shared obligations arising from common concerns could only be meaningfully addressed in accordance with the respective capacities and capabilities of the parties. The notion of partnership between the North and the South based on the principle of international cooperation is being further realized through a series of supportive measures to facilitate effective implementation and compliance under the relevant international conventions, including global financial mechanisms and technological cooperation and assistance.[17]

The principle of sustainable development

Another important contribution of the Rio Conference to the development of international law was the reaffirmation of the principle of integrating environmental considerations with socio-economic dimensions and of protecting the earth's environment not only for the present generation but also for future generations – that is, the principle of sustainable development. The notion is expressed through the letter and spirit of the legal instruments adopted at the Conference and thereafter. The interrelationship between environmental protection and economic development once again places human beings at the centre of concerns for sustainable development.[18] As was proclaimed in Rio, environmental protection is to be "an integral part of the development process and cannot be considered in isolation from it."[19] This anthropocentric approach requires a comprehensive means of addressing the issue of environmental damage.

provisions depends on the fulfillment by the developed States parties of their duty to provide financial assistance and to transfer technology to developing countries. In the Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (Paris, October 14, 1994), 1954 UNTS 107, the provisions are not as clearly enshrined, but the same concept of partnership between North and South is upheld.

[17] Such supportive means as reporting requirements, multilateral consultative processes, financial cooperation, and technology transfer are provided in the recent legal instruments on climate change, biodiversity, and desertification.

[18] Principle 1 of the Rio Declaration on Environment and Development. See Henkin *et al.*, *Basic Documents*, p. 710.

[19] Principle 4 of the Rio Declaration.

While the above-mentioned principles need further refinement, their impact on international law has evidently reinforced the existing rules of State responsibility and liability for transboundary damage.

Damage to the global commons calls for the joint action of all States. Given their nature, such relatively new issues as depletion of the ozone layer, reduction of biological diversity, and global climate change require new approaches. During this process, one tendency deserves special attention. When one international convention after another is concluded with additional protocols subsequently adopted for the implementation of the main convention, the continuous international negotiation processes in various areas relating to the global environment have inevitably all touched upon one common issue: that is, how to maintain the relationship between environment and development. These environmental issues are not isolated, but are intrinsically interconnected and linked with economic, social, scientific, technological, and even cultural aspects. In searching for universal standards for the protection of the world environment, this coordinating and balancing process of individual interests of States will definitely produce a far-reaching impact on the economic and social development of each State. The current debate among States, particularly between developed countries and developing countries, on the future arrangements for the reduction of global emissions of greenhouse gases and the pattern of international cooperation and actions, illustrates once again that while pursuing international cooperation for the global common good, few States would spare any efforts to strive for the best possible protection of their national interests.[20] The eventual compromise and agreement on global actions will be achieved through hard bargaining among States. Whether States admit it or not, national interests, reflected individually or represented collectively by group actions, will remain the dominant factor in the negotiation process.[21]

[20] Thomas M. Franck, "Law, Moral Philosophy and Economics in Environmental Discourse," in Macdonald, *Essays*, p. 311. Franck explains that "the willingness of any nation to make the adjustments and sacrifices necessary to effect change in its impact on and use of the biosphere is often, for valid reasons, dependent upon evidence of reciprocal willingness on the part of all to make similar adjustment, or at least to share the burden of adjustment in an agreed fashion."

[21] See the panel discussion on "Theoretical Perspectives on the Transformation of Sovereignty" by the American Society of International Law, particularly the remarks by Benedict Kingsbury, *American Society of International Law Proceedings*, vol. 88 (1994), pp. 1–13.

The prospects

Transboundary damage caused by normal industrial, agricultural, and technological activities through either accidental mishaps or gradually cumulative harmful effects, is an evolving practical matter between States, as well as a legal issue of growing importance in international law. From relations between neighboring countries to global interactions among States, the issue touches on a profound change of perceptions and perspectives of States and peoples towards their natural resources and environment, and towards each other in economic and social development.

The formation of international rules on transboundary damage to a large extent is determined by the development of national laws and practice. When the national environmental standards of one State are raised, that State tends to expect other States, particularly its neighboring States, to follow the same course of conduct in using shared natural resources. This is not only because it fears that its share of resources might be adversely affected by the injurious consequences attributed to the activities of other States, but also more importantly because it wants other States to place the same values on the resources concerned. Indeed, "[w]hich theory of liability is applicable, will have a profound impact on the shape and texture of the new norm."[22] Practice shows that effective control of transboundary damage lies in the adoption by all States of the generally accepted environmental standards of conduct and harmonized rules of remedy in case of damage.

On the international plane, the scope and content of transboundary damage have been expanded at an amazingly rapid pace in recent years, which indicates the overall rethinking of the pattern of economic and social development adopted by States since the Industrial Revolution. In recent years, several factors have rendered traditional rules of international liability insufficient in coping with the problems of transboundary damage. The most notable is that State activities are quickly shrinking. Such activities as civil aviation, space launches, nuclear energy production, etc. have become more commercialized and are now commonly undertaken by the private sector. Moreover, the tendency towards decentralization and deregulation by governments in these areas further weakens the direct accountability of States in the event of damage caused by such activities.

[22] Thomas M. Franck, "Law, Moral Philosophy and Economics in Environmental Discourse," in Macdonald, *Essays*, p. 312.

On the other hand, there is another factor equally worth noting, namely, that activities that may give rise to transboundary damage are subject to increasingly strict and multi-layered supervision and control. Due to the increasing environmental awareness of the public, environmental groups, mass media, and international organizations, governmental or non-governmental, can exert a strong influence on the decision-making process of governments in handling transboundary damage cases that bear international significance. Such public forces may come from different directions, local, national, regional, or international, depending on the matter in question.[23] As a result, the decision-making process becomes more and more complicated for national governments, which have to take into account environmental implications both at home and abroad, with strict liability more often imposed on the operator.

Nationally and internationally, recent statutory environmental standards are becoming more specific and concrete, and the corresponding mechanisms for controlling environmental hazards are growing in number and becoming more diverse, although, relatively speaking, international environmental law remains largely fragmentary and sectoral. As rules develop, each environmental issue of a transboundary nature has to be resolved individually. When substantive rules are laid down, enforcement mechanisms and remedial procedures prove more decisive in settling disputes over transboundary damage.

In practice, the issue of transboundary damage caused by a normal activity conducted by a State to the detriment of the interests of another State often arises in the form of an international dispute. The parties concerned usually differ over both the facts and the laws applicable to the particular case. While they argue over the legality of the activity in question, the acting State tends to insist on its sovereign right to conduct activities of its own choice based on its development needs and circumstances. The injured State, on the other hand, would, in rejecting such unrestricted freedom, demand the immediate cessation of the injurious activity and compensation for damage it has suffered on the ground of its territorial integrity. Unless the parties reach an agreement on a dispute settlement procedure, general principles of law, such as good neighborliness, *sic utere tuo ut alienum non laedas*, and the

[23] An example in point is the recent decision by the US Government to change the original plan for a disposal site for nuclear wastes at the border area with Mexico. The opposition to this plan came not only from the Mexican side but also from domestic pressure on the US side on the basis of environmental concerns for the area.

principle of sovereignty are of little practical value. Moreover, except for cases where essential national interests are involved, such complicated settlement arrangements as adopted in the *Trail Smelter* case have seldom been employed by States to resolve transboundary damage cases. This is primarily due to the fact that States more often than not cannot afford to bear such an expensive and time-consuming process at a cost possibly higher than the damage itself. Even if the States concerned eventually choose such a process, the political consequences will have to be borne by both parties throughout the entire course of action for an equal, fair, and lasting solution based on mutual accommodation and compromise. This perhaps explains why after so many years the *Trail Smelter* case still stands in splendid isolation.

Indeed, very often transboundary damage cases cannot be tackled simply by legal rules and principles, as any proposed solution may first and foremost be affected by other factors of a non-legal nature. With national interests as the point of departure, the matter of transboundary damage is constrained by the economic and social development of States. For example, in the conservation and protection of transboundary waters, the elements that might convince a State to sacrifice its own needs in favor of the interests of its neighboring State cannot be fully answered by reference to such international principles as good-neighborliness. If riparian States place different values on the conservation and protection of the shared resources, they are bound to disagree over what restrictions should be imposed on States in the utilization of the water resources, and differ over what constitutes "appreciable harm" that should be prevented or remedied. Despite the existing differences, particularly between developing and developed States, States have gone a long way towards reaching a common understanding of the relationship between environment and development: without proper protection of the environment, development cannot be sustained; and, without due regard to development, environmental damage cannot be meaningfully addressed.

We should remember one important fact: often the issue we are faced with is not what transboundary damage we want to prevent but what ways and means we have to avoid it. From a legal point of view, any rules on transboundary damage, to be applicable and acceptable, should bear three basic attributes: they must be normative, equitable, and efficient. By normative, it is meant that the rules should establish a standard practice binding on all States engaged in the same activity. The second element requires that the particular conditions and circumstances

should be duly taken into account so that equity and justice are ensured. The last element has two aims: to achieve the optimal utilization of resources and to provide the most effective means to redress the damage.

General rules of State responsibility should by and large govern the legal issues derived from transboundary damage. Since the duty not to cause damage to other States is not absolute under international law, as a corollary international law does not presume that any damage caused would by itself constitute a breach of international obligation on the part of the acting State. As a general principle, a State shall not be held liable for damage it has caused unless it has failed to observe certain standards of conduct as required by international law. Therefore, to determine when the acting State should be held liable for damage it has caused to other States, it is first necessary to establish rules of conduct. Nationally, liability rules have indicated the prevailing social policy towards activities with harmful effects. Internationally, between the right to act and the obligation not to cause harm, likewise lies a course of gradually tightening the rules of conduct on States; from the nuclear industry to normal chemical production, from international commerce, e.g. ocean oil-shipping, to domestic transport of hazardous wastes, the concept of risk or ultra-hazardousness bears a value judgment, which varies in time and in place.

It should be emphasized that international cooperation on the protection of the global environment has rendered the general public, national governments and peoples alike, deeply aware of the importance of maintaining a balanced relationship between economic development and the ecological environment, and of the interdependency of all States in the course of such a process. The ultimate solution to the issues of damage to the global environment lies in the development strategy of all States. Due to historic reasons as well as the still growing disparity in their social development, developed countries are requested to assume more responsibility in redressing the existing environmental problems, particularly by transferring technology and providing financial assistance to their developing partners. Only with the full participation of all States, rich and poor, can damage to the global commons be addressed effectively and efficiently.

In conclusion, we should perhaps come back to the very basic issue which initiated this study: should strict international liability be imposed on States for transboundary damage as a general principle of international law? There is no simple "yes" or "no" answer to this question. After three decades of legal development since the 1972 Stockholm

Conference, the international community is now more than ever conscious of its fragile living conditions, and more ready to adopt stricter rules of conduct for the protection of its limited natural resources and environment. This inspiring development also demonstrates that transboundary damage is a practical and contextual matter, requiring concrete rules and principles, both procedural and substantive. At this stage, however, the priority is to establish minimum standards of conduct for such activities at the national as well as international level. Indeed, the transboundary damage issue demonstrates that, in today's world where, as it is said, the membrane of sovereignty becomes porous,[24] concerted international action for the protection of the global environment becomes essential. However, as the path towards sustainable development varies from State to State, depending on the stage of their social and economic development, environmental problems have to be addressed in an integrated manner, in which liability rules only provide part of the solution.

[24] See D. Caron, "The Law of the Environment: A Symbolic Step of Modest Value," *Yale Journal of International Law*, vol. 14 (1989), p. 528, at p. 530.

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