

DELIBERATE WARTIME ENVIRONMENTAL DAMAGE: NEW CHALLENGES FOR INTERNATIONAL LAW

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When thou shalt besiege a city long time, in fighting against it to take it, thou shalt not destroy the trees thereof by forcing an axe against them: for thou mayest eat of them, and thou shalt not cut them down; for is the tree of the field a man that it should be besieged by thee?

(Deuteronomy 20:19)

INTRODUCTION

A. The Persian Gulf Conflict: Fear, Outrage and Demands for Justice

The period of January 17 to February 28, 1991 entranced the international community in a manner unprecedented in history. The realities of warfare in the 1990s were continuously and instantaneously relayed from a tiny war zone in the Persian Gulf to millions of homes in every country across the globe.

As authorities feverishly recorded and reported casualties, property damage, fluctuations in world economies and shifts in political alliances—a more sinister threat began to emerge in the waters of the Gulf and in the skies above Kuwait. Graphic images of massive environmental destruction were almost biblical in their proportions. An ominous new dimension to the Gulf War was beginning to unfold. One on-sight reporter described the scene as a “Man-Made Hell on Earth” and gave the following eye-witness account:

Dante would have felt right at home in Kuwait, a desert paradise that has suddenly been transformed into an environmental inferno. Across the land hundreds of orange fireballs roar like dragons, blasting sulfurous clouds high into the air. Soot falls like gritty snowflakes, streaking windshields and staining clothes. From the overcast skies drips a greasy black rain, while sheets of goeey oil slap against a polluted shore.¹

Expressions of disbelief and horror reverberated around the globe. The initial outrage came from the media: “What kind of people would do this? That’s what we kept asking ourselves in Kuwait City yesterday. Day had

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1. Phillip Elmer-Dewitt, *A Man-Made Hell on Earth*, TIME, Mar. 18, 1991, at 36.

been turned into night, so thick was the canopy of smoke as the nation's oil wells burned gold and orange along the black-fringed horizon."²

The United Nations Environment Program (UNEP) issued the following caution: "What is being destroyed today—and the damage which has been and could be caused could stay with us—all of us—for a very long time. It will affect generations to come which have had no say in the matter."³

In the United States, senators urged that Iraqi President Saddam Hussein be put on trial for crimes against the environment: "Senator Liberman said there was substantial sentiment in Congress to create some kind of treaty or convention that would make clear that vindictive assaults on the environment like this would be punished—and punished severely."⁴ In Strasbourg, the Council of Europe's 183-member parliamentary assembly condemned "this disgraceful attack on the environment" and called for a war crimes tribunal similar to those set up in Nuremberg and Tokyo after World War II.⁵

The purpose of this article is to examine the extent to which international law answers this universal demand for accountability for deliberate wartime environmental damage.

B. International Law Taken by Surprise!

Until the Persian Gulf Conflict, war and environmental damage arose independently, from time to time, as threats to our survival. Accordingly, separate and unrelated regimes, both legal and political, evolved to address these threats. The laws of war, for example, focused on the treatment of prisoners and the use of weapons of mass murder. Environmental protection laws, on the other hand, focused on standards of care and civil liability for negligent (unintentional) environmental damage.

To the horror of the international community, the Persian Gulf Conflict brought about the "marriage" of war and environmental damage and the "birth" of a new menace—deliberate wartime destruction of the environment. As one observer commented:

The gulf war was the first conflict in which ecoterrorism played a major role in a combatant's battle plan, and even though the fighting lasted only 42 days, it may turn out to be the most ecologically destructive conflict in the history of warfare. Experts are still sorting out the effects on the air, land and sea, some of which may persist for generations to come.⁶

2. Robert Fisk, *Crisis in the Gulf: Something evil has visited Kuwait City*, THE INDEPENDENT, Feb. 28, 1991, at 1.

3. United Nations Environment Program, *Gulf War Oil Spill: UNEP Appeals for International Action*, News Release, 1991 No. 2.

4. *Hussein called environmental terrorist*, CHI. TRIB., Mar. 7, 1991, at C8.

5. Robert Rice, *Gulf oil spill another crime against humanity*, FIN. REV., Jan. 31, 1991, at 3.

6. Elmer-Dewitt, *supra* note 1, at 37.

Despite the outrage and demands for justice which echoed throughout the world community as it witnessed the environmental holocaust of the Gulf War, the international legal system was taken by surprise. As a result very few, if any, direct sources of liability have evolved. It is therefore necessary to examine various international law regimes which—although they do not directly address the issue of deliberate wartime environmental damage—might provide a basis for liability.

C. Outline of Article

Our search for legal answers to the problem of deliberate wartime environmental damage will be divided into three successive phases.

First, we shall examine the regime of International Environmental Law with a view to extracting principles relevant to deliberate victimization of the environment during war. Section I will consider the general principles of responsibility for environmental damage and Section II will focus on specific treaties dealing with marine pollution, air pollution, and environmental modification techniques.

Secondly, we shall examine the regime of International Law of War with a view to extracting principles which restrict or prohibit deliberate destruction of the environment. Section III will focus on the Law of Force (“*jus ad bellum*”) which regulates the right of states to use force *per se*. Section IV will examine the Law of Warfare (“*jus in bello*”) which, independently of the lawfulness of the use of force *per se*, sets out the permissible means and methods of conducting warfare.

Thirdly, Section V will draw together the results of the previous analysis and present a concise picture of existing international law on the subject of deliberate wartime environmental damage. The application of this law will be demonstrated in the context of the Persian Gulf Conflict. Finally, various avenues of reform will be explored and relevant conclusions stated.

I. GENERAL PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW

A. Overview

International Environmental Law is a new and dynamic legal regime evolving in response to the rapid growth of industrialization, the expansion of transportation, the population explosion and the use of highly noxious substances, all of which have greatly exacerbated harm to the environment in the post World War Two era.

For present purposes, it is important to bear in mind that the regime has developed primarily in response to a series of environmental accidents. Catastrophes such as the Torrey Canyon disaster in 1967, the Amoco Cadiz collision in 1978 and the Chernobyl explosion in 1986, all resulted in the establishment of standards of care and levels of responsibility designed to minimize accidents in the future and clarify their legal consequences. The

legal regime did not, until very recently, even contemplate deliberate or vindictive environmental pollution such as the pumping of oil into the sea or the ignition of oil-well fires which occurred in the Persian Gulf Conflict. Nevertheless, to the extent that these laws apply to negligent or careless pollution, it is logical to assume that they must certainly apply to deliberate pollution.

B. The Principle of State Responsibility for Environmental Damage

The general principles of International Environmental Law made their first appearance in the 1941 *Trail Smelter Case*⁷ relating to injuries caused to the State of Washington by sulphur dioxide emissions from a smelter plant in British Columbia. In the absence of any international judicial decisions on the issue, the Special Arbitral Tribunal examined numerous decisions of the United States Supreme Court⁸ and deduced the following principle:

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.⁹

Applying this principle, the Tribunal held that Canada was responsible in international law for the conduct of the Trail Smelter and had "the duty . . . to see to it that this conduct should be in conformity with the obligation of the Dominion under international law."¹⁰ The Tribunal ordered reparation by way of injunctive relief and the payment of an indemnity.

For the next thirty years, the *Trail Smelter Case* was consistently cited as laying down a general principle of state responsibility for environmental damage.¹¹ Any remaining doubt as to whether the principle was a norm of customary international law was conclusively removed by Principle 21 of the 1972 Stockholm *Declaration of the United Nations on the Human Environment*:¹² "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."¹³ The

7. *Trail Smelter Case* (United States v. Canada), 3 R. Int'l Arb. Awards 1905 (1938 & 1941).

8. *E.g.*, *Missouri v. Illinois*, 200 U.S. 496 (1906) (water pollution); and *Georgia v. Tennessee Copper Company*, 206 U.S. 230 (1907) (air pollution).

9. *Trail Smelter Case*, 3 R. Int'l Arb. Awards at 1965.

10. *Id.* at 1966.

11. *See, e.g.*, *Canada-United States: Agreement on Air Quality*, Mar. 13, 1991, 30 I.L.M. 676, 678.

12. Stockholm Declaration on the Human Environment, adopted by the UN Conference on the Human Environment at Stockholm, June 16, 1972, Section I of the Report of the United Nations Conference on the Human Environment, U.N. Doc. A/CONF.48/14 and Corr. 1 (1972) (adopted with no roll-call vote recorded), *reprinted in* 11 I.L.M. 1416, 1420 [hereinafter Stockholm Declaration].

13. *Id.*

Declaration is not itself legally binding. However, Principle 21 was the culmination of thirty years of international judicial development and is universally recognized as a statement of customary international law.¹⁴

Further development of the general principle of responsibility for environmental damage is being carried out by the International Law Commission (the "ILC") in its draft Articles on "International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law."¹⁵ The 33 Articles adopted to date are the subject of much debate and, as acknowledged by the ILC itself, cannot be said to represent customary international law.¹⁶ However, having established the existence of the general principle, the draft Articles will (together with other legal instruments) serve as useful guides to the individual elements of the principle.

C. Elements of the Principle

Having established the principle of state responsibility for environmental damage, it is necessary to expand upon the parameters of that responsibility. The existence of responsibility will depend upon the following issues: (1) Where must the injurious act occur and where must the damage impact?; (2) What type of damage is "environmental damage" and how much damage must occur?; (3) What is the requisite state of mind?

1. Origin of the Injurious Act and Area of Impact

The key phrase in relation to the requisite place of origin of the injurious acts of states is "activities within their jurisdiction or control."¹⁷ This phrase appears in Article 21 of the Stockholm Declaration¹⁸ and Article 1 of the ILC's draft Articles.¹⁹ With regard to the requisite area of impact, the *Trail Smelter Case* only imposed liability for damage caused to "other states."²⁰ However, concern for the global commons has increased substantially since 1941 and hence the Stockholm Declaration extends liability more generally to "areas beyond the limits of national jurisdiction"²¹ such as the High Seas.

14. See 1984 I.L.C. REP. 171, 175. [hereinafter I.L.C.].

15. *Id.*

16. *Id.* at 171, 175.

17. Stockholm Declaration, *supra* note 12, art. 21.

18. "States have . . . the responsibility to ensure that activities within their jurisdiction or control. . . ." Stockholm Declaration, *supra* note 12, at 1420.

19. "The present articles apply with respect to . . . places under its jurisdiction . . . or . . . under its control. . ." I.L.C., *supra* note 14.

20. *Trail Smelter Case*, 3 R. Int'l Arb. Awards at 1911.

21. Stockholm Declaration, *supra* note 12, at 1420.

2. Nature and Quantum of Damage

The principle is only concerned with damage of an environmental nature—in other words, pollution. Pollution is defined broadly in numerous international instruments as: “any introduction by man, directly or indirectly, of substance or energy into the environment resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems, impair amenities or interfere with other legitimate uses of the environment.”²²

As to the quantum of damage, most international instruments and arbitral awards require “significant,” “substantial” or “serious” injury or damage.²³ The ILC, in its draft Articles, has not yet decided whether to specify “appreciable” harm or “significant” harm.²⁴ In practice, none of these terms are particularly helpful and it is difficult to extract any elaboration of their meaning. The draft Articles do state that the damage must be “greater than the mere nuisance or insignificant harm which is normally tolerated.”²⁵ Furthermore, there appears to be a presumption of significant harm (or a waiving of its requirement) when pollution is caused by substances which are highly dangerous to human life and health. Several international agreements contain “black lists” of such substances.²⁶ The draft Articles provide the following examples: “Flammable and corrosive materials, explosives, oxidizants, irritants, carcinogens, mutagens and toxic, ecotoxic and radiogenic substances, . . . dangerous genetically altered organisms and dangerous micro-organisms.”²⁷

22. This definition is quoted from the OECD *Council Recommendation on Principles Concerning Transfrontier Pollution*, OECD Doc C(74)224 (Nov. 21, 1974), reprinted in 14 I.L.M. 242, 243 (1975). Article 1(4) of the *Convention on the Law of the Sea* not yet in effect, defines “pollution of the marine environment” in almost identical terms. *Convention on the Law of the Sea*, opened for signature Dec. 10, 1982, Art. 1(4) U.N. Doc. A/CONF.62/122, reprinted in UNITED NATIONS, OFFICIAL TEXT OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA WITH ANNEXES AND INDEX, U.N. Sales No. E.83.V.5 (1983).

23. See *Resolution 2995 (XXVII) of the General Assembly* concerning co-operation between states in the field of the environment, 27 G.A.O.R., Supp. No. 30 (A/8730), at 42 (1973); *Recommendation of the Council of the Organisation for Economic Co-operation and Development on Principles Concerning Transfrontier Pollution*, Leading OEC Documents 30, 35 (1978); *Draft on the Law of the Non-navigational Uses of International Watercourses*, Article 8(2), U.N. Doc. A/CN.4/348, at 105 (1981). The *Trail Smelter* tribunal imposed liability only in cases “of serious consequence.” *Trail Smelter Case*, 3 R. Int’l Arb. Awards 1905 (1938 & 1941).

24. See I.L.C. *supra* note 14, draft Article 2(h).

25. *Id.*

26. See, e.g., *1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, Annex I, August 30, 1975, 26 U.S.T. 2403, 2465; *Agreement between the United States and Canada on Great Lakes Water Quality*, Nov. 22, 1978, 30 U.S.T. 1383.

27. See I.L.C., *supra* note 14, draft Articles 2(b), 2(c), 2(d).

3. State of Mind

Although neither the *Trail Smelter Case* nor the Stockholm Declaration specify the exact state of mind necessary to violate the duty to prevent environmental damage, it should be observed that the issue is exclusively concerned with the requisite degree of fault. On one view, a state must take “such measures as may be practicable under the circumstances” in order to escape liability.²⁸ On another view, a state will be strictly liable unless it can demonstrate that it had no knowledge of the activity in question!²⁹ For our purposes, there is no need to resolve the issue because we are concerned with deliberate environmental damage which will give rise to liability under either view of the requisite state of mind.

D. Responsibility for Violations

The principles established in the *Trail Smelter Case* and the Stockholm Declaration have their roots in the traditional regime of State Responsibility. For example, the tribunal in the *Trail Smelter Case* said that “a state owes at all times” a duty to prevent environmental damage, and “no state has the right” to cause environmental damage.³⁰ Similarly, Article 21 of the Stockholm Declaration provides that “states have . . . the responsibility to ensure” that their activities do not cause environmental damage.³¹ The general principle is specifically intended to protect states, can only be violated by states and, by implication, cannot give rise to any individual responsibility or punishment.

What, then, is the nature of a state’s responsibility? Under customary international law, a state which commits an “internationally wrongful act” incurs “state responsibility” which can only be discharged by making “reparation.” The Permanent Court of International Justice has explained 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. Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by restitution in kind or payment in place of it—such are the principles which should serve to determine the amount of compensation due for an act contrary to international law.³²

28. AMERICAN LAW INSTITUTE, RESTATEMENT OF THE LAW (REVISED) pt. IV, ch. 1, § 601(1).

29. I.L.C., *supra* note 14, draft Article 3.

30. *Trail Smelter Case*, 3 R. Int’l Arb. Awards at 1911, 1965.

31. Stockholm Declaration, *supra* note 12, at 1420.

32. *The Factory at Chorzow*, (Ger. v. Pol.), 1928 P.C.I.J., ser. A, No. 17, at 47 (Sept. 13, 1928).

On traditional principles, only those states which are directly injured by the wrongful conduct have jurisdiction to invoke the responsibility of the offending state to pay compensation. During the last half-century, however, two world wars and the technological revolution have dramatically changed the shape of international relations and the traditional framework of state responsibility has, in turn, undergone significant readjustment. In 1970, in the *Barcelona Traction Case*,³³ the International Court of Justice suggested that certain obligations, called “*erga omnes*,” affect the interests of all states and hence any state (whether specifically injured or not) has jurisdiction to invoke the responsibility of the offending state:

An essential distinction should be drawn between the obligations of a State towards the international community as a whole, and those arising vis-a-vis another State. By their very nature the former are the concern of all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes*.³⁴

This view is reinforced by the ILC’s *Draft Convention on State Responsibility* which introduces in Article 19, the notion of an “international crime”:

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, constitutes an international crime.³⁵

Significantly, Article 19(3) expressly stipulates that: “an international 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. . . .”³⁶

However, the foregoing principles only demonstrate that a rule designed to protect the environment is capable of amounting to an “international crime” or “*erga omnes*.” This does not mean that every rule pertaining to environmental protection will necessarily be so classified. In fact, it is extremely difficult to construe the particular principle established in the *Trail Smelter Case* and codified in the Stockholm Declaration as one of “essential importance for the safeguarding and preservation of the human environ-

33. *Barcelona Traction, Light, & Power Co. (Second Phase) (Belg. v. Sp.)*, 1970 ICJ REP. 3 (Judgement of Feb. 5).

34. *Id.* at 32.

35. Draft Article 19(2), 1976 I.L.C. REP. 175. Some western states (including the United States) rejected the Article as an unwise application of the notion of criminal responsibility, A/C 6/31/17 (1976). But it was generally agreed that “in the case of rules which protect the common and fundamental interests of all states . . . it is necessary to confer a right on any state individually to prosecute a claim.” Judge Arechaga, 159 R.C.A.D.I. 275 (1978-I).

36. *Id.* art. 19(3).

ment.”³⁷ The principle is specifically designed to resolve interstate disputes. The focus of concern is the injury inflicted upon a state’s interest, not the impact upon the interests of the international community at large. Even the ILC’s draft Articles only require the state of origin to “negotiate with the affected state” to determine the legal consequences of the harm.³⁸ In the final analysis, it must be concluded that the principle developed in the *Trail Smelter Case* and the Stockholm Declaration is not intended to protect global interests, only state interests. Hence, only those states which suffer environmental damage will be able to invoke the responsibility of the offending state to make reparation.

E. The War Context

1. Applicability of the General Principle in Wartime

The *Trail Smelter Case* and the Stockholm Declaration which, together, introduced the principle into customary international law, express the prohibition in broad terms and do not in any way preclude its application in the context of hostilities. This is reinforced by paragraph five of the *World Charter for Nature* in which the United Nations General Assembly (U.N.G.A.) overwhelmingly resolved that “nature shall be secured against degradation caused by warfare or other hostile activities.”³⁹ As part of a U.N.G.A. resolution, this provision is not inherently binding. It does, however, constitute further evidence supporting of the applicability of the general principle in wartime.

On the other hand, Article 26 of the ILC’s draft Articles on “International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law” provides that “there shall be no liability . . . if the harm was directly due to an act of war [or] hostilities.”⁴⁰ However, this provision has no basis in customary international law and certainly does not prejudice the wartime application of the principle established in the *Trail Smelter Case* and Stockholm Declaration. Indeed, Article 5 of the draft Articles expressly provides that “the present articles are without prejudice to the operation of any other rule of international law.”⁴¹

We therefore conclude that the general principle of state responsibility for environmental damage is applicable in wartime.

37. Stockholm Declaration, *supra* note 12.

38. I.L.C., *supra* note 14, draft Article 21.

39. The resolution was supported by over 100 states. The sole dissenting vote was cast by the United States. G.A. Res. 37/7, 37 U.N. GAOR Supp. (No. 51), U.N. Doc. A/RES/37/7 (1982), reprinted in 22 I.L.M. 456 (1983).

40. I.L.C., *supra* note 14, at 171.

41. *Id.* art 5.

2. Circumstances precluding wrongfulness

Even in the context of war, a state may be able to demonstrate the existence of certain circumstances which preclude the wrongfulness of acts which would otherwise be violations of the general principle. The "special circumstances" most likely to be invoked by a state causing wartime environmental damage are distress and necessity. It is important to appreciate that self-defence is not a defence to a violation of the general principle prohibiting environmental damage. It is only a defence to the use of force.⁴² However, as will shortly be demonstrated, a state committing wartime environmental damage must be doing so in the course of lawful self-defence in order to assert a circumstance of distress or necessity.

(a) Distress. The nature of "distress" in customary international law is codified in Article 32 of the ILC's *Draft Convention on State Responsibility*.⁴³ Under the Article, distress may only be invoked if the state had no other means of saving the lives of persons entrusted to its care.⁴⁴ Furthermore, distress may not be invoked if the state in question has contributed to the occurrence of the situation of extreme distress, or if the conduct in question was likely to create a comparable or greater peril.⁴⁵ In the context of war, this means that a state must at least be acting in lawful self-defence and must satisfy the requirement of proportionality.⁴⁶

(b) Necessity. The elements of "necessity" in customary international law are codified in Article 33 of the ILC's *Draft Convention*.⁴⁷ As in the case of "distress," a state must be acting in lawful self-defence because necessity may not be invoked if the state has contributed to the situation of necessity.⁴⁸ Unlike the case of "distress," however, the state need not be acting to save lives. It need only be safeguarding "an essential interest of the state against a grave and imminent peril."⁴⁹ At the same time, Article 33 imposes an upper limit on the amount of damage that may be inflicted by stipulating that the act of necessity must not "seriously impair an essential interest" of the victim state.⁵⁰

42. The "use of force" is prohibited by Article 2(4) of the U.N. Charter, subject to exceptions for self-defence (Article 51) and collective security authorized by the Security Council (Articles 39 and 42). Charter of the United Nations, 59 Stat. 1031, TS No. 993. This is discussed in detail in Section III.

43. 1979 I.L.C. REP. 329.

44. *Id.*

45. *Id.*

46. These concepts are discussed in detail in Sections III and IV.

47. 1980 I.L.C. REP. 69.

48. *Id.*

49. *Id.*

50. *Id.*

F. Summary

The vast majority of wartime environmental damage will give rise to state responsibility under the general principle derived from the *Trail Smelter Case* and the Stockholm Declaration. The special circumstances precluding wrongfulness could rarely be invoked because an offending state would be required to demonstrate that:

- (1) it caused the environmental damage in the course of lawful self-defence; and
- (2) environmental destruction was either:
 - (a) the only means of saving lives; or [distress]
 - (b) the only means of safeguarding an essential state interest, in which case it must not seriously impair an essential interest of the victim state. [Necessity]

However, the reality of modern armed conflict is such that the threat of post-war financial obligations is not likely to deter states or their individual representatives from engaging in environmental destruction during a war. After all, the issues over which wars are fought, (particularly when each state expects to be victorious), will invariably override any financial considerations! The inevitable conclusion is that while the general principle of state responsibility established in the *Trail Smelter Case* and codified in the Stockholm Declaration is fully applicable to wartime environmental damage, its primary role will be in the context of post-war reparations rather than as a deterrent to the infliction of such damage during the course of war.

II. SPECIFIC AREAS OF INTERNATIONAL ENVIRONMENTAL LAW

A. Overview

In this section we shall examine specific rules which build upon the general principle of state responsibility for environmental damage in order to address particular environmental concerns. Marine pollution has been the subject of numerous treaties since World War Two, primarily due to the vast expansion of maritime transport, accidental discharges from vessels and coastal installations and the dumping at sea of an ever-expanding list of noxious substances. Air pollution has also been a source of considerable concern in recent years, as a result of increased awareness of the large-scale climatic changes being caused by depletion of the ozone layer and the "greenhouse effect." Most importantly for present purposes, hostile environmental modification attracted particular international concern in the 1970s when it became apparent that future technology might enable countries to induce volcanic eruptions, droughts, earthquakes and extreme weather changes.

B. Marine Pollution

1. Pre-1982 Conventions

Bearing in mind the fact that the numerous treaties on marine pollution evolved in response to industrial accidents such as the discharges of the Torrey Canyon in 1966, the Amoco Cadiz in 1978 and the Exxon Valdez in 1989, it is not surprising that none of the treaties prior to 1982 have any application to deliberate wartime marine pollution. The following examples should suffice to illustrate this point:

- (1) The 1954 London *Convention for the Prevention of Pollution of the Sea by Oil* provides, in Article 19, that a government "in case of war or other hostilities" is entitled to "suspend the operation of the whole or any part of the present Convention."⁵¹
- (2) The 1969 Brussels *Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties* provides, in Article 2, that "no measure shall be taken under the present convention against any warship or other ship owned or operated by a state and used for the time being, only on government non-commercial service."⁵²
- (3) The 1972 London *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter* prohibits the dumping of waste, but defines "dumping" in Article 3(1) to exclude "placement of matter for a purpose other than the mere disposal thereof."⁵³ In other words, dumping of waste for the purpose of inflicting damage upon an enemy during war would not be prohibited.

2. The 1982 Law of the Sea Convention

Part 12 of the 1982 United Nations *Convention on the Law of the Sea* ("LOS Convention") is devoted to protection of the marine environment and is the most comprehensive attempt to address the issue to date.⁵⁴ Although

51. *Convention for the Prevention of Pollution of the Sea by Oil*, May 12, 1954, 12 U.S.T. 2989, 327 U.N.T.S. 3, 18.

52. *Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties*, brussels, Nov. 29, 1969, 26 U.S.T. 765, 767-68.

53. *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, Dec. 29, 1972, 26 U.S.T. 2403, 1046 U.N.T.S. 120, 140.

54. *Convention on the Law of the Sea*, opened for signature Dec. 10, 1982, Art. 1(4) U.N. Doc. A/CONF.62/122, reprinted in UNITED NATIONS, OFFICIAL TEXT OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA WITH ANNEXES AND INDEX, U.N. Sales No. E.83.V.5 (1983).

the convention is not yet in force,⁵⁵ it is generally accepted that all the provisions except those on deep sea-bed mining and dispute resolution represent customary international law. As John Moore, Director of the Centre for Oceans Law and Policy wrote in 1984:

Scholars presently differ on which portions of the Convention may now be regarded as customary international law and thus binding law for all States, whether or not party to the Convention. But there is significant support for the proposition that all of the provisions of the Convention, with the exception of those concerning deep sea-bed mining, are at least the best evidence of customary international law in the absence of State practice to the contrary.⁵⁶

Turning to the substantive provisions, it must first be conceded that some of the undesirable "old habits" have been reiterated in the LOS Convention. "Dumping" is restrictively defined in Article 1(5) as excluding "placement of matter for a purpose other than the mere disposal thereof." Furthermore, under Article 236, any "warship, naval auxiliary, other vessel or aircraft owned or operated by a state" is exempt from the provisions of the convention.

Nevertheless, the LOS Convention prohibits a wide range of undesirable marine activities, only a few of which involve "dumping" or "vessels." The majority of provisions, therefore, do contribute to wartime environmental protection. The relevant obligations may be summarized as follows:

- (1) Under Article 194(1), states are broadly obligated to take "all measures . . . necessary to prevent . . . pollution of the marine environment from any source, using . . . the best practicable means at their disposal."
- (2) Under Article 194(3), states are specifically obligated to "minimize to the fullest possible extent":
 - (a) "the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere," and;
 - (b) "pollution from . . . installations and devices operating in the marine environment."

Unfortunately, in contrast to the welcome enumeration of specific sources of marine pollution giving rise to obligations of prevention, the convention has made little progress in the area of responsibility. Article 235(1) simply

55. *Id.* In 1982 the convention was immediately signed by 119 nations. But it has not yet received 60 ratifications as required by Article 308. Several developed nations including the United States, the United Kingdom and the Federal Republic of Germany, did not sign due to dissatisfaction with the Convention's deep sea-bed mining regime.

56. John Moore, *Introduction* to MYRON NORDQUIST, UNITED NATIONS CONVENTION ON THE LAW OF THE SEA: A COMMENTARY xxviii (1985).

incorporates the customary obligation to make reparation for violations of international law:

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.

In Articles 207-212, states are directed to “adopt laws and regulations” for the prevention of marine pollution from each of the enumerated sources. Obviously, however, in a war situation perpetrators are not likely to be concerned about the domestic laws of their enemy, nor would they have reason to fear their own domestic laws while acting under government orders. Even the right of coastal states to forcibly prevent pollution of their coasts from marine casualties, under Article 221, would have little deterrent effect during war because the polluting state would naturally expect retaliation from its adversary.

In the end, the LOS Convention provides only a skeleton (albeit a good one) for the future regulation of marine pollution by international law. The only real contribution is the enumeration of specific sources of marine pollution which states, pursuant to their general responsibility, are obligated to prevent.

C. Air Pollution

A number of recently adopted treaties address the problems of transboundary pollution and depletion of the ozone layer. The 1979 Geneva *Convention on Long-Range Transboundary Air Pollution* provides, in Article 2, that “the contracting parties . . . shall endeavour to limit and, as far as possible, gradually reduce and prevent air pollution.”⁵⁷ Similarly, Article 2 of the 1985 Vienna *Convention for the Protection of the Ozone Layer* requires parties to “take appropriate measures” for the protection of the ozone layer.⁵⁸

In practice, however, these conventions do not impose real restrictions on deliberate wartime air pollution. First, the terminology is extremely weak: states need only “endeavour” to limit air pollution “as far as possible” and take “appropriate measures.” Secondly, the provisions seem to set out long-term objectives, rather than current obligations: parties must “gradually reduce” air pollution. Thirdly, and most significantly, neither convention imposes any liability or provides for responsibility.

The main purpose of these conventions, as indicated by most of their articles, is to facilitate peacetime exchange of technical information,

57. Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, T.I.A.S. No. 10541, *reprinted in* 18 I.L.M. 1442 (1979) (entered into force Mar. 16, 1983).

58. Vienna Convention for the Protection of the Ozone Layer, *opened for signature* Mar. 22, 1985, *reprinted in* 26 I.L.M. 1529 (entered into force Sept. 1, 1988).

monitoring of air pollutants and financing of research.⁵⁹ They are not intended to establish specific prohibitions on deliberate wartime air pollution.

D. Hostile Environmental Modification

1. The En-Mod Convention

Within the regime of International Environmental Law, the only instrument which directly addresses the problem of deliberate wartime environmental damage is the 1976 Geneva *Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques*.⁶⁰ The convention is currently binding on 55 states, including a substantial proportion of those technologically advanced countries whose cooperation would be necessary to effectuate the aims of the convention—United States, Soviet Union, United Kingdom, Japan, Germany, Canada, Cuba, Egypt, Yemen, India, Pakistan and others.⁶¹

A number of States, including Iran, Iraq and Syria, have signed the convention but have not yet ratified it. Although these States are not bound by the terms of the treaty, they are probably bound by Article 18 of the *Vienna Convention on the Law of Treaties*⁶² which provides that: “a state is obliged to refrain from acts which would defeat the object and purpose of a treaty when . . . it has signed the treaty . . . subject to ratification.”⁶³ In other words, they must not act inconsistently with the convention’s stated objective of prohibiting “military or any other hostile use of environmental modification techniques in order to eliminate the dangers to mankind from such use.”⁶⁴ Of course, a violation of the *Convention on the Law of Treaties* is not the same as a violation of the En-mod Convention itself. The scope

59. Convention on Long-Range Transboundary Air Pollution, *supra* note 57; Vienna Convention for the Protection of the Ozone Layer, *supra* note 58.

60. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, May 18, 1977, 31 U.S.T. 333, 1108 U.N.T.S. 152 (banning the use of techniques of environmental modification in war) [hereinafter En-Mod Convention]. The convention was adopted by G.A. Res. 321/72, by a vote of 90 to 8 with 30 abstentions. It came into effect on October 5, 1978.

61. MULTILATERAL TREATIES DEPOSITED WITH THE SECRETARY-GENERAL: STATUS AS AT 31 DECEMBER 1989, at 836, U.N. Doc. ST/LEG/SER. E/8 (1990) [hereinafter MULTILATERAL TREATIES].

62. Convention on the Law of Treaties, *opened for signature* May 22, 1969, U.N. Doc. A/CONF.39/27, *reprinted in* 63 AM. J. INT’L L. 875 (1969), and in 8 I.L.M. 679, 686 [hereinafter Vienna Convention]. The convention is the principal authoritative source of the law of treaties. It is regarded as largely (but not entirely) declaratory of existing law, and on that basis it has been invoked and applied by tribunals and by states even prior to its entry into force and in regard to non-parties as well as parties.

63. *Id.* State practice suggests that Article 18 is part of customary international law. For example, the United States and Soviet Union have both accused each other of violating the unratified *Strategic Arms Limitation Treaty (SALT II)*. Indeed, in 1986, the President ordered the elimination of two nuclear submarines in order to keep within the terms of the unratified treaty.

64. En-Mod Convention, *supra* note 60, at 335.

of state responsibility in this regard is likely to be in the nature of nominal damages only.

2. The Central Obligation

Article 1 of the En-mod Convention sets out the central obligation in the following terms: "Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party."⁶⁵ We shall examine the various elements of the Article in turn.

(a) "military or any other hostile use." It is significant that, in prohibiting "military or any other hostile use," the convention does not distinguish between lawful and unlawful uses of force.⁶⁶ Presumably, the underlying policy is that hostile environmental modification poses such a threat to mankind that it must be prohibited even in the course of lawful self-defence or authorized collective security. This stands in contrast to the general principle in the *Trail Smelter Case* and Stockholm Declaration, which is subject to exception in circumstances of "necessity" or "distress."

(b) "environmental modification techniques." This term is defined in Article 2 as: "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."⁶⁷ Although the definition is very broad and extends to every sector of the global environment, it seems to be primarily concerned with very large-scale environmental manipulation. This is reinforced by the Understanding reached by the Conference of the Committee for Disarmament and submitted to the General Assembly together with the convention.⁶⁸ The Understanding on Article 2 sets forth the following illustrations of phenomenon that might result from environmental modification:

earthquakes; tsunamis; an upset in the ecological balance of a region; changes in weather patterns (clouds precipitation, cyclones of various types and tornadic storms); changes in climate patterns, changes in the state of the ozone layer; and changes in the state of the ionosphere.⁶⁹

(c) "widespread, long-lasting or severe effects." These terms describe the requisite quantum of damage. They are phrased in the alternative so that

65. *Id.* art. 1.

66. *Id.*

67. *Id.* art. 2.

68. *Id.*

69. *Id.*

the existence of any one effect will invoke the prohibition. The problem with these expressions is that there is no indication of how widespread or how severe the damage must be. The Understanding accompanying Article 1 does define the terms as follows:

- (a) "widespread": encompassing an area on the scale of several hundred square kilometres;
- (b) "long-lasting": lasting for a period of months, or approximately a season;
- (c) "severe": involving serious or significant disruption or harm to human life, natural and economic resources or other assets.⁷⁰

However, this interpretation does not represent a consensus of opinion and is not part of customary international law. Some governments expressly rejected these interpretations and criticized the vague terminology of the convention. The Turkish Government, for example, made the following *Interpretive Statement* when it signed the convention:

In the opinion of the Turkish Government the terms "widespread", "long-lasting" and "severe effects" contained in the Convention need to be clearly defined. So long as this clarification is not made the Government of Turkey will be compelled to interpret itself the terms in question and consequently it reserves the right to do so as and when required.⁷¹

Even if the Understanding on Article 1 was widely accepted, it would be open to criticism because the interpretation would subsume a large category of environmentally hazardous weapons which should arguably be permissible in certain circumstances during a war.⁷² For present purposes, we may conclude that the vague terminology significantly undermines the practical value of the convention.

(d) "as the means of destruction, damage or injury." This phrase raises the question of whether the offending state must have intended to cause the exact damage that occurred, or need only have intended to cause some damage. The former alternative would enable states to easily avoid the convention by asserting that they did not intend to cause the amount or type of damage that in fact occurred. The latter alternative, however, would mean that states are responsible for excessive damage which they had no intention of causing and no means of anticipating. It is submitted that states should be responsible for any damage which they intended to cause and any excess damage which was reasonably foreseeable.

70. *Id.*

71. MULTILATERAL TREATIES, *supra* note 61, at 836.

72. The terms are considered further in Section IV in relation to 1977 Protocol (I) Additional to the Geneva Conventions of 1949 (*infra* note 155), including a suggested interpretation representing the maximum consensus of all states.

3. Responsibility for Violations

Like all the other instruments of International Environmental Law, the En-mod Convention only invokes the responsibility of states. Under Article 1, "each state party" undertakes not to engage in hostile environmental modification against "other state parties."⁷³

State responsibility under the convention, however, does *not* include any obligation to make reparation or pay monetary compensation. Instead, Article 5(2) obligates the U.N. General-Secretary to convene a Consultative Committee of Experts at the unilateral request of any state.⁷⁴ The committee is required to assess the situation and present "a summary of its findings of fact."⁷⁵ The underlying rationale is that the committee's findings will have a political impact and result in some "horizontal enforcement" by encouraging the offending state to make reparation so as to re-establish its credibility in the international community. However, this is somewhat undermined by the fact that the committee is not authorized to draw legal conclusions, to vote on "matters of substance" or to impose liability. Indeed, in the context of war, international diplomacy has usually been exhausted already and states are unlikely to be overly concerned about a committee's report.

The convention provides two other "enforcement mechanisms" which merit brief consideration. First, Article 4 directs states to enact domestic legislation to enforce the convention in areas under their jurisdiction or control.⁷⁶ However, as explained in relation to the LOS Convention, this mechanism is of very little use. Secondly, Article 5(3) entitles any state party to "lodge a complaint with the Security Council of the United Nations."⁷⁷ If the Security Council decides that the complaining state "has been harmed or is likely to be harmed," then every other state is obligated to "provide or support assistance in accordance with the . . . Charter of the United Nations." In other words, the Security Council may act in accordance with its powers under Chapters VI and VII of the U.N. Charter.⁷⁸ In fact, this conferral of power upon the Security Council is both superfluous and deceptive. The Security Council's powers under Chapter VI and VII exist independently of any convention and does not require any express conferral by particular conventions.⁷⁹ Under Article 39 of the U.N. Charter, the Council's "Chapter VII" powers are conditional on the existence

73. En-Mod Convention, *supra* note 60, art. 1.

74. *Id.* art. 5(2).

75. *Id.*

76. *Id.* art. 4.

77. *Id.* art. 5(3).

78. U.N. CHARTER, *supra* note 42, ch. VI & VII.

79. *Id.*

of a “threat to the peace, breach of the peace or act of aggression.”⁸⁰ The question is whether any of those conditions will be satisfied in the event of an act of hostile environmental modification. This issue is examined in detail in Section III of this article.

E. Summary

Our analysis in this section demonstrates that International Environmental Law is not adequately equipped to deal with deliberate wartime environmental damage. Of all the numerous conventions on specific environmental concerns, only two make any significant contribution to wartime environmental protection. The LOS Convention builds upon the general principle discussed in Section I by listing specific sources of marine pollution which states must avoid. The En-mod Convention directly prohibits large-scale modification of the environment for military purposes.

Even these conventions, however, are problematic. The difficulties can be summarized as follows:

- (1) Deliberate wartime pollution by “dumping” or through the use of “vessels,” is exempt from the LOS Convention.
- (2) The requisite quantum of damage under the En-mod Convention is extremely uncertain because the expressions, “widespread, long-lasting or severe,” are capable of divergent interpretation.
- (3) The reluctance of several important states (particularly Iraq, Iran and Syria) to become parties to the En-mod Convention significantly undermines its effectiveness and its ability to contribute to the progressive development of customary international law.
- (4) Most importantly, the responsibility provisions both under the LOS Convention and the En-mod Convention are too weak to influence the behavior of a state engaged in armed conflict. Neither the threat of post-war financial obligations, nor the embarrassment of an adverse report by a committee, is sufficient to deter a state from engaging in environmental destruction during a war. Only the threat of post-war individual criminal responsibility is likely to have an impact on the servicemen and decision-makers who really constitute “the state.”

80. *Id.* art. 39.

III. THE INTERNATIONAL LAW OF FORCE: THE "JUS AD BELLUM"

A. Overview

In this section, we shall examine the laws regulating the use of force *per se* (the "jus ad bellum") with a view to their capacity to restrain environmental victimization. There are essentially four aspects within this regime which require investigation.

First, we must consider the nature of the general prohibition on the use of force, the breach of which at least gives rise to state responsibility to make reparation.

Secondly, we shall examine the scope of the pre-conditions in the U.N. Charter which govern the power of the Security Council to authorize collective military operations.

Thirdly, we will analyze the nature of crimes against peace (specifically, the crime of waging an aggressive war) which give rise to individual criminal responsibility.⁸¹ Our concern is whether an otherwise non-aggressive war can be rendered aggressive by virtue of environmental victimization.

Finally, we must remember that all the above sanctions only apply when environmental damage is inflicted in the course of an unlawful use of force. We must therefore briefly discuss the two main exceptions to the prohibition on the use of force, namely, self-defence and authorized collective security. Environmental damage inflicted in the course of either of these lawful uses of force will not be restricted by the "jus ad bellum" regime.

B. Environmental Damage as a Prohibited "Use of Force"

1. The Prohibition on the Use of Force

Until the early part of this century, war was still regarded as a lawful instrument of national policy, a "natural function of the state and a prerogative of its uncontrolled sovereignty."⁸² However, after two world wars and numerous unsuccessful attempts to outlaw war,⁸³ the *Charter of the United Nations* was set up "to save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind."⁸⁴ In Article 2(4), the Charter expressly prohibited not only war,

81. Agreement for the Prosecution and Punishment of the Major War Criminals of the European Axis, Aug. 8, 1945 and Oct. 6, 1945, 59 Stat. 1543, U.N.T.S. 280, 284.

82. 2 OPPENHEIM'S INTERNATIONAL LAW 178 (Lauterpacht ed., 7th ed. 1952).

83. 1919 *Covenant of the League of Nations*, reprinted in RUTH B. RUSSELL, A HISTORY OF THE UNITED NATIONS CHARTER 978-89 (1958); Paris General Treaty for Renunciation of War as an Instrument of National Policy, Aug. 27, 1928, 94 L.N.T.S. 57.

84. U.N. CHARTER, *supra* note 42, preamble.

but any "threat or use of force against the territorial integrity or political independence of any state."⁸⁵

Over the years, it has been suggested that certain uses of inter-state force do not violate "territorial integrity" or "political independence" and hence would not be prohibited.⁸⁶ The overwhelming weight of authority, however, regards Article 2(4) as an absolute prohibition, subject only to collective security (Article 42) and self-defence (Article 51).⁸⁷

It is now generally accepted that Article 2(4) not only corresponds to customary international law, but "belongs to the realm of *jus cogens*."⁸⁸ This means it is "a norm from which no derogation is permitted and which can be modified only by a subsequent norm . . . having the same character."⁸⁹

2. Responsibility for Violations

A violation of the obligation in customary international law to refrain from the threat or use of force constitutes an internationally wrongful act, giving rise to state responsibility to make reparation. Reparation would ordinarily consist of monetary compensation for all losses and injuries suffered by the victim states and their nationals as a result of the unlawful use of force.

The use of force, as such, does not give rise to any individual responsibility or punishment because the obligation is imposed upon states.⁹⁰ However, if the use of force amounts to the "waging of a war of aggression," it will constitute a "crime against peace" for which there is individual criminal responsibility.⁹¹ At this stage it should be noted that "aggression" appears to have acquired the character of "erga omnes," or "international crimes," whereby every state (not just the immediate victim) is entitled to invoke the responsibility of the aggressor to make reparation.⁹²

85. *Id.* art. 2(4).

86. *E.g.*, the use of force solely to vindicate a legal right or to provide humanitarian aid.

87. These exceptions are discussed in Part E of this section. Dinstein arrives at this interpretation by reference to other provisions of the Charter, YORAM DINSTEIN, *WAR, AGGRESSION AND SELF-DEFENCE* 86 (1988). Brownlie arrives at the same conclusion by examining the *Travaux Préparatoires* of the Charter, IAN BROWNLIE, *INTERNATIONAL LAW AND THE USE OF FORCE BY STATES* 266-67 (1963). This interpretation is also implicit in the recent judgement of the International Court in the *Nicaragua Case*, 1986 I.C.J. Rep. 14, 100.

88. *Nicaragua Case*, 1986 I.C.J. Rep. 14, 153

89. Vienna Convention, *supra* note 42, at 698-99, art. 53.

90. Article 2(4), for example, provides that "all Members" shall refrain from the use of force. Since membership of the United Nations is limited to states, only states are bound by the obligation. U.N. CHARTER, *supra* note 42, art. 2(4).

91. We shall explore this possibility in section IIID of this section.

92. This characterization of aggression is directly supported by the *Barcelona Traction Case*, *Barcelona Traction, Light, and Power Company Ltd.* (New Application: 1962) (Belgium v. Spain) Second Phase, 1970, 46 I.L.R. 178, 206; and Article 19 of the Draft Articles, *supra* note 27, at 95.

3. Environmental Damage as a "Use of Force"

The term "use of force" is not expressly defined in any international legal instruments. Brierly asserts that Article 2(4) only prohibits the use of "armed force" because this expression is used in the preamble of the Charter.⁹³ But this assertion appears to be unfounded. The historical evolution of the prohibition on the use of force suggests that words such as "armed," "military," "aggression" and "war" were purposely avoided in Article 2(4) "because these terms lend themselves to circumvention."⁹⁴ Indeed, Brownlie comments that "the *travaux préparatoires* do not indicate that the phrase applied only to armed force" and "there is no evidence either in the discussions at San Francisco or in State or United Nations practice" suggesting such a limited construction.⁹⁵

Given, then, that the "use of force" concept is wider than "armed force," does it extend to the infliction of environmental damage? Brownlie stated in 1963 that "deliberate employment of natural forces by a state . . . can probably be regarded as a use of force."⁹⁶ He suggests the "release of large quantities of water down a valley" and "the spreading of fire through a built up area or woodland across a frontier" as possible (albeit difficult) examples.⁹⁷

More compelling is the growing support for the recognition of "coercive economic measures" as a "use of force." The *Charter of the Organisation of American States*, for example, provides in Article 16 that "no state may use . . . coercive measures of an economic or political character in order to force the sovereign will of another state."⁹⁸ Of course, customary international law does not, at present, recognize economic coercion as a use of force⁹⁹—such a claim by Iraq during the recent Persian Gulf Conflict was firmly and universally rejected by the international community.¹⁰⁰ Nevertheless, if international law is moving in the direction of recognizing

93. J.L. BRIERLY, *THE LAW OF NATIONS* 415 (Sir Humphrey Waldock ed., 6th ed. 1963).

94. LOUIS HENKIN ET AL., *INTERNATIONAL LAW CASES AND MATERIALS* 677 (2nd ed. 1987).

95. BROWNLIE, *supra* note 53, at 362.

96. *Id.* at 376.

97. *Id.* at 362-63.

98. 2 U.S.T. 2394, 119 U.N.T.S. 3. For similar resolutions, see Article 32 of the *Charter of Economic Rights and Duties of States*, G.A. Res. 3281, 29 U.N. GAOR Supp. (No. 31), U.N. Doc. A/9631 (1974); *Declaration of the Principles of International Law concerning Friendly Co-operation among States*, G.A. Res. 2625 (XXV), 25 U.N. GAOR Supp. (No. 28), U.N. Doc. A/8028 (1970); *Declaration on the Inadmissibility of Intervention in Domestic Affairs of State and the Protection of their Independence and Sovereignty*, G.A. Res. 2131, 20 U.N. GAOR Supp. (No. 14), U.N. Doc. A/6014 (1965).

99. The concept of economic aggression was widely criticized as "liable to extend the concept of aggression indefinitely," 7 U.N. GAOR Supp., No. 20, U.N. Doc. A/2211 at 58 (1952). Economic coercion was excluded from the 1974 consensus. *Definition of Aggression*, G.A. Res. 3314, 29 U.N. GAOR 29th Sess., Supp., No. 31, U.N. Doc. A/9631 (1974).

100. Television Documentary Program "Price of Peace: *The Mother of all defeats*," Melbourne, Australia, March 25, 1991, 8:30-10:30 p.m., Channel 10 (on file with author).

economic coercion as “force,” *a fortiori* the infliction of deliberate environmental damage is likely to constitute a “use of force.”

Further evidence in support of the characterization of environmental damage as a “use of force” lies in Resolution 687 of the U.N. Security Council (the “cease-fire” resolution in the Persian Gulf conflict).¹⁰¹ Paragraph 16 of the resolution expressly “reaffirms that Iraq is liable under international law for any direct loss, damage, including environmental damage and the depletion of natural resources . . . as a result of Iraq’s unlawful invasion and occupation of Kuwait.”¹⁰² What is the legal basis for this imposition of liability? At first, there might appear to be three possibilities: (1) violation of the Stockholm principle prohibiting environmental damage; (2) violation of the laws of warfare, or; (3) violation of the prohibition on the use of force. On closer examination, however, the first two possibilities may be dismissed because they have nothing to do with the “lawfulness” of the invasion. The reference to “Iraq’s unlawful invasion” could only relate to the prohibition on the use of force which, under the terms of paragraph 16, includes “environmental damage.”

In the writer’s view the prohibition in Article 2(4) deliberately employs the broad term “force” in order to encompass any agency—including environmental manipulation—which has an adverse physical impact upon another state. It is the adverse physical impact, rather than the particular agency employed, which invites a conclusion that force has been used. In the case of economic coercion, an adverse physical impact is not always readily apparent because it is difficult to objectively assess the impact of economic pressure—hence the reluctance to recognize economic coercion as a use of force. Environmental damage, however, whether caused by the ignition of oil-well fires or by the pumping of oil into the sea, in itself constitutes an extremely adverse physical impact—worthy of full recognition as a use of force. This approach is consistent with the *Oxford Dictionary’s* definition of “force” as a “measurable and determinable influence, tending to cause motion of a body.”¹⁰³ The core of this definition is an “influence tending to cause motion”¹⁰⁴—in other words, a “physical impact.” The qualifying criteria are that the influence or impact must be “measurable and determinable”¹⁰⁵—in other words, “objectively assessable.”

Of course, not all environmental damage will amount to a use of force. Just as “a few stray bullets across a boundary”¹⁰⁶ would not be regarded as a violation of Article 2(4), small-scale environmental damage such as a small transboundary bushfire would also escape the prohibition. The

101. S.C. Res. 687, U.N. Doc. S/22430 (1991).

102. *Id.*

103. THE CONCISE OXFORD DICTIONARY 382 (7th ed. 1982).

104. *Id.*

105. *Id.*

106. Bengt Broms, *The Definition of Aggression*, (1977) 154 R.C.A.D.I. 299, 346.

question of the requisite quantum of damage is no clearer here than it is in relation to the International Environmental Law regime. The "agency" theory which we developed above suggests that the damage must at least be "measurable" or "objectively determinable." However, it is certainly clear from Resolution 687 that severe damage, such as that inflicted on the environment during the Persian Gulf Conflict, violates Article 2(4).

*C. Environmental Damage as a "Threat to the Peace"
or "Breach of the Peace"*

1. The Nature of Collective Security

The question of whether environmental damage can amount to a "threat to the peace" or "breach of the peace" is important for our purposes because the collective security mechanism in Chapter VII of the U.N. Charter is triggered by the Security Council's determination that there exists any "threat to the peace, breach of the peace, or act of aggression."¹⁰⁷ The process commences with calls on the parties to comply with provisional measures,¹⁰⁸ then measures not involving the use of armed force such as the "interruption of economic relations" or the "severance of diplomatic relations,"¹⁰⁹ and finally, should the Security Council decide that these measures are inadequate, it "may take such action by air, sea, or land forces as may be necessary to maintain or restore international peace and security."¹¹⁰

At this stage we shall only examine the scope of "threats to the peace" and "breaches of the peace."¹¹¹

2. Environmental Damage as a "Threat to the Peace"
or "Breach of the Peace"

Having established that environmental damage may constitute a "use of force," it is appropriate to begin our investigation here by observing that most authorities regard the term "threat to the peace" as even wider in scope than "threat or use of force." Róling explains that whereas "threat of force is illegal," a "threat to the peace may be the consequence of legitimate activities."¹¹² Broms similarly argues that "economic, ideological and other like forms of aggression" which are not threats or uses of force "could

107. U.N. CHARTER, *supra* note 42, art. 39.

108. *Id.* art. 40.

109. *Id.* art. 41.

110. *Id.* art. 42.

111. Environmental damage as an "act of aggression" is considered in Part D.

112. B.V.A. Róling, *On Aggression, On International Criminal Law, On International Criminal Jurisdiction*, 2 NEDERLANDS TIJDSCHRIFT VOOR INTERNATIONAAL RECHT 167, 173-74 (1955).

be defined as acts falling within the framework of a threat to the peace or a breach of the peace.”¹¹³ Kelsen, in fact, provides a long list of “threats to the peace” which would not amount to “threats or uses of force.”¹¹⁴ Hence, we may confidently extend our previous finding that environmental damage may amount to a “use of force” to a conclusion that environmental damage may amount to a “threat to the peace” or “breach of the peace.”

Alternatively, the characterization of environmental damage as a “threat to the peace” or “breach of the peace” may be inferred even without resorting to indirect argumentation about the scope of the “use of force” concept. Dinstein states that Article 39 of the U.N. Charter gives the Security Council “a *carte blanche* in evaluating any given situation . . . Nowhere is the Council under less strictures than in its determination that a threat to the peace exists.”¹¹⁵ Kelsen takes this view one step further, stating:

Since the Security Council is completely free in its determination of what is a threat to the peace or breach of the peace, it may determine as such any conduct of a state without regard to whether this conduct constitutes the violation of an obligation stipulated by pre-existing law. By declaring the conduct of a state to be a threat to, or breach of, the peace, the Security Council may create new law.¹¹⁶

In similar terms, Akehurst concludes that, realistically, “a threat to the peace is whatever the Security Council says is a threat to the peace.”¹¹⁷ These assertions are not sarcastic observations on United Nations practice, nor are they cynical criticisms of Charter phraseology. They derive from the fact that: “the Council is a political and not a judicial organ. It is composed of Member States, and its decisions are (and have every right to be) linked to political motivations that are not necessarily congruent with legal considerations.”¹¹⁸

Clearly, there is no legal impediment to a determination by the Security Council that acts of environmental damage constitute a “threat to the peace” or a “breach of the peace.” It will, in the end be a question of political will, which in turn depends largely on the gravity of the damage and the perceived threat to international peace and security. It is significant that, in the context of the recent Persian Gulf Conflict, the commencement of the allied “ground war” was reportedly triggered in part by growing evidence of the Iraqi troops

113. Broms, *supra* note 106, at 386-87.

114. *E.g.* “If a state refuses to execute the decision of the International Court of Justice,” HANS KELSEN, *THE LAW OF THE UNITED NATIONS* 727-28 (1950).

115. DINSTEIN, *supra* note 87, at 258.

116. KELSEN, *supra* note 114, at 736.

117. MICHAEL AKEHURST, *A MODERN INTRODUCTION TO INTERNATIONAL LAW* 181 (4th ed. 1982).

118. DINSTEIN, *supra* note 87, at 258-59.

sabotaging the Kuwaiti oil wells and inflicting environmental damage of potentially global proportions.¹¹⁹

D. Environmental Damage as Aggression

1. Individual Responsibility for Crimes Against Peace

Whether environmental damage amounts to “aggression” is relevant in two contexts. First, if the Security Council determines that the environmental damage constitutes an “act of aggression,” it may authorize a collective military response under Articles 39 and 42 of the U.N. Charter.¹²⁰ Secondly, and of far greater significance, Article 6(a) of the *Charter of the International Military Tribunal at Nuremberg* (the “Nuremberg Charter”)¹²¹ provided that the “planning, preparation initiation, or waging of a war of aggression” is a “crime against peace” for which “there shall be individual responsibility.”¹²² Such responsibility was to consist of criminal sanctions including where appropriate, capital punishment.¹²³ Furthermore, crimes against peace were to attract universal jurisdiction whereby any state was entitled to prosecute offenders subject only to the practical attainment of custody.¹²⁴ At the time of the Nuremberg Trials, there was considerable debate about whether the crime of aggressive war was part of customary international law.¹²⁵ Today, however, there is no doubt that “the criminality of aggressive war has entrenched itself in an impregnable position in contemporary international law.”¹²⁶ For present purposes, therefore, the issue is whether acts of environmental damage performed during a war qualify as “aggression” so as to render the war a “war of aggression.”

2. Environmental Damage as “Aggression”

The term “aggression” has a long legal history dating back to the early days of Greece.¹²⁷ However, it was not until 1974, after 20 years of

119. Television Documentary Program, *supra* note 100.

120. U.N. CHARTER, *supra* note 42, art. 39, 42. Of course, the Security Council’s powers are identical in the face of aggression, breach of the peace or any threat to the peace. Hence, it is not imperative for the Council to determine specifically that aggression has been perpetrated.

121. Agreement for the Prosecution and Punishment of the Major War Criminals of the European Axis (Nuremberg Charter), Aug. 8, 1945, 59 Stat. 1544, 82 U.N.T.S. 280, 284.

122. *Id.*

123. *See id.* art. 27.

124. *See* Article 6 of the London Agreement to which the Charter was annexed.

125. *See* Franz Schick, *Crimes Against Peace*, 38 J. CRIM. L. & CRIMINOLOGY 445 (1948); Quincy *The Law of the Nuremberg Trial*, 41 AM. J. INT’L L. 38 (1947); George A. Finch, *The Nuremberg Trial and International Law*, 41 AM. J. INT’L L. 20 (1947).

126. DINSTEN, *supra* note 87, at 188. *See* G.A. Res. 95(I); G.A.Res. 177(II).

127. *See* Broms, *supra* note 106, at 305-35.

negotiations and submissions from representatives from 138 nations, that the U.N. General Assembly was able to reach a consensus with the adoption of Resolution 3314.¹²⁸ The overwhelming majority of nations have accepted the General Assembly's Definition¹²⁹ and at least one paragraph, namely Article 3(g)¹³⁰ has been held by the International Court of Justice in the 1986 *Nicaragua Case* to mirror customary international law.¹³¹ At the outset, therefore, "the essence of crimes against peace has to be extracted from the General Assembly's formulation."¹³²

The General Assembly's Definition contains both general and enumerative elements. The general part is embodied in Article 1: "Aggression is the use of armed force by a State against the sovereignty, territorial integrity or political independence of another State, or in any other manner inconsistent with the Charter of the United Nations, as set out in this Definition."¹³³

This is a repetition of the core wording of Article 2(4) of the U.N. Charter prohibiting the use of force, subject to several variations. The most significant variation for present purposes is that the Definition refers to the use of "armed force"¹³⁴ whereas the U.N. Charter simply prohibits the use of "force."¹³⁵ Having demonstrated that acts of environmental damage may constitute a use of "force," may they also constitute a use of "armed force?"

The natural starting point in answering this question, is the enumeration of specific acts of aggression in Article 3 of the Definition. Sub-paragraph (b), the second of the seven illustrations, includes "the use of any weapon by a state against the territory of another state," as an act of aggression.¹³⁶ Can environmental manipulation be regarded as a "weapon"? As an initial observation, it is worth recalling the 1976 *Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques*.¹³⁷ Irrespective of the substance of the convention, its mere existence suggests that environmental modification was widely perceived as a

128. *Definition of Aggression*, G.A. Res. 3314, 29 U.N. GAOR 29th Sess., Supp., No. 31, U.N. Doc. A/9631 (1974).

129. *Id.* at 362-63.

130. Article 3(g) of the definition provides that the "sending . . . of armed bands . . . which carry out acts of force against another state [may] qualify as an act of aggression." G.A. Res. 3314, 29 U.N. GAOR Supp (No. 31), U.N. Doc. A/9631 (1974).

131. 1986 I.C.J. Rep. 14, 103. Since Article 3(g) was the most indirect form of aggression in the enumeration, it may be inferred by interpolation that "other portions of Article 3 may equally be subsumed under the heading of true codification." DINSTEIN, *supra* note 87, at 124.

132. DINSTEIN, *supra* note 87, at 121.

133. *Definition of Aggression*, G.A. Res. 3314, 29 U.N. GAOR 29th Sess., Supp., No. 31, U.N. Doc. A/9631 (1974).

134. U.N. CHARTER, *supra* note 42, art. 2(4).

135. *Id.*

136. *Id.* art. 3(b).

137. En-Mod Convention, *supra* note 60, at 333.

potential weapon of war. This argument is reinforced by the *Explanatory Note* to Article 3(b), recording the unanimous agreement of the Special Committee that the expression "any weapon," is intended to include "conventional weapons," weapons of mass destruction and [significantly] any other kind of weapon."¹³⁸ Since environmental manipulation is capable of causing at least as much damage as conventional weapons, and potentially as much damage as weapons of mass destruction, it is submitted that environmental warfare is exactly the type of new weapon which the framers of the *Definition of Aggression* would have intended to be included by Article 3(b).

Nevertheless, if environmental manipulation cannot be regarded as a "weapon," under Article 3(b) of the Definition, further investigation is still merited because Article 4 states that "the acts enumerated [in Article 3] are not exhaustive."¹³⁹ To determine whether environmental manipulation might fall within the general definition of aggression as a "use of armed force," it is necessary to consider the underlying interest at the heart of the concept of aggression which was to be protected by the criminalization of "aggressive war." The first clue as to the nature of this interest is found in the fifth preambular paragraph of the Definition: "Aggression is the most serious and dangerous form of the illegal use of force, being fraught in the conditions created by the existence of all types of weapons . . . with the Possible threat of a world conflict and all its catastrophic consequences."¹⁴⁰ Further insight is provided by an observation of George Finch in relation to the Nuremberg Trials in 1947. Finch canvasses the various contemporary views on the definition of aggression and comments that a good definition would apply to weapons and other scientific instruments "the outlawry of which is vitally necessary to safeguard not merely the future peace but civilization itself."¹⁴¹ Finally, the following statement by Judge Biddle (the American Judge on the Nuremberg Tribunal) in his report of the trial to President Truman is of supreme intuitive value:

Aggressive war was once romantic; now it is criminal. For nations have come to realise that it means the death not only of individual human beings, but of whole nations, not only with defeat, but in the slow degradation and decay of civilised life that follows that defeat.¹⁴²

The common thread running through all these sources is that the criminalization of aggressive war was fundamentally designed to protect the welfare of future generations of mankind. It was not intended to be limited to military

138. See paragraph 20 of the *Report of the Special Committee on the Question of Defining Aggression*, U.N. GAOR, 29th Sess., Supp. No. 19, at 9, U.N. Doc A/9619.

139. *Definition of Aggression*, art. 4, G.A. Res. 3314, 29 U.N. GAOR 29th Sess., Supp., No. 31, U.N. Doc. A/9631 (1974).

140. *Id.*

141. Finch, *supra* note 125, at 36.

142. Report of Judge Francis Biddle to President Truman, Nov. 24, 1946, 15 Dep't St. Bull., No. 6, 954, 956.

invasions and missile attacks. Rather, it extends to any conduct threatening future civilization. It is indisputable in this context that environmental damage is capable of threatening not only the welfare, but also the very survival of future generations of mankind. This reality was most clearly stated in the Commentary to the ILC's draft Articles on State Responsibility:

[T]he astounding progress of modern science, although it has produced and continues to produce marvellous achievements of great benefit to mankind, nevertheless imparts a capacity to inflict kinds of damage which would be fearfully destructive not only of man's potential for economic and social development but also of his health and of the very possibility of survival for the present and future generations.¹⁴³

In the final analysis, therefore, it is confidently submitted that acts of environmental damage perpetrated during the course of a war are capable of rendering that war *aggressive*, so as to attract individual penal responsibility. Of course, much still depends on the magnitude of damage inflicted. The comments made about the quantum of damage in relation to the use of force are equally applicable here.

E. Lawful Uses of Force

The most significant limitation on all the foregoing principles is that they presuppose the illegitimacy of the resort to force in the first place. If environmental damage is inflicted by a state in the course of a lawful use of force, then it cannot amount to a prohibited "use of force," a "breach of peace" or a "crime against peace." In such circumstances, even the most severe acts of deliberate environmental destruction will escape liability under the "jus ad bellum" regime.

We have already discussed one lawful use of force, namely, collective military operations authorized by the U.N. Security Council under Articles 39 and 42 of the U.N. Charter.¹⁴⁴ The other main lawful use of force is the right of self-defence enshrined in Article 51 of the U.N. Charter.¹⁴⁵

Under customary international law, states were entitled to use force in self-defence where "the necessity of that self-defence is instant, overwhelming, and leaving no choice of means, and no movement for deliberation."¹⁴⁶ When these criteria were present, a state was entitled to use force even in anticipation of an armed attack. Article 51, however, provides that "nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs."¹⁴⁷

143. 2 I.L.C. Y.B. 95, 108 (emphasis added).

144. U.N. CHARTER, *supra* note 42, arts. 39 & 42. See Part C of this section.

145. U.N. CHARTER, *supra* note 42, art. 51.

146. Diplomatic note from U.S. Secretary of State, Danile Webster, to the British following the *Caroline* incident in 1842. 2 MOORE DIGEST OF INTERNATIONAL LAW 412 (1906).

147. *Id.*

There is much debate about whether Article 51 replaces or merely reiterates the preexisting principle in customary international law. On one hand, the phrase, "if an armed attack occurs"¹⁴⁸ appears to preclude any right of anticipatory self-defence and to that extent abolishes customary international law. On the other hand, the reference to the "inherent right" of self-defence suggests that the position at customary international law, including the right of anticipatory self-defence, is preserved. This issue is not yet settled and there are a number of eminent jurists and publicists on both sides of the debate.¹⁴⁹

F. Summary

In this section we have demonstrated that deliberate wartime environmental damage may constitute: (1) an illegal use of force, giving rise to state responsibility to make reparation; (2) a threat to the peace, breach of the peace or act of aggression, for which the Security Council may authorize a collective military response, and; (3) aggressive conduct sufficient to render the war "aggressive," thus giving rise to individual criminal responsibility for a "crime against peace."

These conclusions, however, are subject to two very important qualifications. First, there remains considerable uncertainty as to the minimum quantum of environmental damage necessary in order to invoke each of the three consequences outlined above. We have suggested that the damage should be measurable and objectively determinable. Secondly, none of the principles in the "jus ad bellum" regime apply if the environmental damage is perpetrated in the context of lawful self-defence or authorized collective security.

IV. THE INTERNATIONAL LAW OF WARFARE: THE "JUS IN BELLO"

A. Overview

In this section, we shall examine the numerous principles of the Law of Warfare (the "jus in bello") with a view to their capacity to restrain deliberate wartime environmental damage. The principles of the "jus in bello" regime, in sharp contrast to those of the "jus ad bellum" regime discussed in the previous section, apply irrespective of whether a war is being waged illegally (in violation of Article 2(4) of the U.N. Charter) or legally (pursuant to Articles 42 or 51 of the U.N. Charter).

^{148.} *Id.*

^{149.} An excellent analysis of the Travaux Préparatoires of the U.N. Charter by Dr. Tim McCormack firmly supports the existence of a right of anticipatory self-defence. See T.L.H. MCCORMACK, *ISRAEL'S BOMBING OF IRAQ'S NUCLEAR REACTOR AND SELF-DEFENCE IN INTERNATIONAL LAW* (Thesis, Law Library, Monash University, 1990) (on file with author).

The modern Law of Warfare is the product of centuries of state practice which gradually evolved into a body of customary international law.¹⁵⁰ In the latter half of the nineteenth century, men such as Henry Dunant, Francis Lieber and Tsar Alexander II instigated a process of codification which eventually led to the numerous Geneva and Hague conventions comprising a substantial proportion of the modern rules of warfare.¹⁵¹

For present purposes, it is convenient to divide the rules of warfare into two categories: (1) General principles of warfare which indirectly restrict deliberate environmental destruction; and (2) Principles which directly restrict deliberate destruction of the environment.

It should be noted that the ability of states to engage in deliberate environmental destruction is further restrained by limitations on the use of specific weapons. The use of land mines and incendiary weapons is regulated by the 1981 Inhumane Weapons Convention.¹⁵² First use of chemical and biological weapons has been effectively outlawed by the 1925 Poisonous Weapons Protocol.¹⁵³ Even the use of indiscriminate nuclear weapons is arguably illegal on general principles.¹⁵⁴ In practice, however, these rules do not significantly prevent deliberate environmental damage—they merely reduce the variety of tools which may be employed for that purpose. As such, further consideration of those rules is beyond the scope of this article.

In the following sections, the two categories outlined above will be examined in turn. We shall then consider the nature of the responsibility which flows from violations of the laws of warfare.

B. General Principles of Warfare

At the heart of the “jus in bello” regime lies the fundamental proposition that “the right of belligerents to adopt means of injuring the enemy is not

150. See 1 THE LAW OF WAR—A DOCUMENTARY HISTORY (Leon Friedman, ed. 1972).

151. Henry Dunant was caught up in the Battle of Solferino in 1859 and published an account of his experiences under the title *A Memory in Solferino*. The booklet led to the establishment of the International Red Cross in 1890 and the first Geneva Convention in 1964. Francis Lieber drafted the first comprehensive *Code of Land Warfare* in 1863 during the American Civil War. Tsar Alexander II convened the conference which produced the 1868 St. Petersburg Declaration. The latter two instruments laid the foundations for the Hague Conventions of 1899 and 1907.

152. United Nations Conference on Prohibitions or Restrictions of Use of Certain Conventional Weapons: Final Act, Oct. 10, 1980, UN Doc. A/CONF.95/15 (1980), reprinted in 19 I.L.M. 1523, 1529-35 [hereinafter Weapons Conference].

153. Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, June 17, 1925, 26 U.S.T. 571, 94 L.N.T.S. 655.

154. See, e.g., 1963 *Shimoda Case, Ryuichi Shimoda et al. vs. The State*, II THE LAW OF WAR: A DOCUMENTARY HISTORY 1688 (Leon Friedman, ed. 1972).

unlimited.”¹⁵⁵ From this broad underlying proposition, four principles of somewhat lesser abstraction have evolved: (1) the requirement of military necessity; (2) the requirement of proportionality; (3) the obligation not to cause unnecessary suffering, and; (4) the obligation to distinguish between military and civilian targets.

Each of these four principles will be examined individually, with a view to their application to deliberate environmental damage. From this analysis we shall attempt to build a “general theory of military necessity” which encompasses all four principles and lends itself more easily to implementation.

1. Military Necessity

Every use of force in war must, as a minimum precondition, be militarily necessary. Expressed in this way, however, the principle is capable of divergent interpretation. At one extreme, “the doctrine of military necessity would . . . justify any act that helped bring about victory, even if the act was not really necessary for victory. It would merely have to help.”¹⁵⁶ At the other extreme, the principle implies a “but-for” test, under which it must be demonstrated that but for the act in question, victory could not have been achieved.

The true meaning of military necessity lies somewhere in between these extremes. However, the considerable uncertainty as to the requisite amount of military advantage, will prevent the principle from operating in practice as a deterrent. In the context of deliberate environmental damage, it will invariably be arguable that there was some military advantage, however small that advantage. Some have argued, for example, that the dropping of the atom bomb on Japan during the Second World War—an act of vast human and environmental devastation—was a “military necessity” to shorten the war and to alleviate the “acute tension.”¹⁵⁷ The ignition of Kuwaiti oil wells by the Iraqis during the recent Persian Gulf War was universally condemned—yet it has been argued that the oil fires provided a marginal military gain by filling the sky with black smoke and temporarily obscuring the vision of enemy planes.¹⁵⁸

155. Article 22 of the (Hague) Convention (No. IV) Respecting the Laws and Customs of War on Land, with Annex of Regulations, Oct. 18, 1907, 36 Stat. 2277, T.S. No. 539; Article 35(1) of the 1977 Protocol (I) Additional to the Geneva Conventions of 1949, June 8, 1977, reprinted in 16 I.L.M. at 1408 [hereinafter Protocol (I)]; Weapons Conference, *supra* note 152, at 1524.

156. SHELDON M. COHEN, *ARMS AND JUDGMENT* 35 (1989).

157. INGRID DETTER DELUPIS, *THE LAW OF WAR* 333-34 (1987).

158. Greg Hywood, *Iraqi attack on oil fields in Kuwait puzzles strategists*, FIN. REV., Jan. 23, 1991.

2. Proportionality

Of course, even where a particular means of warfare satisfies the requirement of military necessity, the harm done by military action must still be in proportion to the military gain. The 1977 Geneva Protocol (1) Additional to the Geneva Conventions of 1949 purports to codify, in Article 57(2)(a)(ii), the principle of proportionality, in customary international law.¹⁵⁹ The Articles provide that:

those who plan or decide upon an attack shall . . . take all feasible precautions in the choice of means and methods of attack with a view to avoiding, and in any event to minimising, incidental loss of civilian life, injury to civilians and damage to civilian objects.¹⁶⁰

Under this Article, however, proportionality in the choice and use of weapons is only required in relation to civilian targets.¹⁶¹ This means that once a target is classified as yielding military gain, any means of warfare may be employed against it without regard to proportionality. In the context of deliberate environmental damage, such an interpretation is reckless and carries sinister implications. For example, if an amphibious attack upon land is likely, the coastal waters become a legitimate military target for the purposes of self-defence. Under Article 57, since the waters are a military target, no rule of proportionality applies and the Article would not be violated even if billions of barrels of oil are pumped into the sea causing long-term severe damage to the regional ecology, economy, water supply and possibly the human inhabitants!

The better view is that the rule of proportionality applies in relation to the target whether it is military or civilian. Even if the destruction of a target satisfies the test of military necessity, excessive damage should be prohibited. Indeed, this interpretation of the rule is supported by the *Handbook of the Law of War for Armed Forces* published by the International Red Cross Committee in 1987.¹⁶² In Rule 389, the Handbook states: "The rule of proportionality shall be respected. An action is proportionate when it does not cause . . . damage which is excessive in relation to the value of the expected result of the whole military operation."¹⁶³ This statement clearly expresses the requirement of proportionality without reference to the nature of the target.

159. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol 1), adopted by the Conference June 8, 1977, U.N. Doc. A.32/144, *reprinted in* 16 I.L.M. 1391 (1977).

160. *Id.* art. 57(2)(a)(ii).

161. *Id.*

162. F. DE MULINEN, *HANDBOOK ON THE LAW OF WAR FOR ARMED FORCES* (1987).

163. *Id.* at 92.

3. Unnecessary Suffering

The St. Petersburg Declaration of 1868 condemned the employment of arms which "uselessly aggravate the sufferings of disabled men, or render their death inevitable."¹⁶⁴ This was reiterated in Article 23(e) of the Regulations annexed to the 1907 Hague Convention (IV) in what was to become a classical principle of customary international law: "It is especially forbidden . . . to employ arms, projectiles, or material calculated to cause unnecessary suffering."¹⁶⁵ Prima facie, the use of the word "suffering" suggests that the principle is concerned with unnecessary harm to persons, excluding property damage or damage to the natural environment. However, the authentic French text of Article 23(e) uses the words "propres a causer des maux superflus" which are more accurately translated as "a nature to cause superfluous injury."¹⁶⁶ The significance of this wording for present purposes is that the word "injury" is not limited to personal harm. It includes property damage, environmental damage, or damage to any "thing" as indicated by the following definition of "injury" in *Webster's Third New International Dictionary*: "INJURY: . . . the act or result of inflicting on a person or thing something that causes loss, pain, distress, or impairment."¹⁶⁷

Significantly, the 1977 *Protocol (I) Additional to the Geneva Convention of 1949*, in Article 35(2), and the 1981 Inhumane Weapons Convention, in the Preamble, both prohibit the employment of weapons, projectiles and material and methods of warfare of a nature to cause "superfluous injury or unnecessary suffering."¹⁶⁸

Notwithstanding the clear application of the principle to superfluous environmental damage, most authorities question the practical utility of a principle expressed in such general terms:

Taken on its face value, the provision is couched in such vague and uncertain terms as to be barren of practical effects . . . [T]he way States have attempted to implement Article 23e, either in military manuals or in the few cases where the rule was invoked, shows that no common consent has ever evolved among States as to the actual normative value of the principle.¹⁶⁹

164. Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight, signed in St. Petersburg, Dec. 11, 1868, reprinted in 1 Am. J.Int'l L. Supp. 95 (1907) [hereinafter St. Petersburg Declaration].

165. 1907 Hague Convention, *supra* note 154, art 23(e).

166. *Id.*

167. WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1164 (17th ed. 1976).

168. Protocol (I), *supra* note 155; Weapons Conference, *supra* note 152.

169. ANTONIO CASSESE, MEANS OF WARFARE: THE TRADITIONAL AND THE NEW LAW, THE NEW HUMANITARIAN LAW OF ARMED CONFLICT 162-63 (1979).

Of course, in cases of extremely excessive injury, there is much less room for dispute:

Article 23e as it stands now plays in practice a normative role . . . in extreme cases (such as cases where the cruel character of a weapon is so manifest that nobody would deny it, or where evidence can be produced of gross, repeated and large-scale violations of the principle).¹⁷⁰

In particular, as one author observes, “weapons which *inevitably* cause unnecessary suffering are prohibited.”¹⁷¹ The use of oil-well fires by the Iraqis during the recent Persian Gulf War (which threaten to adversely impact the health of plant, animal and human life in the region for generations to come) constitutes a text-book example of an extreme case “where the cruel character of a weapon is so manifest that nobody would deny it.”¹⁷²

4. Civilian Targets

The St. Petersburg Declaration of 1868 first articulated the general principle of customary international law whereby the only legitimate object which states should endeavour to accomplish during war is to weaken the military forces of the enemy.¹⁷³ This principle clearly (albeit indirectly) restricts the ability of warring parties to deliberately damage the natural environment—but only to the extent that elements or regions of the natural environment are not legitimate military targets.

The key concepts, “military targets” and “civilian targets” are by no means easy to apply. The 1977 *Geneva Protocol (1) Additional to the General Conventions of 1949* contains detailed rules designed to clarify and facilitate the application of these concepts.¹⁷⁴ Article 52(2) defines military objectives, as:

those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.¹⁷⁵

This definition is significant because it confirms that an objective must yield real and definite military gains in order to be classified as “military.”¹⁷⁶

170. *Id.* at 163.

171. DELUPIS, *supra* note 157, at 136.

172. *Id.*

173. St. Petersburg Declaration, *supra* note 164, at 95. One hundred years later, on December 18, 1968, the U.N. General Assembly unanimously adopted Resolution 24444(XXII), stating that “distinction must be made at all times between persons taking part in the hostilities and members of the civilian population, to the effect that the latter be spared as much as possible.”

174. Protocol (I), *supra* note 155.

175. *Id.* art 52(2).

176. *Id.*

Targets of nominal military value or arbitrarily labelled as “military” will not be legitimate objectives. Besides this, however, the definition merely replaces the vague notion of military objective, with equally vague expressions such as “effective contribution to military action” and “definite military advantage.”¹⁷⁷ As a result, the distinction between military and civilian targets remains a question of degree.

The problem is addressed more tangibly in Article 51(4) which prohibits “indiscriminate attacks.”¹⁷⁸ “Indiscriminate attacks” are defined as “those which are not directed against a specific military objective, or which employ a method or means of combat which cannot be directed at a specific military objective.”¹⁷⁹ Article 51(5) then defines two types of attacks which “among others” must be “considered indiscriminate:”

(a) an attack by bombardment by any methods or means which treats as a single military objective a number of clearly separated and distinct military objectives located in a city, town, village or other area containing a similar concentration of civilians or civilian objects; and

(b) an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.¹⁸⁰

Although these provisions are also framed in terms of vague expressions (such as “military objectives,” “concentration of civilians,” “incidental loss,” “concrete and direct military advantage”),¹⁸¹ they appear to clearly prohibit techniques such as area bombardment and the use of “blind” weapons which have wide or uncontrollable destructive power. Indeed, one might logically speculate that these provisions clearly outlaw large-scale environmental victimization such as the ignition of hundreds of oil-fires or the pumping of billions of barrels of oil into the sea. Such techniques are inherently “blind” and inflict untold devastation far beyond any military advantage.

Unfortunately, however, logical interpretation must take a back seat to the numerous reservations or “suggested interpretations” recorded by states upon concluding the Protocol. The United Kingdom delegation, for example, stated that it considered that the definition of indiscriminate attacks given in that paragraph “was not intended to mean that there were means or methods of combat the use of which would involve an indiscriminate attack in all circumstances.”¹⁸² Similar statements were made by the delegations of

177. *Id.*

178. *Id.* art. 51(4).

179. *Id.*

180. *Id.* art. 51(5).

181. *Id.*

182. MICHAEL BOTHE ET AL., *NEW RULES FOR VICTIMS OF ARMED CONFLICTS* 306 n.23 (1982) (citing CDDH/SR. 41, at 29-30).

Italy,¹⁸³ the Federal Republic of Germany,¹⁸⁴ and Canada.¹⁸⁵ These reservations, together with the fact that the United States and other countries have not even ratified the Protocol, lead to the inevitable conclusion that any innovative contribution made by Article 51(4-5) is not part of customary international law—and probably not even part of treaty law. Any residual doubt is dispelled by the view expressed by many authorities that a violation of the provisions depends upon the belligerent's subjective perception of the likely effect of its attack:

Instead of establishing that the possible disproportion must be *objective* (i.e. that the actual incidental damage of civilians must not be out of proportion to the military advantage actually gained), the provision hinges on how a belligerent perceives and anticipates the effect of its attack. . . . Thus, for instance, faced with a glaring disproportion of civilian loss to the military advantage, a belligerent could claim that when he planned the attack he did not expect or anticipate such a great disproportion.¹⁸⁶

5. A General Theory of Military Necessity

Under the four general principles outlined above, any employment of environmentally hazardous methods must be justifiable by military necessity; they must be proportionate to the desired military gain; they must not result in superfluous injury; and they must impact specifically on military targets. In practice, however, the inherent generality and vagueness with which these Principles are expressed exposes them to divergent interpretations and wholesale exploitation and avoidance. While it may well be possible in hindsight to confidently identify violations of the principles, the vast uncertainty of their content prevents them from operating as effective deterrents during the course of battle.

However, notwithstanding the above remarks, we must consider the position of a tribunal having jurisdiction over persons accused of violating the general principles of warfare. Such a tribunal could not simply decline to apply the laws on the grounds of uncertainty or vagueness. Rather, the tribunal would be required to develop, by extrapolation from existing customary international law, an objective process of analysis capable of practical application.

In the writer's submission, it is possible to devise such a mechanism by combining the four general principles into a common context as follows: (1) We begin by taking the most lenient interpretation of "military necessity," namely, that a belligerent is entitled to take measures to achieve even the

183. CDDH/SR. 41, at 30, DIPLOMATIC CONFERENCE ON THE REAFFIRMATION AND DEVELOPMENT OF INTERNATIONAL HUMANITARIAN LAW APPLICABLE IN ARMED CONFLICTS, OFFICIAL RECORDS (1974-1977).

184. *Id.* annex, at 1.

185. *Id.* annex, at 4.

186. Cassese, *supra* note 169, at 175-76.

smallest military gain; (2) We then superimpose upon the latter rule strict conditions of "proportionality," namely, that the amount of damage caused by the measures must not be greater in magnitude than the military gain being sought; (3) We then use the remaining two general principles (relating to "superfluous injury" and "civilian targets") in order to facilitate our assessment of proportionality. In other words, if a substantial proportion of the damage is unconnected to the military gain being sought (ie: is "superfluous") or impacts upon innocent civilian targets, then proportionality has not been satisfied; (4) Finally, with regard to the state of mind of the offender, we must achieve a balance between imposing liability for totally unexpected damage and imposing liability only for specifically intended damage. An appropriate standard would be one of "reasonable expectation."

Since the term "military necessity" is often used to encompass all four general principles, we shall refer to the latter process of analysis as our "general theory of military necessity." The theory may be summarized as follows:

- (1) In selecting means and methods of warfare, a belligerent must reasonably expect to obtain some military benefit, however small that benefit may be.
- (2) The damage caused, however, must not be greater in magnitude than the military gain being sought.
- (3) Such disparity shall be presumed where there is evidence that:
 - (i) a substantial proportion of the total damage did not yield any military benefit, or;
 - (ii) innocent civilians and civilian objects were more than incidental victims in terms of the proportion of the total damage inflicted upon them.
- (4) The disproportionate damage must have been intended or reasonably expected to result from the implementation of the particular means or methods of warfare.

The underlying philosophy of this general theory which, in the writer's submission, is consistent with customary international law, is that a belligerent should retain the right to pursue even the smallest military gain provided that the damage inflicted is proportionate to the size of that gain. Furthermore, the general theory facilitates the assessment of proportionality by reference to the relative amount of damage which does not produce military gains or which impacts upon innocent civilian targets. Essentially, the lawfulness of a particular method of warfare depends on whether the overwhelming proportion of the reasonably expected damage, measurably contributes to the achievement of the desired military goal.

However, having arrived at this general theory, we must not lose sight of the fact that it does not absolutely or even specifically prohibit environmental damage per se. It only prohibits *excessive* environmental damage. In the context of the Gulf Conflict, for example, any Iraqi liability under these principles in relation to the oil spill or oilwell fires would be limited to that part of the environmental damage which was disproportionate in relation to the military gain.

C. Direct Limitations on Deliberate Wartime Environmental Damage

The general principles of warfare indirectly and unwittingly contribute to wartime environmental protection. Since the upsurge of specific environmental concerns in the 1970s, however, international law has come to regard environmental protection as a distinct goal of the law of warfare. The protection conferred by the relevant laws extends to "property," to "objects indispensable to the survival of the civilian population," to "works and installations containing dangerous forces" and to the "natural environment" in general. Each of these will be considered in turn.

1. Protection of property

Throughout the history of warfare, various tactics of scorched earth, and crop destruction have caused serious local environmental harm. Hence, Article 23(g) of the 1907 Hague Regulations provided that "it is especially forbidden . . . to destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war."¹⁸⁷

The deficiencies of this provision are immediately apparent from the expression, "property" and from the qualification, "unless demanded by the necessities of war."¹⁸⁸

With regard to "property" it is not difficult to envisage forms of environmental damage such as weather modification, atmospheric pollution or ozone depletion which do not fit comfortably within the notion of "destruction of property." Domestic legal systems have always found it difficult to formulate a definition of "property." *Osborn's Concise Law Dictionary* defines property as "that which is capable of ownership; also used as meaning a right of ownership, as 'the property in the goods.'"¹⁸⁹ From this it seems that "property" describes the relationship between an object and its owner, or, more generally, between a proprietary interest and the interest-holder. On this basis, objects such as the climate, the atmosphere, the sea

187. 1907 Hague Convention, *supra* note 155, art. 23(g).

188. *Id.*

189. OSBORN'S CONCISE LAW DICTIONARY 268 (6th ed. 1976).

and marine life, which are not capable of being the objects of such a "proprietary relationship," could not be characterized as "property."¹⁹⁰

Of paramount concern is the exception in the case of destruction "demanded by the necessities of war," which introduces the recurrent problem of uncertainty. As Falk observes, "such judgements of necessity are difficult to second-guess; hence the regulatory effects are likely to be modest."¹⁹¹ Of course, the problem might be resolved by reference to our "general theory of military necessity" as developed in an earlier section. But this or any similar process of analysis has not found expression in any of the conventions and, as such, carries little value as a deterrent.

Notwithstanding these reservations, the provision does effectively prohibit extreme damage which is clearly beyond the necessities of war and which impacts upon recognized items of "property" such as forests, farmland, vegetation, crops and livestock. In fact, this prohibition was the basis for charges of war crimes against ten German civilian administrators of Polish forests during World War Two. Nine of these Germans were accused of war crimes by the United Nations War Crimes Commission at Nuremberg because of their implementation of a Nazi policy "of ruthless exploitation of Polish forestry" which involved "the wholesale cutting of Polish timber to an extent far in excess of what was necessary to preserve the timber resources of the country."¹⁹²

The principle was reiterated in Article 53 of the 1949 Geneva *Convention (IV) Relative to the Protection of Civilian Persons in Time of War* as follows: "Any destruction by the occupying power of real or personal property . . . is prohibited, except where such destruction is rendered absolutely necessary by military operations."¹⁹³ Unfortunately, this provision incorporates all the defects present in the Hague provision and adds to them a further limitation on the scope of the prohibition. By the words "occupying power," the convention confines its protection to property located in occupied territory. In other words, if an air-force bombs factories in an enemy country, such destruction is not covered by Article 53. Only if the enemy power occupies the territory where the factories are situated will such destruction be prohibited—and only to the extent that such destruction is not necessitated by military operations.

190. See Felix S. Cohen, *Dialogue on Private Property*, 9 RUTGERS L. REV. 357 (1954).

191. Richard A. Falk, *Environmental Disruption by Military Means and International Law*, in ENVIRONMENTAL WARFARE 37 (Arthur H. Westing ed., 1984).

192. United Nations War Crimes Commission, *Case No. 7150 496* (1948).

193. Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287, 322.

2. Protection of Objects Indispensable to the Survival of the Civilian Population

Protocol I of 1977 contains in Article 54, a non-exhaustive list of "objects indispensable to the survival of the civilian population" which shall not be "attacked, destroyed, removed or rendered useless."¹⁹⁴ Examples of these objects are "foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and irrigation works."¹⁹⁵

At first sight, this provision appears to confer an admirably high level of protection upon a number of environmental targets. However, on examining the detailed qualifications and exceptions embodied in subsequent paragraphs of Article 54, it becomes clear that the provision adds very little to the pre-existing restrictions on destruction of property.

First, it is only prohibited to destroy the objects to which Article 54 applies "for the specific purpose of denying them for their sustenance value to the civilian population."¹⁹⁶ This means that the objects may lawfully be destroyed for purposes other than depriving civilians of their sustenance value. Such legitimate purposes would include destruction to prevent their use as cover, destruction to clear an area for fire or destruction to frustrate an advancing enemy.¹⁹⁷

Secondly, since the provision is only concerned with the civilian population, the objects may lawfully be destroyed for the specific purpose of depriving the enemy of their sustenance value, if they could be used by the enemy "as sustenance solely for the members of its armed forces" or otherwise "in direct support of military action."¹⁹⁸

Thirdly, even if the relevant objects are destroyed for the specific purpose of depriving the civilian population of sustenance, such destruction is lawful if carried out by a state "in the defence of its national territory against invasion . . . where required by imperative military necessity."¹⁹⁹

Essentially, destruction undertaken for any purpose other than to deprive civilians of food is effectively regarded as militarily necessary (or at least it is not prohibited by this provision). The inevitable conclusion is that - at least from the perspective of environmental protection - Article 54 is of negligible utility.

194. Protocol (I), *supra* note 155, art. 54.

195. *Id.* art. 54(2).

196. *Id.*

197. These illustrations were given in the Report of Committee III at the Diplomatic Conference of 1974-1977. BOTHE, *supra* note 182, at 339-40.

198. Protocol (I) *supra* note 155, art. 54(3).

199. *Id.* art. 54(5).

3. Protection of Works and Installations Containing Dangerous Forces

In contrast to the very modest (at times, negligible) protection conferred upon environmental targets by the foregoing provisions, Article 56 of 1977 Protocol I provides a particularly high level of protection for “dams, dykes and nuclear electrical generating stations” and “military objectives located at or in the vicinity of these works or installations.”²⁰⁰ Such objects “shall not be made the object of attack, even where these objects are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population.”²⁰¹

Unlike the previous provisions, the exceptions in Article 56 are discrete, specific and leave minimal scope for divergent interpretation. The objects to which Article 56 applies may only be attacked if: (1) they are used “in regular, significant, and direct support of military operations,”²⁰² and (2) the attack is “the only feasible way to terminate such support.”²⁰³ In the case of a dam or dyke, a third condition must be satisfied—it must be used by the enemy “for other than its normal function.”²⁰⁴

The specificity and detail of these exceptions ensures that—unlike most of the provisions discussed earlier—they do not significantly undermine the central prohibition. As the Report of Committee III emphasized, protection “would exist unless the military reasons for destruction in a particular case were of an extraordinary vital sort.”²⁰⁵

Consider, for example, the case of a dyke which has the “normal function” of holding back water. As long as the dyke serves no other purpose, it will not lose its protection. But even if the dyke carries a main road and thus has an important traffic function which may at first sight even seem to preponderate over its “normal” function, this does not result in a loss of protection, not even if the traffic includes occasional military transport. The special protection ceases only if the traffic is “in regular, significant and direct support of military operations” and “attack is the only feasible way to terminate such support!”²⁰⁶

Without limiting the substantial achievements of Article 56 as outlined above, two qualifying remarks are necessary in order to place the article in proper perspective.

First, the protection conferred by Article 56 is limited to a specific list of environmentally precarious targets, namely dams, dykes, nuclear electrical generating stations and military objectives in the vicinity of these works.

200. *Id.* art. 56(1).

201. *Id.*

202. *Id.* arts. 56(2)(a), (b) & (c).

203. *Id.*

204. *Id.* art. 56(2)(a).

205. BOTHE, *supra* note 182, at 352.

206. Protocol (I), *supra* note 155, art. 56.

The article has no bearing on other dangerous installations, such as oil wells and oil pumping stations, which have demonstrated their destructive capacity during the Gulf Conflict.

Secondly, it must be remembered that the innovative rules embodied in Article 56 are not (at present) incorporated into customary international law. Such incorporation must await evidence of the "constant and uniform practice" of states abiding by the prohibition and accepting it "as law."²⁰⁷ At present, the reluctance of a number of important states to become parties to Protocol I,²⁰⁸ combined with incidents of attacks on nuclear facilities during recent conflicts,²⁰⁹ are frustrating the entrance of Article 56 into customary international law.

4. General Protection of the Natural Environment

After the Vietnam War and particularly the United States' use of the defoliant Agents Orange and Blue, the Diplomatic Conference of 1974-1977 decided to take up the challenge of general wartime environmental protection. This gave rise to Articles 35(3) and 55(1) of 1977 Protocol I, which are expressed in almost identical terms.²¹⁰ Article 35(3) provides "It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." Article 55(1) similarly states:

Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.²¹¹

Perhaps the first noticeable feature of these provisions is the welcome absence of any reference to "military necessity." Indeed, all the qualifications are expressed in terms of the nature of the damage. The existence of any military value, advantage or imperative is irrelevant to the operation of these articles.

207. The expressions "constant and uniform practice" and "accepted as law" appear in almost every case in which a court or tribunal has been required to determine the existence of a custom. See, e.g., *The Paquete Habana* 175 U.S. 677 (1900); *The Case of the S.S. Lotus, France v. Turkey*, 1927 P.C.I.J., ser. A, No. 10; *Asylum Case, Colombia v. Peru* 1950 I.C.J. 266; *The Right of Passage Case, Portugal v. India* 1960 I.C.J. 6.

208. There are 62 signatory states to Protocol I and to date, 78 states have ratified or acceded to the Protocol. However, this does not include any major Western, former Soviet Bloc or Middle Eastern state.

209. During the Iran-Iraq War of 1980's, for example, the Iraqi airforce reportedly bombed an Iranian nuclear power station. Fortunately, the nuclear fuel rods were not in place at the time of the raid. H. MCCOUBREY, *INTERNATIONAL HUMANITARIAN LAW* 118 (1990).

210. Protocol (I), *supra* note 155, arts. 35(3) and 55(1).

211. *Id.* art. 55(1).

The second noticeable characteristic is the striking similarity to Article 1(1) of the 1977 *Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques* (the "En-mod Convention").²¹² The Convention and the Protocol are not, however, identical and it is important to appreciate three particular differences:

- (1) The Convention prohibits acts which have "widespread, long-lasting or severe"²¹³ effects, while the Protocol prohibits acts which have "widespread, long-term and severe" effects.²¹⁴ This means that under the Convention, any one of the described effects separately is prohibited, but under the Protocol they must be cumulative.
- (2) Under the Convention, environmental modification must be carried out "as the means" of destruction or damage.²¹⁵ The Protocol, however, prohibits methods which "may be expected" to cause damage.²¹⁶ In other words, the prohibition in the Convention is directed at deliberate environmental damage only, whereas the Protocol extends to objectively foreseeable collateral effects.
- (3) The Convention was created within the framework of International Environmental Law, whereas the Protocol is part of the Law of Warfare. This is a critical distinction (as will be demonstrated in the next section) because responsibility under the Law of Warfare entails far more severe consequences than it does under International Environmental Law.

With the foregoing preliminary observations in mind, we may now turn to the central elements of Articles 35(3) and 55(1). In order to attract the prohibition, the environmental damage, must be "widespread, long-term and severe."²¹⁷ Initially, one is tempted to refer to the definitions of these terms which were incorporated in the Understanding associated with the En-mod Convention.²¹⁸ However, the Understanding expressly states that it was "intended exclusively for this [the En-mod] Convention and is not intended to prejudice the interpretation of the same or similar terms if used in connection with any other international agreement."²¹⁹ Furthermore, a substantial number of states lodged reservations to the Protocol, stating their

212. *En-Mod Convention*, *supra* note 60, at 333; *see* Section I(D).

213. *Id.*

214. Protocol (I), *supra* note 155.

215. *En-Mod Convention*, *supra* note 60.

216. Protocol (I), *supra* note 155.

217. *Id.* art. 55(1).

218. *See* Section I(D).

219. *Arms Control and Disarmament*, 1978 DIGEST § 7, at 1673.

understanding that the scope of the adjectives used in the Protocol was different from the scope of the terms in the convention.²²⁰

In the Report of Committee III, only the element of duration (“long-term”) was explained. This element:

was considered by some to be measured in decades. Reference to twenty or thirty years was made by some representatives as being a minimum. Others referred to battlefield destruction in France in the First World War as being outside the scope of the prohibition . . . It appeared to be a widely shared assumption that battlefield damage incidental to conventional warfare would not normally be proscribed by this provision.²²¹

The most that can reasonably be derived from this so-called “explanation” is that the articles are intended to prohibit extreme environmental damage, and are not concerned with incidental or minor environmental damage. In essence, this “explanation” is no more enlightening than the terms themselves. France actually refused to accede to Protocol I because of “the lack of consensus among the signatory states . . . as to the exact meaning of the obligations they have undertaken.”²²²

Of course, if an alleged breach of Article 35(3) or 55(1) was brought before a tribunal with appropriate jurisdiction, the tribunal would be required to interpret the phrase “widespread, long-term and severe,” as prescribing the minimum quantum of damage capable of attracting international consensus. Such an interpretation might well resemble the following:

- (1) “Widespread:” encompassing at least an entire region of several hundred square kilometres;
- (2) “Long-term:” lasting for at least several decades;
- (3) “Severe:” causing death, ill-health or loss of sustenance to thousands of people, at present or in the future.

Although this interpretation leaves very little scope for application, any broader interpretation could not be said to reflect international consensus.

Whatever the exact meaning of these Articles, it is unlikely that they apply to any major Western, former Soviet Bloc or Middle-Eastern state since none of them are parties to the Protocol. One writer has expressed the view that Article 55 “seems to incorporate the minimum current consensus of international law on military activities in relation to the natural environ-

220. These states included Mexico, Peru, Egypt, Federal Republic of Germany, United Kingdom, Venezuela, Italy, Argentina, Australia, Byelo-russia, France, Hungary, Qatar. BOTHE, *supra* note 182, at 343-44.

221. CDDH/215/Rev. 1, para. 27, DIPLOMATIC CONFERENCE ON THE REAFFIRMATION AND DEVELOPMENT OF INTERNATIONAL HUMANITARIAN LAW APPLICABLE IN ARMED CONFLICTS, OFFICIAL RECORDS (1974-1977)..

222. DOCUMENTS ON THE LAWS OF WAR 464-65 (Adam Roberts & Richard Guelff eds., 2d ed. 1989).

ment.”²²³ However, it is difficult to understand how a provision could represent a norm of customary international law when there is such extensive disagreement about the meaning of its central elements. Indeed, when the Preamble to the 1981 Inhumane Weapons Convention recalled “that it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment,”²²⁴ France lodged a reservation stating that this paragraph “reproduces the provisions of Article 35, paragraph 3 of Additional Protocol I,” and “applies only to States parties to that Protocol.”²²⁵

D. Responsibility for Violations

The Law of Warfare derives much of its strength from the fact that violations give rise not only to state responsibility to make reparation, but also to individual criminal responsibility.

State Responsibility for violations of the laws of warfare is no more than an application of the general principle of State Responsibility for international wrongs.²²⁶ The relevant principles have already been examined in relation to the Stockholm principle²²⁷ and the use of force²²⁸ and it should suffice to recall our conclusion that monetary compensation is inadequate both for the purpose of deterrence and as a means of redressing deliberate environmental victimization.

In this section we shall examine the nature of individual responsibility for violations of the laws of warfare. We shall also consider the practical effectiveness of the relevant principles.

1. Individual Responsibility

(a) The Nuremberg Principles. The first substantial development of detailed principles in the field of individual responsibility, came with the Charter and Judgement of the International Military Tribunal at Nuremberg, following World War Two.²²⁹ The principles established at Nuremberg can be summarized as follows.

First, all violations of the laws of warfare constitute “war crimes” for which there is individual responsibility.²³⁰ As Article 6(b) of the Nurem-

223. Falk, *supra* note 127, at 39.

224. Weapons Conference, *supra* note 152, at 1524.

225. Roberts & Guelff, *supra* note 222, at 488.

226. State Responsibility to pay compensation for violations of the laws of warfare is expressly codified in Article 3 of the 1907 Hague Convention (IV) and Article 91 of 1977 Protocol I. Roberts & Guelff, *supra* note 222.

227. *See* section I.

228. *See* section II.

229. Nuremberg Charter, *supra* note 121.

230. *Id.* art. 6(b).

berg Charter provided: "The following acts, or any of them, are crimes . . . for which there shall be individual responsibility . . . War Crimes: namely, violations of the laws or customs of war. . ." ²³¹ The Charter provided a list of such crimes, which led some writers to suggest that not all violations of the laws of war constitute "war crimes." ²³² However, this view is inconsistent with the express statement in Article 6(b) that war crimes "shall include, but not be limited to" the violations specifically listed. ²³³ In any event, it was a pre-existing principle of customary international law that violations of the laws of warfare give rise to individual criminal responsibility. Hence, whether or not all such violations are termed "war crimes" is purely a matter of semantics. ²³⁴

Secondly, individual responsibility is not confined to those who personally commit war crimes. Article 6 extends culpability to "leaders, organisers, instigators and accomplices participating in the formulation or execution of a common plan." ²³⁵ This is reinforced by Article 7 which provides that "the official position of defendants whether as Heads of State or responsible officials in Government Departments, shall not be considered as freeing them from responsibilities." ²³⁶

Thirdly, individuals convicted of war crimes are subject to criminal punishment ranging from fines and imprisonment to capital punishment. ²³⁷ This is clearly evident from Article 27 of the Charter which entitled the Tribunal "to impose upon a Defendant, on conviction, death or such other punishment as shall be determined by it to be just." ²³⁸

Fourthly, Article 8 of the Nuremberg Charter conclusively rejected the plea of "superior orders" as a defence to the commission of war crimes, except as a mitigating factor with regard to punishment. ²³⁹ Even as a mitigating factor, it would seem that the obedient soldier must be able to demonstrate that he was acting under extreme duress. In the *Einsatzgruppen Case*, for example, the Tribunal held:

231. Nuremberg Charter, *supra* note 82, art. 6(b).

232. See, e.g., Yves Sandoz, *Penal Aspects of International Humanitarian Law*, 1 INT'L CRIM. LAW 209, 224-26 (M. Cherif Bassiouni ed., 1986).

233. *Id.* art. 6(b).

234. Note that "crimes against humanity" are war crimes of a particularly abhorrent nature such as genocide, slavery, extermination and "other inhumane acts committed against any civilian population." *Id.* art. 6(c) They are classified separately in Article 6(c) of the Nuremberg Charter because, unlike the war crimes in Article 6(b), they are not confined to actions against enemy targets, or to actions during wartime. To the extent that deliberate wartime environmental damage is a violation of the laws of warfare, it will constitute a "war crime" giving rise to individual responsibility. Whether or not it also constitutes a "crime against humanity" does not affect the consequences. It is again a matter of semantics only, and hence shall not be explored in this article.

235. *Id.* art. 6.

236. *Id.* art. 7.

237. *Id.* art. 27.

238. *Id.*

239. *Id.* art. 8.

If one claims duress in the execution of an illegal order it must be shown that the harm caused by obeying the illegal order is not disproportionately greater than the harm which would result from not obeying the illegal order. It would not be an adequate excuse, for example, if a subordinate under orders killed a person known to be innocent, because by not obeying it he himself would risk a few days of confinement.²⁴⁰

Finally, war crimes give rise to “universal jurisdiction” entitling any state to take action against the defaulting individuals.²⁴¹ Papadatos explains the nature of the universality principle as follows:

It is well known that this principle grants a state the right to punish a crime which is a violation of the norms of the law of nations, regardless of the place in which the deed was committed or of the nationality of the accused person or of the victim; the jurisdiction which it sets up is that of the *forum deprehensionis*, i.e., of that state on whose territory the defendant has been arrested.²⁴²

The status of the “Nuremberg principles” as norms of customary international law was confirmed by the U.N. General Assembly on 11 December 1946 with the unanimous adoption of Resolution 95(I) affirming “the principles of international law recognized by the Charter of the Nuremberg Tribunal and the judgement of the Tribunal.”²⁴³

(b) The System of “Grave Breaches.” A significant limitation on the Nuremberg principles was that they regarded the prosecution of war criminals as “an exercise of the right of self-help enjoyed by states as part of their sovereignty.”²⁴⁴ States were entitled to invoke the individual responsibility of war criminals, but were not obligated to do so.²⁴⁵

The Geneva Conventions of 1949 partly rectified the situation by identifying certain violations as “grave breaches” for which states undertook the following obligations: (1) to enact legislation necessary to provide effective penal sanctions for any person committing or ordering to be committed any of the “grave breaches,” and; (2) to search for such persons and to bring them to trial before “its own courts,” irrespective of their nationality.²⁴⁶ Each state may also, if it so prefers, “under its own legislation, hand such persons over to another state party which has made out

240. *United States v. Ohlendorf*, 4 TRIALS OF WAR CRIMINALS 471 (USGPO, 1950) (the Einsatzgruppen were SS death squads engaged in genocide.)

241. 1 *Law Reports of Trials of War Criminals* 53.

242. PETER PAPADATOS, *THE EICHMAN TRIAL* 44 (1964).

243. G.A. Res. 95(I), 1(2) R.G.A. 188 (1946).

244. G.I.A.D. Draper, *The Implementation and Enforcement of the Geneva Conventions of 1949 and of the Two Additional Protocols of 1977*, 164 R.C.A.D.I. 9, 37 (1979).

245. *Id.*

246. See Articles 49/50/129/146 of Geneva Conventions I to IV of 1949, respectively. 75 U.N.T.S. at 62, 116, 76 U.N.T.S. at 236, 386.

a *prima facie* case.”²⁴⁷ For those war crimes which do not constitute “grave breaches,” the Conventions do not impose specific obligations but simply require states to “take measures necessary for the suppression of” such infractions.²⁴⁸ It is clear, however, that “all breaches of the Convention should be repressed by national legislation.”²⁴⁹

In view of the distinction between “grave breaches” (which must be prosecuted) and other violations (which may be prosecuted), some further examination of the laws of warfare pertaining to deliberate environmental victimization is warranted.

Beginning with the general principles of the law of warfare, it emerges that only the obligation to distinguish between military and civilian targets gives rise to a “grave breach” upon violation.²⁵⁰ This is derived from Article 85(3)(b) of 1977 Protocol I which identifies as a “grave breach” “launching an indiscriminate attack affecting the civilian population or civilian objects in the knowledge that such attack will cause excessive loss of life, injury to civilians or damage to civilian objects.”²⁵¹ Two qualifications are required here. First, under Article 85(3) the act must have been committed “wilfully” and must actually cause “death or serious injury to body or health,” in order to qualify as a “grave breach.”²⁵² Secondly, only those states which have ratified or acceded to Protocol I are bound to treat such conduct as a “grave breach,” thus excluding most major Western, former Soviet Bloc and Middle Eastern countries.

Turning to the laws which directly restrict deliberate environmental damage, two specific laws are identified in the relevant instruments as giving rise to “grave breaches” upon violation. First, under common Articles 50/51/130/147 of the four Geneva Conventions of 1949 respectively, “grave breaches” expressly include: “extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly.”

Secondly, under Article 85(3)(c) of 1977 Protocol I, “grave breaches” include: “launching an attack against works or installations containing dangerous forces in the knowledge that such an attack will cause excessive loss of life, injury to civilians or damage to civilian objects.”²⁵³ Once again, this latter provision is subject to the two qualifications described above in the context of Article 85(3)(b).²⁵⁴

247. *Id.*

248. *Id.*

249. JEAN PICTET, COMMENTARY ON GENEVA CONVENTION IV RELATIVE TO THE PROTECTION OF CIVILIAN PERSONS IN TIME OF WAR 594 (International Committee of the Red Cross, 1958).

250. Protocol (I), *supra* note 155, art. 85(3)(b).

251. *Id.*

252. *Id.*

253. Protocol (I), *supra* note 155, art. 85(3)(b).

254. Common Articles 49/50/129/146 of Geneva Conventions I to IV of 1949, respectively, *supra* note 246.

The foregoing analysis reveals that most of the restrictions on deliberate environmental damage do not give rise to "grave breaches" upon violation. Consequently, states are only required to "take measures necessary for the suppression" of such conduct.²⁵⁵ The measures may include prosecution of offenders and imposition of penal sanctions, but this is not mandatory.

2. Practical Considerations

The effective practical operation of the laws of warfare depends not only on their substance, but on the existence of an international political climate conducive to their implementation. Since the numerous war crimes trials following World War Two, there has been no shortage of wars and no shortage of war crimes—yet there have been virtually no attempts to invoke individual responsibility for such violations. Part of the problem is that, in the absence of a total defeat, fear of vengeful counter-trials operates as a powerful disincentive.²⁵⁶ Other difficulties include evidentiary complications,²⁵⁷ extradition controversies²⁵⁸ and the inevitable stigma of "victor's justice."²⁵⁹

On the other hand, there is a strong argument that the very existence of a system of individual criminal responsibility, even if it is rarely implemented, produces a measure of respect for the laws of warfare. Kalshoven argues that:

the most important effect of individual criminal liability for violations of the law of warfare is conceived as lying not so much in the actual punishment as in the threat of such punishment. This threat, it is thought, may provide an additional incentive to respect the law in situations where the individual's moral sense might provide insufficient guidance.²⁶⁰

Certainly, "international law, and no less the law of war, relies heavily upon meta-legal forces for its implementation. Part of those forces reside in the nature of man and his awareness of his place in the universe."²⁶¹ However, if we must rely on such "meta-legal forces," then we should also be concerned by Draper's warning that "failure to secure the implementation

255. *Id.*

256. Draper, *supra* note 244, at 40.

257. *See, e.g., In Re Yumashita* (1946) 66 S.C. 340; Quincy Wright, Editorial Comment, *Due Process and International Law*, 40 AM. J. INT'L L. 398, 406 (1946).

258. G.I.A.D. Draper, *The Modern Pattern of War Criminality*, 6 ISRAEL YEARBOOK OF HUMAN RIGHTS 9 (1976).

259. *See, e.g., CRIMES OF WAR: A LEGAL, POLITICAL-DOCUMENTARY AND PSYCHOLOGICAL INQUIRY INTO THE RESPONSIBILITY OF LEADERS, CITIZENS AND SOLDIERS FOR CRIMINAL ACTS IN WAR* 141 (Richard A. Falk et al., eds. 1971).

260. FRITS KALSHOVEN, *THE LAW OF WARFARE* 119 (1973).

261. Draper, *supra* note 244, at 9-10.

and enforcement of the modern humanitarian law of war will do little to maintain the faith of man in man."²⁶²

E. Summary

In general terms, we may conclude that many instances of deliberate wartime environmental damage are prohibited either directly or indirectly by the laws of warfare. The general principles of warfare and, in particular, the "general theory of military necessity" which we extracted from customary international law, prohibit environmental damage to the extent that the damage does not proportionately contribute to the attainment of a military gain. More specific rules directly protect the environment by prohibiting unnecessary destruction of property and objects indispensable to survival, restricting attacks on installations containing dangerous forces and outlawing modes of warfare which cause widespread, long-term and severe environmental damage. Violations of these rules all constitute "war crimes," over which there is universal jurisdiction entitling every state to try and punish offenders. Some war crimes, such as wanton destruction of property, also constitute "grave breaches" for which states are obligated to bring offenders to trial.

However, notwithstanding the existence of all these rules, their practical effectiveness is significantly undermined by the uncertainty of their content and, in many cases, by the broad scope of their exceptions. As such, the implementation of these laws will require a unique and unprecedented degree of international political will. It is most disturbing, in this regard, that even the astonishing cooperative effort of the international community during the recent Gulf Conflict has not yet resulted in the institution of any criminal proceedings for violations of the laws of warfare.

V. ADDRESSING THE CHALLENGE

A. Preliminary Remarks

The purpose of this article is to ascertain the extent to which international law answers the universal demand for accountability for deliberate wartime environmental damage. Having now examined in detail the relevant content of International Environmental Law, the International Law of Force and the International Law of Warfare, it is desirable to present a concise statement of our conclusions. To this end, the principles emanating from the various international legal instruments, shall be merged into four categories as follows:

- (a) Protection of the environment in general against wartime victimization;

262. *Id.* at 52.

- (b) Protection of specific areas of the environment against wartime victimization;
- (c) Protection of environmentally precarious targets against wartime attack;
- (d) Collateral protection resulting from constraints on military strategy.

A global appreciation of the legal implications of deliberate wartime environmental damage will facilitate our application of these laws to the environmental damage perpetrated during the Persian Gulf Conflict and will provide a basis for a discussion of reform strategies.

*B. Synthesis of the Relevant Law*²⁶³

1. Protection of the Environment in General Against Wartime Victimization

Principle 1: Interstate Environmental Damage

Rule: A state engaged in armed conflict must not deliberately allow activities within its control to cause significant environmental damage to areas beyond its national jurisdiction.

Exceptions: The rule does not apply if the activity is carried out in the course of a lawful use of force and either of the following circumstances are present:

- (1) the activity is necessary in order to save lives, and the activity poses a lesser threat to life than that which is being suppressed; or
- (2) the activity is the only means of safeguarding an essential interest of the state against a grave and imminent danger.

Responsibility: Violations of the rule give rise to State Responsibility to make reparation, usually in the form of monetary compensation.

263. This is intended as a summary only, so as to enable the reader to obtain an overall perspective on the relevant law. More extensive detail, definition and analysis can be found in the previous sections. Citations for conventions, protocols, declarations, resolutions, cases and other instruments have been deliberately excluded in the interests of clarity of presentation. Of course, all the instruments have been referred to with citations on numerous occasions throughout this article.

Status: Customary International Law.

Major Sources: *Trail Smelter Case*; 1972 Stockholm Declaration

Problems:

- (1) Uncertainty as to the threshold quantum of damage—how much damage is “significant”?
- (2) Inadequacy of monetary compensation as a deterrent and as a means of redress.

Principle 2: Environmental Damage as a Use of Force

Rule: States must refrain from acts of environmental victimization where such acts amount to a use of force against other states.

Exception: This rule does not apply to acts performed in the course of lawful self-defence or authorized collective security operations.

Responsibility: Violations of the rule give rise to the following consequences:

- (1) In all cases, states will be responsible to make reparation, usually in the form of monetary compensation.
- (2) If the U.N. Security Council regards the environmental damage as a “threat to peace, breach of the peace or act of aggression,” then the Council may respond by authorizing a collective military action.
- (3) If the environmental damage amounts to an “aggressive” use of force, then the individuals responsible will be subject to criminal punishment for “crimes against peace” for which there is universal jurisdiction.

Status: Customary International Law.

Major Sources: U.N. Charter; *Nicaragua Case*; Nuremberg Charter and Judgement; U.N. *Definition of Aggression*; U.N. Security Council Resolution 687.

- Problems:**
- (1) Uncertainty as to the exact amount of environmental damage that is required in order to constitute a “use of force,” “breach of the peace” or “act of aggression.”
 - (2) The field of application of the rule is limited to the context of unlawful uses of force.

Principle 3: Environmental Modification

Rule: States involved in armed conflict must not, for the purpose of damaging other states, deliberately manipulate the natural environment in a manner which causes widespread, long-lasting or severe effects.

Exceptions: None.

Responsibility: Violation of the rule entitles any state to bring a complaint to a Consultative Committee of Experts which is empowered to assess the situation and present a summary of its findings of fact. Alternatively, a state may lodge a complaint with U.N. Security Council which may then act in accordance with its powers under Chapter VII of the U.N. Charter.

Status: This principle only applies to states which are parties to the 1977 En-mod Convention.

Source: 1977 En-mod Convention.

- Problems:**
- (1) Uncertainty as to the requisite quantum of damage. When is damage “widespread, long-lasting or severe”?
 - (2) The responsibility provisions are extremely inadequate.
 - (3) Important Middle Eastern countries are not bound.

Principle 4: Environmental Warfare

Rule: States must not employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.

Exceptions: None.

Responsibility: Violations of the rule give rise to the following consequences:

- (1) States will be responsible to make reparation in the form of monetary compensation.
- (2) Individuals who commit or order to be committed such violations will be subject to criminal punishment for “war crimes” for which there is universal jurisdiction.

Status: This rule only applies to states which are parties to Protocol I of 1977.

Major Sources: 1977 Protocol I.

- Problems:**
- (1) Uncertainty as to the requisite quantum of damage. What is the scope of the terms “widespread, long-term and severe”?
 - (2) The rule is not binding on any major Western, former Soviet Bloc and Middle Eastern countries.

2. Protection of Specific Areas of the Environment Against Wartime Victimization

Principle 5: Marine Environment

Rule: States engaged in armed conflict must minimize to the fullest possible extent all forms of marine pollution, including:

- (1) the release of toxic, harmful or noxious substances from land-based sources, or from or through the atmosphere.
- (2) pollution from any installations and devices operating in the marine environment.

Exceptions: None.

Responsibility: Violations of the rule give rise to the following consequences:

- (1) A state is entitled to take measures beyond its territorial sea, proportionate to the actual or threatened injury, to protect its coastline or related interests, including fishing.
- (2) States are responsible to make reparation by way of monetary compensation.

Status: Customary International Law.

Major Sources: 1982 LOS Convention.

- Problems:*
- (1) The requisite quantum of damage is, again, left undefined.
 - (2) States are only required to “minimize” environmental damage.
 - (3) The responsibility regime is extremely inadequate for the purpose of deterrence and as a means of redress.

Principle 6: Property

Rule: States engaged in armed conflict must not destroy enemy property.

Exceptions: The rule does not apply if such destruction is rendered absolutely necessary by military operations.

Responsibility: Violations of the rule give rise to the following consequences:

- (1) States are responsible to make reparation in the form of monetary compensation.
- (2) Individuals who committed or ordered to be committed such violations shall be subject to criminal punishment for “war crimes” for which there is universal jurisdiction. Furthermore, states are obligated to ensure that perpetrators of such “grave breaches” are brought to trial.

Status: Customary International Law.

Major Sources: 1907 Hague Regulations; 1949 Geneva Convention IV; Nuremberg Charter.

- Problems:*
- (1) Many areas of the environment do not fall within the ambit of “property.”
 - (2) The term “military necessity” is capable of many divergent interpretations and exposes the rule to widespread avoidance.

Principle 7: Objects Indispensable to Civilian Survival

Rule: States engaged in armed conflict must not attack or destroy objects indispensable to the survival of the civilian population such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water and installations, and supplies and irrigation works.

Exceptions: The rule does not apply in the following circumstances:

- (1) when objects are destroyed for purposes other than depriving civilians of sustenance;
- (2) when objects are destroyed for the specific purpose of depriving enemy military forces of sustenance, or;
- (3) when it is militarily necessary for a state to destroy objects in order to defend its national territory against invasion.

Responsibility: Violations of the rule give rise to the following consequences:

- (1) States are responsible to make reparation in the form of monetary compensation.
- (2) Individuals who committed or ordered to be committed such violations shall be subject to criminal punishment for "war crimes" for which there is universal jurisdiction.

Status: The rule is only binding on states which are parties to Protocol I of 1977.

Major Sources: 1977 Protocol I.

Problems:

- (1) The exceptions to this rule are so extensive that its practical value is negligible.
- (2) No major Western, former Soviet Block or Middle Eastern countries are bound by the rule.

3. Protection of Environmentally Precarious Targets Against Wartime Attack

Principle 8: Works and Installations containing Dangerous Forces

Rule: States engaged in armed conflict must not attack any of the following works or installations if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population: dams, dykes, nuclear electrical generating stations and military objectives located at or in the vicinity of these works or installations.

Exceptions: The rule does not apply if the following circumstances are present:

- (1) the object is used in regular, significant and direct support of military operations;
- (2) the attack is the only feasible way to terminate such support, and;

- (3) if the object is a dam or a dyke, the enemy must be using it for other than its normal function.

Responsibility: Violations of the rule give rise to the following consequences:

- (1) States are responsible to make reparation in the form of monetary compensation.
- (2) Individuals who committed or ordered to be committed such violations shall be subject to criminal punishment for “war crimes” for which there is universal jurisdiction. Furthermore, states are obligated to ensure that perpetrators of such “grave breaches” are brought to trial.

Status: This rule is only binding on states which are parties to Protocol I of 1977.

Major Sources: 1977 Protocol I.

Problems: No major Western, former Soviet Block or Middle Eastern countries are bound by the rule.

4. Collateral Protection Resulting from Constraints on Military Strategy

Principle 9: Constraints on Military Strategy

Rule: States involved in armed conflict must not engage in environmentally damaging activities where:

- (1) such activities are not necessary to achieve a military objective;
- (2) the damage would be excessive in proportion to the military advantage;
- (3) the activities would cause superfluous injury or unnecessary suffering, or;
- (4) the damage would impact upon civilian targets or both civilian and military targets without discrimination.

Exceptions: None.

- Responsibility:** Violations of the rule give rise to the following consequences:
- (1) States are responsible to make reparation in the form of monetary compensation.
 - (2) Individuals who committed or ordered to be committed such violations shall be subject to criminal punishment for "war crimes" for which there is universal jurisdiction. Certain states which regard such violations as "grave breaches" are obligated to ensure that perpetrators are brought to trial.
- Status:** Customary International Law (except for the characterization of violations as "grave breaches," which is only binding on states which are parties to Protocol I of 1977).
- Major Sources:** 1868 St. Petersburg Declaration; 1907 Hague Regulations; 1977 Protocol I.
- Problems:** The generality and vagueness of these constraints exposes the rule to divergent interpretations, subjective judgement and wholesale exploitation and avoidance.

C. Examination of the Persian Gulf Conflict

The deliberate, massive environmental damage in the recent Persian Gulf Conflict provides an immediate practical context within which we may observe the strengths and weaknesses of existing international law on deliberate wartime environmental damage. Although it is beyond the scope of this article to engage in a detailed assessment of the environmental damage inflicted during the conflict, we shall briefly outline the known circumstances and consequences of the oil spill and oil-well fires, so as to provide a factual basis for our legal analysis.

1. The Environmental Damage

(a) **The Oil Spill.** On January 19, 1991, two days after the commencement of hostilities, a giant oil slick began to form in the Persian Gulf off the Kuwaiti coast. By 15 April the slick was estimated to be "in the order of six

million barrels,²⁶⁴ as compared to the release of only 250,000 barrels in the 1989 Exxon Valdez disaster.²⁶⁵ Australian Foreign Minister, Senator Gareth Evans reported the existence of "credible evidence that the spill was deliberately engineered by the Iraqis . . . These particular environmental consequences are not to be attributed . . . to the inadvertent effect of artillery action or things of this kind."²⁶⁶ As to Iraqi motives, American officials were only able to speculate that Iraq was "attempting to disrupt allied military manoeuvres, or befoul desalting plants, or produce a kind of ecological terrorism in retribution for the bombing."²⁶⁷

Pictured on television screens across the globe, the first tragic victims of the spill were the numerous species of marine life which make up the rich and diverse ecology of the Persian Gulf:

The slick has killed an estimated twenty to thirty thousand sea birds . . . Small numbers of turtles and sea snakes seem to have died by being smothered from the oil. Fish mortalities have been fairly localised to shrimps and crabs which have died in very large numbers . . . Within the impacted area, most of the salt marshes and all of the mangroves have been oiled. It is likely then that all of the mangroves and virtually all of the salt marshes will die.²⁶⁸

The local human population directly suffered as a result of the impact of the spill on the Gulf's commercial fisheries. The Gulf fisheries "are of great cultural and economic importance. For centuries they have provided a livelihood for coastal communities, and the use of simple fishing traps set on the intertidal zone continues today."²⁶⁹

In terms of the future, Australian marine biologists are pessimistic:

It will simply not be possible to clean up many of the Gulf's habitats once they have become contaminated by oil. Access is limited, and physical removal so difficult that greater damage may be done by trying. Heavy

264. Ros Kelly, Question Times, *House of Representatives*, April 15, 1991 (televised on Channel 2, April 15, 1991, 11:30 pm). The Minister explained that her report was based on information supplied by two Australian oil-spill experts in the Gulf: "The reality of it is you can't read this sort of thing in the newspaper. This comes from advisors that this Government has taken the trouble to send to the area." (on file with author).

265. "Ecological Consequences of the Arabian Gulf Oil Spill," Saudi Arabian National Commission for Wildlife Conservation and Development (NCWCD), Fact File dated 25 February 1991 (on file with author).

266. News Conference, Parliament House, January 26, 1991, Transcript, at 3 (on file with author).

267. Robert McFadden, *Oil Threatens Fishing and Water Supply*, N.Y. TIMES, Jan. 26, 1991, at 4.

268. Kelly, *supra* note 264.

269. Charles Sheppard & Andrew Price, *Will Marine Life Survive the Gulf War?*, NEW SCIENTIST, Mar. 9, 1991, at 37.

machinery may be used to scrape oil off beaches but on thousands of hectares of soft blue-green algae flats it will be useless.²⁷⁰

(b) The Oil-Well Fires. On January 22, 1991, U.S. reconnaissance satellites detected plumes of dark smoke erupting from oil refineries and oil installations in Iraqi-occupied Kuwait.²⁷¹ During mid-February, more fields were set ablaze in western Kuwait. In the final two weeks of the war, Iraq embarked upon large-scale sabotage of oil wells, especially in the Burgan field.²⁷² By 2 April 1991, 517 of Kuwait's 1,080 wells were ablaze, burning 3-4 million barrels of oil per day.²⁷³ The general perception was that the sabotage was part of a vindictive "scorched earth" policy, although one Pentagon spokesman speculated that "there is an advantage from their point of view of starting a fire. It creates smoke, some would obscure the ground, make it difficult for us to find targets."²⁷⁴

The fire blackened the skies, turning day into night in areas as far as Turkey and Qatar. Sooty acid rain has fallen in Saudi Arabia and Iran and "reports of black snow in the Himalayas came from Swiss skiers."²⁷⁵ The increase in soil acidity causes metal contamination, pollution of water supplies, reduction in farming yields and destruction of up to 60% of the forests in the impacted area.²⁷⁶

Kuwaiti environmental experts have said that "spending one day in Kuwait City could be the equivalent of smoking 250 cigarettes."²⁷⁷ Dr. Sefein, a surgeon at Ahmadi Hospital in Kuwait, said he was dealing with "20 to 30 new cases every day involving breathing problems, articaria, running noses, boils and sore throats."²⁷⁸ Dr. El Yacoub of the Kuwaiti Institute for Scientific Research reported that examination of several recently slaughtered sheep had revealed severe irritation of the lungs: "It means the hydrocarbons are taken to the smallest cell of the body, which means in the long term, the chances of cancer increase."²⁷⁹

At one stage, scientists predicted that "a pall of smoke over the Indian sub-continent . . . could reduce the temperature gradient and shut down the

270. *Id.* at 39.

271. Philip Shenon, *Iraq Sets Oil Refineries Afire*, *N.Y. Times*, Jan. 23, 1991, at A1, A6.

272. Information Update, *Kuwait's Oil Fires*, Department of Foreign Affairs and Trade, Apr. 2, 1991 (on file with author).

273. *Id.*

274. Tom Fiedler, *Oil fires blanket Kuwait in smoke*, *AGE*, Feb. 14, 1991, at 1.

275. *Black Snow*, *AGE*, Apr. 1, 1991, at 11.

276. Information Update, *Kuwait's Oil Fires*, Department of Foreign Affairs and Trade, 2 April 1991.

277. *Oil fire pollution drives away 150,000 Kuwaitis*, *Sydney Morning Herald*, Mar. 27, 1991, at 11.

278. *Id.*

279. *Id.*

monsoon, bringing drought to hundreds of millions of people.²⁸⁰ Although this did not eventuate, the mere possibility provides considerable cause for concern.

2. Application of the Relevant Law²⁸¹

(a) Principle 1: Interstate Environmental Damage. Both the pumping of oil into the Persian Gulf and the ignition of oil-wells took place in an area within the control of Iraq, namely Kuwaiti Territory. These activities caused environmental damage in Kuwait, Saudi Arabia, Iran and many other states, all of which were beyond the national jurisdiction of Iraq. Hence, provided this damage can be regarded as "significant," Iraq has violated Principle 1, as derived from the *Trail Smelter Case*²⁸² and the 1972 Stockholm Declaration.²⁸³ Note that the exceptions to Principle 1 do not apply because Iraq was engaged in an unlawful use of force in violation of Article 2(4) of the U.N. Charter.²⁸⁴

Can the environmental damage caused by the spill and the fires be regarded as "significant"? It is unfortunate that this term has not been further defined. In this instance, however, it may be observed that the damage inflicted in the Gulf was far greater than the damage caused to the state of Washington by emissions from the Canadian Smelter Plant. Since the Tribunal in the *Trail Smelter Case*²⁸⁵ found there to be sufficient damage to justify an award of compensation and injunctive relief, *a fortiori* the damage in the Gulf may safely be regarded as "significant."

(b) Principle 2: Environmental Damage as a Use of Force. To the extent that the pumping of oil into the Gulf and the ignition of oil-well fires constitutes a "use of force," Iraq has violated Principle 2, as derived from the U.N. Charter²⁸⁶. Note that the exceptions to this Principle do not apply because Iraq was not engaged in authorized collective security, nor was it acting lawfully in self defence.²⁸⁷

Applying the conception of force which we developed in the previous section, it is evident that Iraq's acts of environmental victimization had an adverse physical impact upon other states. The question remains, however,

280. Fred Pearce, *Desert Fires Cast a Shadow Over Asia*, NEW SCIENTIST, Jan. 12, 1991, at 31.

281. Only Principles 1, 2, 5, 6 and 9 are applicable here. Principles 3, 4, 7 and 8 are derived from conventions and protocols to which Iraq is not a party and which, as explained in the previous sections, have not crystallized into customary international law. See section I(B), *infra*.

282. *Trail Smelter Case*, 3 R. Int'l Arb. Awards 1905 (1938 & 1941).

283. Stockholm Declaration, *supra* note 12, at 1416.

284. U.N. CHARTER, *supra* note 42, art. 2(4).

285. *Trail Smelter Case*, 3 R. Int'l Arb. Awards 1905 (1938 & 1941).

286. U.N. CHARTER, *supra* note 42.

287. *Id.* art. 51.

whether the damage was sufficient in degree to amount to a “use of force”? This question is answered by paragraph 16 of U.N. Security Council Resolution 687 which expressly “re-affirms that Iraq . . . is liable under international law for any direct loss, damage, including environmental damage and the depletion of natural resources . . . as a result of Iraq’s unlawful invasion and occupation of Kuwait.”²⁸⁸ This resolution imposes liability for an unlawful use of force, acknowledging expressly that the unlawful use of force included environmental damage.

The Security Council did not specifically declare that the environmental damage constituted a “breach of the peace.” From a practical perspective, however, the Security Council had already characterized Iraq’s invasion as a “breach of the peace” and hence there was no need to further characterize individual acts in such terms.²⁸⁹

Whether or not the environmental damage can be characterized as “aggressive” depends on the gravity of the threat to future civilization posed by Iraq’s actions. Although the full ramifications of Iraq’s environmental victimization will not be known for some time, it is clear that Iraq’s actions have imperilled the health and in some cases the survival of millions of people in countries as far as Iran and India. The threat is potentially global. For these reasons, it is submitted that the environmental damage alone is sufficient to characterize Iraq’s invasion and occupation as a “war of aggression.”

(c) Principle 5: The Marine Environment. Iraq’s deliberate pumping of oil into the Gulf certainly amounts to a release of a harmful substance from a land-based source. It would also constitute pollution from an installation operating in the marine environment. All evidence indicates that the spill was the result of deliberate sabotage by Iraq, so as to preclude any suggestion that Iraq sought to minimize the damage. On this basis, it may be concluded that Iraq has violated Principle 5, as derived from customary international law (as reflected in the 1982 LOS Convention.)²⁹⁰

(d) Principle 6: Property. Much of the environmental damage inflicted by Iraq can be characterized as “destruction of property.” The despoiling of crops and farmland by acid rain, the poisoning of livestock by polluted air and the devastation of hundreds of oil installations by fire, are but a few examples. All this damage caused by Iraq *prima facie* amounts to a violation of Principle 6, as derived from the 1907 Hague Regulations and the 1949 Geneva Conventions.²⁹¹ But we must consider the application of the

288. U.N. Doc. S/22430 91-10541 32902(E), *supra* note 66.

289. S.C. Res. 660, 45 U.N. SCOR (2932d mtg.), U.N. Doc. S/INF/46 (199) (resolution of August 2, 1990).

290. U.N. Doc. A/Conf. 62/122 (1982).

291. Roberts & Guelff, *supra* note 222.

exception to Principle 6 for destruction rendered absolutely necessary by military operations. Iraq would certainly argue that the oil spill was militarily necessary in order to deter an amphibious attack and that the oil fires were militarily necessary in order to obscure the vision of allied pilots engaged in aerial attacks. The Allies, on the other hand, might argue that the spilled oil would have had a negligible effect on any amphibious attack and that the blackened skies were only a very minor irritation to Allied pilots. Applying the “general theory of military necessity” which we developed in the previous section, the following observations may be made:

- (1) There was arguably some military benefit (albeit small) in polluting the Gulf and blackening the skies;
- (2) The magnitude of the damage to persons and objects unconnected to the military targets was indisputably far greater than the magnitude of the military advantage;
- (3) This disparity is evident from the vast amount of superfluous injury (which had no connection to the prevention of allied amphibious landings or to obscuring the vision of allied pilots) and from the substantial (as opposed to incidental) devastation of civilian objects;
- (4) The disparity could reasonably have been anticipated by Iraq, as evidenced by the numerous predictions and warnings by environmentalists, scientists and other experts, even in advance of the military confrontation, of severe environmental devastation;
- (5) Therefore, Iraq cannot invoke the doctrine of “military necessity” as a defence.

Even independently of this process of analysis, it may be argued that the majority of the oil-well fires, having been triggered by Iraq in the course of its retreat in the final hours of battle, could not reasonably have been regarded as militarily advantageous by any standards. Hence, on any interpretation of the “military necessity” exception, the ignition of the oil fires cannot escape illegality.

(e) Principle 9: Constraints on Military Strategy. Principle 9 requires us to consider whether the oil spill and fires were militarily necessary, were proportionate to the expected military gain, avoided superfluous injury and impacted specifically on military targets.

Considering each of the 4 criteria individually, we immediately encounter the recurrent problem of ascertaining exactly what is meant by the terms “military necessity,” “proportionality,” “superfluous” and “civilian object.” We have already demonstrated (in our discussion of Principle 6) how easy it would be for opposing states, taking different views of the scope of “military necessity,” to invoke a variety of competing arguments in their respective favors. Our “general theory of military necessity,” encompassing all four constraints, was applied in relation to Principle 6 (destruction of property not justified by military necessity) and will not be repeated here.

In summary, however, it might be said that the damage inflicted was grossly excessive in relation to the meager potential for military gain.

3. Responsibility for Violations

All violations of the relevant laws give rise to state responsibility to make reparation. Iraq's obligation to provide monetary compensation for all the environmental damage has in fact been incorporated into paragraph 16 of Security Council Resolution 687 (the "cease-fire resolution").²⁹²

Furthermore, violations of Principle 6 (destruction of property) and Principle 9 (constraints on military strategy) amount to "war crimes." Any state which is able to secure custody of those persons who committed or ordered the destruction of property or the violation of the general constraints on military strategy, is entitled to prosecute those persons in its domestic courts and to impose criminal punishment including, where appropriate, the death penalty. Indeed, those who planned, prepared and organized the environmental victimization can be regarded as having planned, prepared and organized a "war of aggression"—a "crime against peace" for which there is also individual criminal responsibility.²⁹³

D. Suggestions for Improvement

The nine principles, articulated and applied in the previous sections, demonstrate that international law, more by accident than by design, does impose a degree of accountability (including individual accountability) for deliberate wartime environmental damage. At the same time, however, our analysis has exposed substantive deficiencies in each of the principles and in the existing law in general. In this section, we shall build upon our analysis of existing international law by first suggesting ways of strengthening the existing nine principles and, secondly, proposing a framework for a comprehensive package of international law directly addressing the problem of deliberate wartime environmental damage.

1. Improvement of Existing Laws

It is entirely conceivable that international armed conflict will erupt and threaten the natural environment long before the lengthy process of preparing and negotiating a comprehensive package of applicable international law can be completed. In the interim, therefore, states should be encouraged to collectively (or at least individually) contribute to the following piecemeal reforms of existing law:

292. S.C. Res. 687, U.N. Doc. S/22430 (1991).

293. Nuremberg Charter, *supra* note 121.

- (1) States which are not yet parties to the 1976 En-mod Convention and 1977 Protocol I should ratify these instruments as soon as possible. If states find particular provisions unacceptable, they should be encouraged to expressly declare their acceptance of all the other provisions, thereby enabling these provisions to enter into customary international law.
- (2) States should declare their understanding of the minimum quantum of damage required in relation to Principle 1 (interstate environmental damage), as derived from the Stockholm Declaration and the *Trail Smelter Case*. Since a violation of Principle 1 only results in an obligation to pay monetary compensation, states should be willing to agree that the principle should apply to any environmental damage, provided it is "measurable."
- (3) Although we have demonstrated, on the basis of customary international law, that environmental damage is capable of constituting a "use of force," "breach of peace" or "act of aggression," these principles will be more effective for the purpose of deterrence if states expressly declare their understanding to this effect. For example, the 1974 U.N. *Definition of Aggression* could be amended to expressly include "deliberate environmental damage" in its non-exhaustive enumeration of "acts of aggression."²⁹⁴
- (4) The major deficiency in both the 1976 En-mod Convention and Protocol I of 1977 lies in the uncertain scope of the terms "widespread," "long-term" and "severe." Hence, states should be strongly encouraged to reach an agreement as to the meaning of these terms. It is not realistic to attempt here to predict the definitions which states are likely to accept. Nevertheless, environmental manipulation of such severity that modern science is not even able to predict the consequences should certainly be deemed to satisfy the requisite quantum of damage.
- (5) The prohibition on destruction of property, not justified by military necessity, could be considerably strengthened if states were prepared to declare that, for the purpose of that prohibition, "property" includes any aspect of the natural environment.
- (6) Principle 5, related to marine pollution, is expressed in terms of an obligation to "minimize to the fullest possible extent" damage to the marine environment. States should be encouraged to expressly declare that any pollution of the sea for military purposes constitutes a violation of this obligation.
- (7) The extensive protection conferred upon dams, dykes and nuclear electrical generating stations by Article 56 of 1977 Protocol I should be extended, particularly in light of the Gulf Conflict, to other installations containing dangerous forces such as oil wells, oil tankers and oil pumping stations. This could be achieved by either making the list of

294. *Definition of Aggression*, G.A. Res. 3314, 29 U.N. GAOR 29th Sess., Supp., No. 31, U.N. Doc. A/9631 (1974).

protected installations non-exhaustive or by adding oil installations to the list of specifically protected targets.

- (8) The uncertainty created by the concept of “military necessary” could be substantially resolved if states were to expressly adopt the “general theory of military necessity” which we developed in an earlier section and which was derived from existing principles of customary international law.

2. A Comprehensive Package of International Law

The preparation and negotiation of a comprehensive legal package designed to directly address the problem of deliberate wartime environmental damage is a lengthy, complex and most demanding challenge which, nevertheless, must be confronted by the international community. In July of 1991, environmentalists, scientists, politicians and international lawyers gathered together in Ottawa for a Conference on the Use of the Environment as a Tool of Conventional Warfare. The delegates discussed the environmental damage caused by the Gulf War, the relevant rules of existing international law and the need for clarification and reform. Although the conference did not produce any new laws or any extrapolations of existing laws, it marks the very beginning of the process of developing a body of international law specifically directed at wartime environmental protection. It is hoped that this process might eventually lead to the adoption of a set of principles based on the following outline:

(a) General Protection of the Environment Against Warfare

This section would prohibit any wartime conduct which is intended or could reasonably be expected to cause significant damage to the natural environment. “Significant” should be further defined in terms of the area of damage, the duration of damage and the seriousness of damage. This might be expressed in terms of a “definable region of damage” so as to include, for example, destruction of a forest but not destruction of a few trees.

(b) Protection of Specific Parts of the Environment

(i) Air

This part should prohibit any conduct intended or reasonably expected to result in weather modification, depletion of the ozone layer, acid rain, toxic levels of radiation fall-out and poisoning of the air. Air pollution in general should be prohibited in the same manner as the general prohibition in Part (a).

(ii) Sea

This section should prohibit the dumping, pumping or releasing of particular types of harmful substances into the marine environment. The specific protections enjoyed by the marine environment under the Law of the Sea Convention might be reiterated here. Pollution of the sea in general should be prohibited in the same manner as the general protection conferred by Part (a).

(iii) Land

This section should specifically protect forests, crops, farmlands, agriculture, wildlife and livestock. Pollution of the land and of objects on the land should be prohibited generally in the same manner as the general prohibition in Part (a).

(c) Protection of Environmentally Precarious Targets

The purpose of this section is to protect works and installations which, if attacked, could endanger the environment by the release of harmful substances and forces. The section should commence with a general provision prohibiting attacks on any works or installations which contain environmentally hazardous substances or forces. There should also be a non-exhaustive enumeration of specific installations to be protected: dams, dykes, nuclear installations, chemical plants and oil installations.

(d) The "Military Necessity" Exception

The infliction of environmental damage in circumstances of military necessity should constitute an exception to the prohibitions in Parts (a), (b) and (c). However, "military necessity" must be strictly and narrowly defined in very specific terms. The "general theory of military necessity" which we developed in Section IV might be an appropriate starting point from which to develop this exception.

(e) Responsibility for Violations

The success of the entire legal package will largely depend upon the nature and extent of responsibility flowing from violations of the principles. To this end, individuals engaged in the planning, ordering or commission or violations of the principles should be deemed guilty of "grave war crimes." Such crimes should invoke not only universal jurisdiction, but a universal obligation to locate suspected criminals, bring them to trial and punish those who are found guilty. This section should also expressly impose upon offending states an obligation to pay monetary compensation for any damage flowing from their violations of the principles. Of course, none of these provisions should prejudice the power of the U.N. Security Council to take

further diplomatic, economic or even military measures in accordance with Sections VI and VII of the U.N. Charter.

The above suggestions are neither comprehensive nor detailed. They are intended only as an outline of the main substantive principles which should be incorporated in a comprehensive package of international law dealing with deliberate wartime environmental damage. A number of procedural matters also require close attention. It is submitted, for example, that the new rules should not come into effect until they have been accepted or ratified by at least the five permanent members of the U.N. Security Council. Furthermore, there is much merit in the suggestion by Canadian M.P., Patrick Boyer, that there should be established an International Green Cross to respond to environmental calamities just as the Red Cross responds to war's human calamities and suffering.²⁹⁵ At the very least, these suggestions, together with the substantive principles proposed above, should provide a strong foundation upon which to build an effective legal regime to address the challenge of wartime environmental protection.

E. Conclusion

In concluding, it must be emphasized that the existence of applicable laws is no guarantee of their implementation, and the availability of avenues of reform does not mean they will eventuate. Until recently, there was every reason to be skeptical. After all, the environment had suffered war wounds before without any legal repercussions.

Today, however, the spread of democracy, the demise of communism in the Soviet Union and Eastern Europe, the new spirit of international cooperation demonstrated in the Persian Gulf and, most importantly, the rapid evolution of environmental culture, all provide considerable cause for optimism. As one reporter observed:

What is different now is, in part, the greening of our consciousness. No one who watched the oil spill in Alaska, the clean up of the Exxon Valdez, can be unaffected by a deliberate, one-man assault on a sea. No one in the recycling, rain-forest-saving, conservation mind-set can fail to be appalled by such deliberate wasting.²⁹⁶

At first, it was the innocence and vulnerability of marine life which aroused our emotions during the Gulf Conflict: "The newest victims of this war wear no dog tags. They carry no proof of nationality. They espouse no conviction that God or justice or history is on their side. Indeed they take no side."²⁹⁷ This concern, however, was rapidly surpassed by the grave

^{295.} Tim Harper, *Support growing for environmental response team*, TORONTO STAR, July 13, 1991, at A19.

^{296.} Ellen Goodman, *A crime against humanity and nature*, CHI. TRIB., Feb. 3, 1991, at 4. 297. *Id.*

realization that environmental victimization is actually capable of bringing about the end of humanity and the death of our planet: "The days where we thought the planet could absorb all types of abuse are over. Protection of the environment has become a key issue because we have finally realized that our survival is at stake."²⁹⁸

The astonishing realignment of political powers and the unstoppable forces of freedom and democracy, have produced a climate of international cooperation uniquely favorable to the enforcement of Iraqi responsibility under existing international law, and to the development of a more effective and comprehensive body of law. In a visionary statement likely to be cited for years to come, then U.S. President George Bush contemplated the new opportunities for the enforcement and development of international law:

This is an historic moment. We have in the past year made great progress in ending the long era of conflict and cold war. We have before us the opportunity to forge for ourselves and for future generations a new world order, a world where the rule of law not the law of the jungle, governs the conduct of nations.²⁹⁹

The ability of international law to meet the challenge of environmental protection will no doubt be a critical factor in the realization of this "new world order." We must all share in the hope that:

even in the devastating business of killing each other, there may be enough sanity for a consensus, enough sense of preservation to at least have a rule on the book and in our minds against waging war on the very environment we must share when the war is over.³⁰⁰

298. Extract from address by Mary Collins P.C. M.P., to the Conference on the Use of the Environment as a Tool of Conventional Warfare. Transcript obtained from Department of Foreign Affairs and Trade (Canberra). (on file with author).

299. President George Bush, Address to the Nation, Washington D.C., January 16, 1991, reprinted in 57 VITAL SPEECHES OF THE DAY, No. 8, Feb. 1, 1991, at 227.

300. Goodman, *supra* note 296, at 4.

