

Denver Journal of International Law & Policy

Volume 28
Number 3 *Summer*
1999 Sutton Colloquium & McDougal Lecture

Article 3

January 2000

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Recommended Citation

Michael N. Schmitt, Humanitarian Law and the Environment, 28 Denv. J. Int'l L. & Pol'y 265 (2000).

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Humanitarian Law and the Environment

Keywords

Environmental Law, Humanitarian Law, Crimes

HUMANITARIAN LAW AND THE ENVIRONMENT*

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When the Rome Conference adopted the Statute of the International Criminal Court (ICC) in July 1998, it included as a war crime the causation of "widespread, long term and severe damage to the natural environment."¹ Such "greening" of international humanitarian law promises heightened sensitivity to the environmental consequences of warfare as we enter the new millennium. The ICC Statute provision, however, is but the most recent example of a growing environmental consciousness vis-à-vis military operations that first began to surface over two decades ago.

This article catalogues those aspects of international humanitarian law that safeguard the environment during armed conflict: it is intended primarily as a primer for those new to the subject.² As will become apparent, humanitarian law has focused scant attention directly on the environment. Instead, it relies on conventional and customary humanitarian law that has only recently been recognized as having environmental consequence for the bulk of its environmental play. Following a brief review of the historical context from which the law emerged, discussion turns to four types of relevant norms: 1) specific environmental provisions in humanitarian law; 2) limits on the use of particular weapons capable of causing environmental damage; 3) non-

* Based on remarks at the 1999 Sutton Colloquium, "International Environmental Law & Policy," University of Denver College of Law.

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1. Rome Statute of the International Criminal Court, July 17, 1998, art. 8.2(b)(iv), U.N. Doc. A/CONF.183/9* (visited May 11, 1999) >, *reprinted in* 37 I.L.M. 999 (1998) [hereinafter ICC Statute].

2. See ENVIRONMENTAL CONSEQUENCES OF WAR: LEGAL, ECONOMIC, AND SCIENTIFIC PERSPECTIVES (Carl Bruch ed., 1999)(including an in-depth analysis); PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT (Richard Grunawalt, John King, and Ronald McClain eds., 1996); Michael N. Schmitt, *Green War: An Assessment of the Environmental Law of International Armed Conflict*, 22 YALE J. INT'L L. 1 (1997).

environment specific treaty law which may safeguard the environment in certain circumstances; and 4) customary humanitarian law offering environmental protection. Although the article's tenor is primarily descriptive, in order to stimulate further reflection, the final section provides an abridged assessment of the applicable normative environment; it suggests that while the environmental component of international law governing warfare is not vacuous, there is certainly room for improvement.

THE ADVENT OF CONCERN OVER THE ENVIRONMENTAL IMPACT OF ARMED CONFLICT

Recognition that armed conflict encroaches on the environment hardly represents an historiographic epiphany.³ Thucydides, for instance, recounts the laying to waste of Athenian fields by the Spartans during the annual sieges of Attica in the Peloponnesian Wars.⁴ In 1672, the Dutch opened their dikes in order to stem the tide of the advancing French forces in the Third Anglo-Dutch War.⁵ During the Boer War, the British Commander, Horatio Kitchener, engaged in a ruthless scorched earth campaign in which farms were burned to deny Boer forces the sustenance on which they relied.⁶ In the next century, the rich Romanian oilfields were attacked by British Colonel Norton Griffiths in order to preclude them from falling into the hands of the invading Central Powers of the First World War.⁷ Romanian oil was again targeted during the Second World War, particularly through the famous 1943 air raids against Ploesti.⁸ Of course, the two incidents which caused the greatest environmental calamity in the history of armed conflict were the atomic bomb attacks on the Japanese cities of Hiroshima and Nagasaki in August of 1945. An eyewitness vividly captured the tragic extent of the destruction better than sterile statistics ever could.

3. A discussion of past environmentally destructive acts during armed conflict is found in the Commentary to the Additional Protocols. INTERNATIONAL COMMITTEE OF THE RED CROSS, COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949, 666-67 (Yves Sandoz, Christophe Swinarski & Bruno Zimmerman eds., 1987) [hereinafter PROTOCOLS COMMENTARY].

4. See, e.g., THUCYDIDES, THE PELOPONNESIAN WAR §§2.19, 2.23, 2.47, 2.55, 2.57, 3.1, 3.26, 4.2, & 7.1 (Robert Strassler ed., Free Press 1996).

5. On this and other environmentally destructive incidents of warfare, see ARTHUR H. WESTING, WARFARE IN A FRAGILE WORLD: THE MILITARY IMPACT ON THE HUMAN ENVIRONMENT (1980), at 14-19, tbl. 1.2 (setting forth "ecologically destructive wars").

6. BRASSEY'S ENCYCLOPEDIA OF MILITARY HISTORY AND BIOGRAPHY 125 (Franklin D. Margiotta ed., 1994). The British also placed some 120,000 Boer women and children into concentration camps, whereby approximately 20,000 died. *Id.*

7. CHARLES R.M.F. CRUTTWELL, A HISTORY OF THE GREAT WAR, 1914-1918, 297-98 (1934).

8. See generally JAMES DUGAN & CAROLL STEWART, PLOESTI: THE GREAT GROUND-AIR BATTLE OF 1 AUGUST 1943 (1998).

Within a few seconds the thousands of people in the streets and the gardens in the center of the town were scorched by a wave of searing heat. Many were killed instantly, others lay writhing on the ground, screaming in agony from the intolerable pain of their burns. Everything standing upright in the way of the blast, walls, houses, factories, and other buildings, was annihilated. . . .Horses, dogs and cattle suffered the same fate as human beings. Every living thing was petrified in an attitude of indescribable suffering. Even the vegetation did not escape. Trees went up in flames, the rice plants lost their greenness, the grass burned on the ground. . . .⁹

These and countless other environmentally destructive operations did not occur in a complete normative vacuum. On the contrary, the historical record recounts multiple efforts to set standards limiting destruction of the environment during armed conflict. In Deuteronomy, as an example, Moses instructs the people of Israel on methods of siege warfare.

When you lay siege to a city for many days, making war against it to capture it, you shall not destroy its surrounding fruit trees by cutting them with an axe; you may eat their fruit, but you must not cut them down. Are the trees of the field people, defenders of the city, that you should lay siege to them? Those trees, however, that you know are not fruit trees you may cut down and use to build siege works against the city that is warring against you, until it falls.¹⁰

Prohibitions on laying waste to civilian food sources were also articulated by the Diaspora scholar Maimonides and the Rabbi Ishmael,¹¹ and Hugo Grotius, in *De Jure Belli ac Pacis*, cites to ancient authorities such as Philo and Livy, who urged limits on the despoliation of "inanimate things."¹² Nevertheless, despite significant humanitarian law codification during the 19th and 20th centuries, it was only in the aftermath of the Vietnam conflict that serious attempts were mounted to impose conventional law limits on the environmental damage resulting from hostilities.

The Vietnam War represented a watershed in the symbiotic relationship between warfare and the global citizenry. This was very much

9. THE AMERICAN HERITAGE HISTORY OF WORLD WAR II 616 (David G. McCullough ed., 1966).

10. Deuteronomy 20:19-20 (Modern Language Bible).

11. Leslie Green, *What Is-Why Is There-the Law of War?*, in THE LAW OF ARMED CONFLICT: INTO THE NEXT MILLENNIUM 141, 146 (Michael N. Schmitt & Leslie C. Green eds., 1998). See also Guy Roberts, *Judaic Sources and Views on the Laws of War*, 37 NAVAL L. REV. 221, 231 (1988); Leslie Green, *The Judaic Contribution to Human Rights*, 28 CAN. Y.B. INT'L L. 3 (1990).

12. HUGO GROTIUS, DE JURE BELLI AC PACIS, bk. III, ch. 12, at 365 (Louise R Loomis trans., 1949).

the case with respect to warfare's environmental consequences. A major causative factor in this shift was direct targeting, and manipulation, of the environment by US forces to achieve tactical and operational objectives. For instance, to counter North Vietnamese and Viet Cong use of forests and dense vegetation as cover for attacks and sanctuaries to melt into, the United States cleared nearly three-quarters of a million acres of land using the Rome Plow, a heavy tractor with large blades attached. It also dropped herbicides over huge expanses of South Vietnam. Similarly, in a futile attempt to arrest the flow of supplies southward along the Ho Chi Minh trail, the US military seeded clouds, hoping that the ensuing rain would render the track impassable.¹³

Such operations would not alone have riveted international attention on the subject of environmental destruction during combat; history had witnessed far more devastating operations in past conflicts without noticeable distraction. However, the targeting of the environment and its use as a means of warfare was taking place in the first widely televised armed conflict. Suddenly, the civilian population watched the war nightly with great interest and horror. This fact coincided with a growing antiwar sentiment, both in the United States and abroad. It also occurred contemporaneously with the rise of environmental consciousness more generally; recall that the first "Earth Day" was celebrated in 1970. Thus, with Vietnam, the environment was visibly being placed at risk for an unpopular cause during a period in which sensitivity about the environment was at a new high.

The first environmental legal standards for armed conflict resulted. In 1977 Additional Protocol I to the Geneva Conventions of 1949 was adopted by the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflict.¹⁴ It contained two provisions, discussed *infra*, addressing damage to the environment during armed conflict.¹⁵ For a variety of reasons, the United States has elected not to ratify Additional Protocol I, although it does recognize much of it as reflective of customary international law.¹⁶ As the protocol was being negotiated, a second effort was

13. See ARTHUR H. WESTING, *ECOLOGICAL CONSEQUENCES OF THE SECOND INDOCHINA WAR* (1976) (referring to the war's environmental impact).

14. PROTOCOL ADDITIONAL TO THE GENEVA CONVENTIONS RELATING TO THE PROTECTION OF VICTIMS OF INTERNATIONAL ARMED CONFLICTS, June 8, 1977, U.N. Doc. A/32/144, 16 I.L.M. 1391 [hereinafter ADDITIONAL PROTOCOL I].

15. On the history and progress of the Conference, held between 1974 and 1977, see PROTOCOLS COMMENTARY *supra* note 3, at xxix – xxxv; NEW RULES FOR VICTIMS OF ARMED CONFLICTS 1-13 (Michael Bothe, Karl Partsch & Waldemar Solf eds., 1982).

16. The ICRC Organization web site (visited May 10, 1999) <<http://www.icrc.org/unicc/ihl eng.nsf/web?OpenNavigator>> (listing the Parties of the ICRC to-date). Although Additional Protocol I was not ratified by certain States, many its provisions, but not including the environmental provisions, are considered declaratory of customary international law. For a non-official, but generally considered authoritative, delineation of

underway to limit use of environmental modification as a weapon. The consummation of this labor was the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD).¹⁷ Whereas Additional Protocol I addressed damage to the environment caused by military operations, such as that caused in Vietnam by the Rome Plow and the use of herbicides, ENMOD was designed to foreclose attempts to employ the environment as a means of warfare, as in the cloud seeding program.

Little else of relevance to the topic occurred until the 1990-91 Gulf War. The environmental destruction of that conflict quickly refocused the attention of the international community on warfare's environmental aspect. In the days preceding commencement of the Coalition air campaign, Saddam Hussein and other Iraqi officials threatened Kuwaiti oil fields if Coalition forces attacked.¹⁸ When the Coalition did attack on January 17, 1991, the Iraqis made good on their promise. By the end of the conflict, they had deliberately spilled between seven and nine million barrels of oil into the Persian Gulf and set 508 oil well heads ablaze, 82 of which were damaged in a manner that caused oil to freely flow from them.¹⁹ Although the Iraqi rationale for these actions remains uncertain, most commentators, as discussed, characterize them as violations of international humanitarian law.²⁰

The academic and policy communities reacted quickly to the events they witnessed. The first serious exploration of the topic came in June 1991 with a conference co-sponsored by the London School of Economics and the British Center for Defense Studies, at which Professor Glen Plant offered a notional fifth Geneva Convention on the Environment for consideration.²¹ Subsequent conferences were sponsored by the Ca-

those considered declaratory, see Michael J. Matheson, *Session One: The United States Position on the Relation of Customary International Law to the 1977 Protocols Additional to the 1949 Geneva Conventions*, 2 AM. U. J. INT'L L. & POL'Y 419 (1987). See also INTERNATIONAL & OPERATIONAL LAW DIVISION, OFFICE OF THE JUDGE ADVOCATE GENERAL, DEP'T OF THE AIR FORCE, OPERATIONS LAW DEPLOYMENT DESKBOOK, tab 12 and Comments by Abraham D. Sofaer in *Agora: The US Decision Not to Ratify Protocol I to the Geneva Conventions on the Protection of War Victims*, 82 AM. J. INT'L L. 784 (1988).

17. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, Dec. 10, 1976, 31 U.S.T. 333, 1108 U.N.T.S. 152 [hereinafter ENMOD].

18. In fact, they actually practiced anti-oil operations by detonating six wells and setting basins of oil ablaze in December 1990. William M. Arkin, *The Environmental Threat of Military Operations*, in PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT, *supra* note 2, at 116, 119.

19. DEP'T OF DEFENSE, FINAL REPORT TO CONGRESS: CONDUCT OF THE PERSIAN GULF WAR 625 (1992) [hereinafter FINAL REPORT].

20. *Id.* See generally PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT, *supra* note 2.

21. See Glen Plant, *Elements of a 'Fifth Geneva' Convention on the Protection of the Environment in Time of Armed Conflict*, in ENVIRONMENTAL PROTECTION AND THE LAW OF

nadian Ministry of External Affairs (Ottawa),²² the International Council of Environmental Law and the Commission on Environmental Law of the International Union for the Conservation of Nature and Natural Resources (Munich),²³ the Office of the Secretary of Defense and the Naval War College (Newport),²⁴ and the Smithsonian Institution, Environmental Law Institute, and the Kuwait Foundation for the Advancement of Sciences (Washington).²⁵ The United Nations also addressed the matter. In Resolution 687, the Security Council held Iraq liable for "any direct loss, damage, including environmental damage, and the depletion of natural resources" caused by its invasion of Kuwait.²⁶ It subsequently established the United Nations Compensation Commission (UNCC) to adjudicate claims against Iraq to be paid out of a fund capitalized by a levy on Iraqi oil exports and frozen Iraqi assets.²⁷ Some 100 countries have filed claims with the UNCC for environmental damage amounting to more than \$250 billion; only recently have the claims begun to be adjudicated.²⁸ For its part, in 1991 the General Assembly asked the International Committee of the Red Cross, which had already decided to convene a meeting of experts to consider the issue of environmental damage in warfare, to provide a report on the subject to the Assembly.²⁹ The report, reproduced as an appendix to this article, came in the form of Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict. Although the Assembly did not formally adopt the Guidelines, it did urge individual States to consider incorporating them into their humanitarian law guidance to armed forces.³⁰ A number of States, among them the United States and Germany, have included limited guidance on envi-

WAR 37, 43 (Glen Plant ed., 1992) (citing the full text).

22. *Id.* (publishing the Proceedings).

23. INTERNATIONAL COUNCIL OF ENVIRONMENTAL LAW, LAW CONCERNING THE PROTECTION OF THE ENVIRONMENT IN TIMES OF ARMED CONFLICT, FINAL REPORT OF THE CONSULTATION OF DEC. 13-15, 1991 (containing the Summary).

24. *Id.* (publishing the Proceedings).

25. See generally ENVIRONMENTAL CONSEQUENCES OF WAR, *supra* note 2.

26. S.C. Res. 687, U.N. SCOR, 45th Sess., 2981st mtg., para. 16, U.N. Doc. S/RES/687 (1991).

27. S.C. Res. 692, U.N. SCOR, 46th Sess., 2987th mtg., U.N. Doc. S/RES/692 (1991), reprinted in 30 I.L.M. 864 (1991). On the work of the Commission, see Ronald J. Bettauer, *The UN Compensation Commission—Developments Since 1992*, 89 AM. J. INT'L L. 416 (1995); John R. Crook, *The United Nations Compensation Commission - A New Structure to Enforce State Responsibility*, 87 AM. J. INT'L L. 144 (1993); Hazel M. Fox, *Reparations and State Responsibility*, in THE GULF WAR 1990-91 IN INTERNATIONAL AND ENGLISH LAW 261 (Peter Rowe ed., 1993); Conrad K. Harper, *Opening Address: The Symposium on the Protection of the Environment During Armed Conflict and Operations Other Than War*, in PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT, *supra* note 2, at 8.

28. Jay Austin and Carl Bruch, *The Greening of Warfare*, THE ENVIRONMENTAL FORUM, Nov.-Dec. 1998, at 32, 33.

29. G.A. Res. 417, U.N. GAOR, 46th Sess., Supp. No. 49, at 319, U.N. Doc. A/46/49 (1991).

30. See G.A. Res. 49/50, U.N. GAOR, 49th Sess., U.N. Doc. A/RES/49/50 (1995).

ronmental law in their humanitarian law manuals, albeit not to the degree reflected in the ICRC Guidelines.³¹

In 1996 international attention again turned to the environmental consequences of warfare, this time in the context of an International Court of Justice case regarding the threat or use of nuclear weapons. In its advisory opinion, the Court opined, after considering the relevant humanitarian law and peacetime environmental norms, that "[t]he existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment."³² Although it rejected assertions that environmental norms alone could deprive a State of its right to self-defense, the ICJ emphasized their importance during military operations: "States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives. Respect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of proportionality."³³ The Additional Protocol I provisions on the environment were singled out as "powerful constraints for all States having subscribed" to them,³⁴ a curious characterization given the fact that it appears clear the use of nuclear weapons was not meant to be governed by the Protocol.³⁵ While the opinion

31. See, e.g., Federal Ministry of Defense of the F.R.G., Joint Services Regulations (ZDv) 15/2, § 401 (1992), *reprinted with commentary in* THE HANDBOOK OF HUMANITARIAN LAW IN ARMED CONFLICTS 111-14 (Dieter Fleck ed., 1995) [hereinafter GERMAN MANUAL]; U.S. NAVY, U.S. MARINE CORPS, U.S. COAST GUARD, THE COMMANDER'S HANDBOOK ON THE LAW OF NAVAL OPERATIONS (NWP 1-14M), ¶ 8.1.3 (1995). There is a cooperative effort underway to draft a joint law of armed conflict manual for U.S. forces and the environment is expected to be addressed. The influential San Remo Manual drafted for the International Institute of Humanitarian Law by a group of internationally renowned experts in naval warfare and law also deals with harm to the environment. INTERNATIONAL INSTITUTE OF HUMANITARIAN LAW, SAN REMO MANUAL ON INTERNATIONAL LAW APPLICABLE TO ARMED CONFLICTS AT SEA, ¶¶ 11, 34, & 44 (Louise Doswald-Beck ed., 1995).

32. Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. (Advisory Opinion), (General List 95), ¶ 29, 35 I.L.M.809, 1343 [hereinafter Nuclear Weapons Case].

33. *Id.* ¶ 29.

34. *Id.* ¶ 31.

35. In its introduction to the Draft Protocol submitted to the Diplomatic Conference in 1973, the ICRC stated that "[p]roblems relating to atomic, bacteriological and chemical warfare are subjects of international agreements and negotiations by governments, and in submitting these draft Protocols the ICRC does not intend to broach these problems." ICRC Draft, in NEW RULES FOR VICTIMS OF ARMED CONFLICTS, *supra* note 15, at 188. Except for a statement by India, there does not seem to have been any dissent on this point. *Id.* at 189. Some countries, such as the United States, France, and the United Kingdom, issued declarations at the time of signature to the effect that the Protocol did not encompass the use of nuclear weapons. See THE LAWS OF ARMED CONFLICTS 704-18 (Dietrich Schindler & Jiri Toman eds., 1988) (referencing the texts of the Declarations). The

is only advisory in nature, and although its ultimate holding on the issue of using nuclear weapons proved controversial,³⁶ the sections addressing environmental damage illustrate the distance the subject has traveled from the periphery towards core humanitarian law.

The most recent forward progress in safeguarding the environment during armed conflict is the prohibition on "*widespread, long term and severe damage to the natural environment* which would be clearly excessive in relation to the concrete and direct military advantage anticipated" found in the ICC Statute. This Statute was not signed by the United States, albeit for reasons unrelated to its environmental provision, and will not come into effect until 60 States have ratified it.³⁷ Yet, its importance with regard to environmental damage during armed conflict cannot be overstated, for it articulates both a substantive norm and sets forth an enforcement methodology.

The ICC effort is timely. As this article is being written, US forces are engaged with NATO allies in an international armed conflict in Yugoslavia. Again, the environmental impact of the use of force has drawn world attention. There is uneasiness over pollution of the Danube River, particularly from the release of oil into the waterway,³⁸ and the Russian Energy Minister transmitted a letter in late April to US Energy Secretary Bill Richardson expressing concern that environmental damage would result if NATO forces struck Yugoslavia's Vinca Institute of Nuclear Science.³⁹ As always, mutual recrimination tends to be the order of the day. For instance, in response to a question regarding Yugoslavian claims that attacks on petro-chemical plants were causing an environmental disaster, NATO spokesman Jamie Shea argued:

On the environmental front, yes, I've seen some rather dramatic statements particularly from people in Yugoslavia on this but I haven't seen many protests from people in the surrounding countries and therefore if this environment ecological impact were as great as is being claimed I think there would be a lot more reports, a lot more calls from people outside Yugoslavia in the surrounding countries than has been

United Kingdom ratified Protocol I in January 1988. At that time the U.K declared that "[i]t continues to be the understanding of the United Kingdom that the rules introduced by the Protocol apply exclusively to conventional weapons [and that they] do not regulate or prohibit the use of nuclear weapons." See INTERNATIONAL REVIEW OF THE RED CROSS, Mar. 1998, at 186 (reprinting the text of the Protocol).

36. See generally Michael N. Schmitt, *The International Court of Justice and the Use of Nuclear Weapons*, NAVAL WAR COLL. REV., Spring 1998, at 91.

37. ICC Statute, *supra* note 1, art. 126.

38. *Danube River Ecosystem Caught in Balkan War*, ENVIRONMENT NEWS SERVICE, May 7, 1999 (visited May 10, 1999) <<http://ens.lycos.com/ens/may99/1999L-05-07-05.html>>.

39. Judith Miller, *Monitoring of Serbia's Enriched Uranium to Resume*, N.Y. TIMES, May 5, 1999, at A10.

the case so I think there is a great deal of exaggeration here and I don't have any evidence, I've seen no reports of either any long-term damage to the environment from these operations.

On the other hand, let's not forget that when our pilots fly over Yugoslavia and see a lot of smoke, the smoke is coming from all of these burning villages in Kosovo and if you're talking about environmental damage, I think the "scorched earth" policy applied to Kosovo, the destruction of livestock, the destruction of rivers and roads and communication routes, the destruction of the agriculture, the slaughtering of a large percentage of the cattle and the livestock, is going to be much more significant in the long term and incidentally require a lot more money to fix than the repair of some oil refineries.⁴⁰

Yugoslavia brought this matter before the International Court of Justice in cases against the United States and certain of its NATO allies alleging a breach of the obligation not to resort to the use of force, as well as various aspects of the *jus in bello*. Among the declarations it is seeking from the Court are that:

[B]y taking part in the bombing of oil refineries and chemical plants, the United States of America has acted against the Federal Republic of Yugoslavia in breach of its obligation not to cause considerable damage; [and] by taking part in the use of weapons containing depleted uranium, the United States of America has acted against the Federal Republic of Yugoslavia in breach of its obligation not to use prohibited weapons and not to cause far-reaching health and environmental damage.⁴¹

40. Transcript of Press Conference Given by Mr. Jamie Shea and General Giuseppe Marani in Brussels, M2 PRESSWIRE, May 3, 1999, available in LEXIS-NEXIS, News Group File.

41. Application Instituting Proceedings, Legality of Use of Force, General List No. 114 (1999) (visited May 10, 1999) <<http://www.icj-cij.org/icjwww/idocket/iyus/iyusframe.htm>>. In Oral Pleadings, one Yugoslavia representative argued, That NATO action is intended not only against the Yugoslav army and police force, but also against the people as a whole, is shown not only by the savage attacks on the civilian population using the most sophisticated weapons and explosives, but also by other systematic forms of endangerment of the lives and health of the Yugoslav people. This is attested to in particular by countless attacks on chemical plants and oil refineries and installations (some facilities have been pounded dozens of times). These attacks have already caused the environmental catastrophe, air pollution and poisoning of rivers. Large quantities of released poisonous substances and oil slicks are bound to have disastrous consequences also for the broader neighbourhood of Yugoslavia. Oil installations and refineries in Pancevo and Novi Sad, chemical plants in Belgrade, Pancevo and other places are targeted almost on a daily basis. Statement of Miodrag Mitic, Oral Pleading, Federal Republic of Yugoslavia, Legality of Use of Force, May 10, 1999, CR/99/14 (visited May 10, 1999) <<http://www.icj-cij.org/icjwww/idocket/iyus/iyusframe.htm>>.

In Oral Pleadings, the United States did not respond to the substance of the allegations, but rather contested both jurisdiction and the inappropriateness of provisional measures in this case.⁴²

While the facts, law, and available remedies may be in dispute in the ongoing conflict in Yugoslavia, there should be little question that in the future environmental harm will continue to characterize armed conflict, and may well take on further strategic and political importance. The allegations bandied about in this conflict are apt evidence that belligerents fully understand the political and moral capital involved in charging an opponent with environmental destruction.

THE NORMATIVE ENVIRONMENT

As noted, specific environmental norms applicable in armed conflict are of relatively recent vintage. Indeed, it was not until 1977 that the environment even merited express mention in humanitarian law. Nevertheless, there is a plethora of international law, humanitarian and otherwise, that offers either direct or indirect protection of the environment from the harmful effects of combat.

A. *Environment Specific Norms*

Additional Protocol I. In 1965 the International Committee of the Red Cross began work to update humanitarian law, most significantly the four Geneva Conventions of 1949. The effort was in part a recognition that the nature of war was changing, and, to remain effective, the law governing its conduct needed to evolve as well. It culminated in the production of two conventions designed to update humanitarian law; Additional Protocol I addresses international armed conflict, whereas the second, Additional Protocol II, applies to non-international armed conflict.⁴³

42. Oral Pleading, United States of America, *Legality of Use of Force*, May 11, 1999, CR/99/24 (visited May 11, 1999) <http://www.icj-cij.org/icjwww/docket/iyus/iyusframe.htm>.

43. Additional Protocol I applies to situations referred to in Common Article 2 to the 1949 Geneva Conventions: "all cases of declared war or of any other armed conflict which may arise between two or more of the High Contracting Parties, even if the state of war is not recognized by any one of them." Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Aug. 12, 1949, art. 2, 6 U.S.T. 3114, 75 U.N.T.S. 31 [hereinafter Geneva Convention I]; Geneva Convention for the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of the Armed Forces at Sea, Aug. 12, 1949, art. 2, 6 U.S.T. 3217, 75 U.N.T.S. 85 [hereinafter Geneva Convention II]; Geneva Convention Relative to the Treatment of Prisoners of War, Aug. 12, 1949, art. 2, 6 U.S.T. 3316, 75 U.N.T.S. 135 [hereinafter Geneva Convention III]; and Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, art. 2, 6 U.S.T. 3516, 75 U.N.T.S. 287 [hereinafter Geneva Convention IV]. Non-international conflict is governed by Common Article 3 to the 1949 Geneva Conventions, *id.*, art. 3 and Additional Protocol II. Protocol Additional to the Geneva Conven-

Additional Protocol I was the first instrument to provide direct protection to the environment during international armed conflict. It did so through two provisions.

Article 35 – Basic Rules

...

3. 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 – Protection of the Natural Environment

1. 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 uses of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby prejudice the health or survival of the population.

Attacks against the natural environment by way of reprisals are prohibited.

Interestingly, the preliminary draft prepared by the ICRC for consideration at the Diplomatic Conference was silent on the subject. However, in light of the Vietnam experience, several delegations urged inclusion of an environmental provision; this pressure bore fruit in the form of Articles 35(3) and 55.⁴⁴

An obvious question is why two articles. The ICRC Commentary to the Protocol explains that while "Article 35(3) broaches the problem from the point of view of methods of warfare, Article 55 concentrates on the survival of the population, so that even though the two provisions overlap to some extent, and their tenor is similar, they do not duplicate each other."⁴⁵ Thus, in a sense, the former is "Hague law," whereas the latter is "Geneva law;" 35(3) limits methods and means of warfare, 55 creates a protected object, the environment.⁴⁶

tions of August 12, 1949, and Relating to the Protection of Victims of Non-international Armed Conflicts, June 8, 1977, U.N. Doc. A/32/144, Annex II (1977), 16 I.L.M. 1442 (1977), reprinted in 16 I.L.M. 1442 (1977) [hereinafter Additional Protocol II].

44. Committee III of the Conference established an informal working group, "Biotope," to handle the environmental issues. This group recommended the two articles subsequently incorporated in the protocol. See *PROTOCOLS COMMENTARY*, *supra* note 3, at 663.

45. *Id.*

46. The designation "Geneva Law" refers to that portion of the law of armed conflict addressing protected classes of persons or things — civilians and civilian objects, prisoners of war, the sick or shipwrecked, medical personnel and facilities, etc. It is distinguished from "Hague Law," which governs methods and means of combat. For a discussion of the international instruments which fall into each category, and of those which

A careful look at the "elements of the offenses" reveals that the two articles respond to very different concerns; the distinction between them is more significant than might appear at first blush. Article 35(3) requires that the damage be caused by a method or means of warfare and imposes a scienter/intent requirement not dissimilar to the "intended the natural consequences" standard of US criminal law. Once the scienter element is satisfied, one need only move along a continuum of environmental damage until the widespread, long-term and severe threshold is met. This standard has elsewhere been labeled an "intrinsic value approach," for the sole question beyond knowledge is severity of damage to the environment *qua* the environment.⁴⁷ The environment is valued without regard to its human benefits, and protected without factoring in any human consequences, whether positive or negative.

Contrast this with the "anthropocentric approach" of Article 55. The scienter element is identical to that contained in Article 35(3), as is the quantum of harm. However, the prohibition only applies when the environmental damage "prejudice(s) the health or survival of the population." It is not the environment that is being protected so much as the human reliance thereon. Restated, whereas Article 35(3) values the environment in and of itself, Article 55 retains the human-centered approach of humanitarian law generally.⁴⁸

By excluding the human factor, Article 35(3) represents a radical departure from traditional humanitarian law formulae. Arguably, the norm would apply even in cases where human suffering results from adherence. For instance, if a particular avenue of attack through an unpopulated but ecologically fragile region would likely result in the Article 35(3) level of environmental damage, military forces might be obliged to route an advance through a more densely populated area, thereby increasing the likelihood of incidental injury to civilians or collateral damage to civilian property. Article 55 is also expressed along a continuum. A strict textualist reading of the provision might suggest that so long as human suffering resulted — *any* human suffering — actions causing environmental harm would be forbidden if the severity and scienter requirements were met, even when the extra-

display elements of both, see FREDERIC DEMULINEN, HANDBOOK ON THE LAW OF WAR FOR ARMED FORCES 3-4 (1987).

47. See Schmitt, *supra* note 2, at 69-70.

48. Note that Article 55 refers to the "population" without use of the adjective "civilian." The official record makes clear that this was intentional, that the goal was to extend the protection to the whole population since the damage was to be long-term. See 15 Official Records of the Diplomatic Conference on the Reaffirmation and development of International Law Applicable in Armed Conflicts 360 [hereinafter O.R.]. The term "health" is used in the provision to provide protection beyond that needed for bare survival. Effects that would pose a serious blow to health, such as congenital defects, degeneration or deformities would, therefore, be encompassed within the meaning of the provision. *Id.* at 281.

environmental human detriment outweighed it. However, it would be absurd to read an anthropocentric norm in a fashion that permitted such a result. Clearly, the intent is to protect those aspects of the environment upon which humans depend.

Regardless of the Hague-Geneva distinction (one that is useful conceptually), violation of Article 55(1) is essentially a lesser-included offense of Article 35(3) in terms of *normative force*.⁴⁹ Any separate value of Article 55 may well lie in the "care" language of the first sentence. Article 35(3) prohibits causing damage, whereas 55(1) imposes a standard of care. The care requirement would presumably apply equally to the attacker *and* the defender. For instance, a defender might destroy extensive oil fields and dump existing reserves in order to keep this valuable resource from falling into enemy hands. If the resulting environmental harm, measured in human terms, exceeded Article 55's acceptable threshold, such action would be forbidden. Given the text of the article (which includes a *prohibition*), it is by definition a breach of the standard of care. This is but one possible interpretation; unfortunately, the Commentary sheds no light on this issue.

Of greater significance is the prohibition on reprisals against the environment.⁵⁰ A belligerent reprisal is an unlawful, but proportionate, act taken to compel one's adversary to desist in its own unlawful course of conduct. Thus, Article 55(2) does not prohibit a response to enemy action in the form of an attack on the environment, but instead merely an unlawful one, that is, one which violates the standards of Articles 35(3), 55(1), or one of the other norms described *infra*.

Particularly troublesome with regard to both articles is the quantum of harm prohibited. Unfortunately, the terms "widespread, long-term and severe" are not defined in the Protocol, nor is the negotiating history much assistance in unraveling their meaning. During discussions, some delegates referred to "long-term" as a period measured in decades, but such an interpretation is far from dispositive.⁵¹ Even if it was, there was no indication as to the meaning of "widespread" or "severe." This is especially problematic given the fact that the standard is articulated in the conjunctive, i.e., that damage will not be prohibited unless it violates all three standards.⁵² Aside from the interpretive di-

49. The issue of distinguishing between the two articles was a point of controversy. The United Kingdom, for instance, took a narrow view. Specifically, the UK interpreted Article 35(3) as a mere reiteration of Article 55. See 6 O.R., *supra* note 48, at 118.

50. ADDITIONAL PROTOCOL I, *supra* note 44, art. 55(2). On reprisals, the classic work is FRITS KALSHOVEN, *BELLIGERENT REPRISALS* (1971).

51. 15 O.R., *supra* note 48, at 268. Additionally, there was mention that the type of damage contemplated was greater than that experienced on French battlefields during the First World War. *Id.* at 269

52. In their humanitarian law guidance, some States have attempted to remedy the omission. For instance, the German Manual defines the quantum of damage necessary as

lemma posed by such definition legerdemain, the required three-part test clearly sets a very high standard of harm before the articles are violated.

The United States opposes the environmental provisions of Additional Protocol I on the ground that they are excessively broad.⁵³ Of course, this means that the United States opposes an interpretation of either Article 35(3) or 55 as reflective of customary international law.

ENMOD. Whereas Additional Protocol I addresses damage to the environment, ENMOD limits modification of the environment as a method or means of warfare. A reaction to operations such as the cloud seeding of the Vietnam War,⁵⁴ the United States is not only a Party to this Convention, but it has also renounced environmental modification techniques as a matter of policy.⁵⁵

The operative provision of the Convention is the first article.

Article I

1. 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.

2. Each State Party to this Convention undertakes not to assist, encourage or induce any State, group of States or international organization to engage in activities contrary to the provisions of paragraph 1

"a major interference with human life or natural resources which considerably exceeds the battlefield damage to be regularly expected in a war." See GERMAN MANUAL, *supra* note 32, § 403. In its Operational Law Handbook, the United States Army Judge Advocate General School asserts that *long-standing* should be understood as decades, *widespread* "probably means several hundred square kilometers. . . (and) *severe* can be explained by Article 55's reference to any act that 'prejudices the health or survival of the population.'" INTERNATIONAL & OPERATIONAL LAW DEPARTMENT, OPERATIONAL LAW HANDBOOK 14-19 (1998). The "widespread" definition is taken from that employed in ENMOD. This is an interesting approach given the Understanding appended to ENMOD (see n. 62 and accompanying text) disclaiming any intention for its definitions to apply to other instruments, an unstated but obvious reference to Protocol I. More important from the perspective of the overall development of the environmental law of war is the Army's reference to human "health and survival." To use this standard in setting an Article 35(3) threshold is to come down firmly in the anthropocentric camp.

53. See Matheson, *supra* note 16, at 424.

54. This certainly came through in the Senate hearings on the Convention. See Environmental Modification Treaty: Hearings on the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques Before the Senate Committee on Foreign Relations, 95th Cong., 2d Sess. (1978); Hearings to Hear Testimony on the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques Before the Senate Committee on Foreign Relations, 96th Cong., 1st Sess. (1979).

55. See James P. Terry, *The Environment and the Laws of War: The Impact of Desert Storm*, NAVAL WAR COLL. REV. 61, 64 (1992).

of this article.⁵⁶

There are two definitional issues implicit in this article. The first concerns those actions that fall within the ambit of the phrase "environmental modification technique." Fortunately, the Convention itself defines the relevant activity. By Article II, it includes "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."⁵⁷ An Understanding included in the report transmitted with the Convention to the United Nations General Assembly clarifies the provision's reach. It cites the following as examples of phenomenon that could be caused through 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 ocean currents; changes in the state of the ozone layer; and changes in the state of the ionosphere."⁵⁸ The Understanding goes on to note that each "would result, or could reasonably be expected to result, in widespread, long-lasting or severe destruction, damage or injury."⁵⁹ Thus, causing one of them, without more, would be forbidden. It further emphasizes that the list is not exhaustive;⁶⁰ any environmental modification generating the requisite level of harm would suffice to violate the prohibition.

The second issue concerns definition of the phrase "widespread, long-lasting or severe," a phrase left curiously undefined in Additional Protocol I and neglected in that convention's negotiating record. In ENMOD, by contrast, each term is defined in an Understanding regarding Article I. "Widespread" encompasses several hundred square kilometers, "long-lasting" is "a period of months, or approximately a season," and "severe" involves "serious or significant disruption or harm to human life, natural and economic resources or other assets."⁶¹ Note that the definition of long-lasting differs dramatically from the "decades" hinted at during the Additional Protocols Conference. This suggests that ENMOD adopts a lower threshold of harm than Protocol I. So too does the fact that the ENMOD quantum of harm is articulated in the disjunctive; violation of any of the three tests would be sufficient to

56. ENMOD, *supra* note 17, art. I.

57. *Id.* art. II.

58. Understanding Relating to Article II, Report of the Conference of the Committee on Disarmament, U.N. GAOR, 31st Sess., Supp. No. 27, at 91-92, U.N. Doc. A/31/27 (1976), reprinted in THE LAWS OF ARMED CONFLICTS, *supra* note 36, at 168.

59. *Id.*

60. *Id.*

61. Understanding Relating to Article I, Report of the Conference of the Committee on Disarmament, U.N. GAOR, 31st Sess., Supp. No. 27, at 91-92, U.N. Doc. A/31/27 (1976), reprinted in THE LAWS OF ARMED CONFLICTS, *supra* note 36, at 168.

breach the standard. Similarly, while Protocol I refers to "damage," the ENMOD Understanding extends the prohibition to mere *disruption*. Finally, whereas Protocol I is measured in terms of damage to the "natural environment," ENMOD includes injury to economic resources and other assets. That the ENMOD and Protocol I standards are, despite being nearly identical in verbiage, distinct is suggested by the Understanding's disclaimer that "the interpretation set forth. . . is intended exclusively for this Convention and is not intended to prejudice the interpretation of the same or similar terms if used in connection with any other international agreement."⁶²

Although the threshold for violation appears much lower in ENMOD than Additional Protocol I, the actual scope of ENMOD is fairly narrow. It only extends to cases involving manipulation of natural processes, and then only when the damage occurs on the territory of a State Party.⁶³ For instance, there is relatively universal consensus that the Iraqi actions during the Gulf War did not violate its prohibitions; the environment was a target of sorts, but its processes were not manipulated such that it constituted a weapon.⁶⁴ In fact, environmental manipulation is no longer viewed as a promising operational technique.⁶⁵ To the extent, then, that the convention has practical import, it is in precluding weapons development, not limiting the scope of available military options.

Furthermore, ENMOD's enforcement mechanism is political in nature — referral to the Security Council. Arguably, this adds little, for the Security Council is already seised of actions involving a "threat to the peace, breach of the peace, or act of aggression" pursuant to Chapter VII of the UN Charter.⁶⁶ It is difficult to imagine a case of environmental manipulation as a weapon that would not amount to a violation of these *jus ad bellum* prescriptions. Similarly, creation of the war crimes tribunals for Yugoslavia and Rwanda demonstrates that the Security Council may treat acts occurring *during* an armed conflict, i.e., violations of the *jus in bello*, as threats and/or breaches of the peace.⁶⁷

62. *Id.*

63. The territorial limitation is contained in ENMOD, *supra* note 17, art. I, ¶ 1.

64. *But see* Luis Kutner & Ved Nanda, *Draft Indictment of Saddam Hussein*, 20 DENV. J. INT'L L. & POL'Y 91, 95 (1991).

65. As an example of the absurd nature of some concepts, one involves melting the Arctic ice cover in order to raise the level of the sea, thereby flooding coastal regions. *See* Hans Blix, *Arms Control Treaties Aim at Reducing the Military Impact on the Environment*, in *ESSAYS IN INTERNATIONAL LAW IN HONOUR OF JUDGE MANFRED LACHS* 703, 709 (Jerzy Makarczyk ed., 1984).

66. U.N. Charter, art. 39.

67. The authority of the Council to create such courts, even to deal with offenses during non-international armed conflict, was upheld in by the ICTY Appeals Chamber in *Prosecutor v. Dusko Tadic*, Decision on the Defense Motion for Interlocutory Appeal on Jurisdiction, Case No. IT-94-1-AR72, Oct. 2, 1995, 35 I.L.M. 32. *See* Leslie C. Green, *Erdemovic-Tadic-Dokmanovic: Jurisdiction and Early Practice of the Yugoslav War Crimes*

Therefore, it is "criminalization" of the act, not the enforcement mechanism, which enjoys normative meaning, albeit meaning of limited practical import.⁶⁸

Statute of the International Criminal Court. *The most recent work in the field has been adoption of the ICC Statute provision granting the Court jurisdiction over certain acts causing environmental damage. By Article 8.2(b)(iv), the following act committed during international armed conflict constitute war crimes.*

Intentionally launching an attack in the knowledge that such an attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct military advantage anticipated.⁶⁹

This provision is interesting for a number of reasons. First the requisite *mens rea* is one of actual knowledge. For the purposes of the Statute, "knowledge" means awareness that a circumstance exists or a consequence will occur in the ordinary course of events."⁷⁰ Thus, an actor who "should have known" that the prohibited environmental damage would result from his or her actions would presumably be acquitted absent evidence convincing the Court "beyond a reasonable doubt"⁷¹ of actual knowledge. This point is further clarified in the article on the general principle of "Mental Element," which imputes intent to an actor when he or she "means to cause [the required] consequence, or is aware that it will occur in the ordinary course of events."⁷²

Criminal responsibility in these cases extends to those who order operations with the knowledge that widespread, long term, and severe damage will occur.⁷³ Pursuant to Article 28, a commander or superior who "knew, or owing to the circumstances, should have known" that those under his or her command and/or control were committing environmental crimes and "failed to take all necessary and reasonable measures within his or her power to prevent or repress their commission" is subject to prosecution.⁷⁴ Indeed, commanders or superiors will be criminally responsible even if they merely fail to "submit the matter

Tribunal, 27 ISR. Y.B. HUM. RTS. 313 (1997) (referencing the issue of jurisdiction of the ICTY).

68. For example, the prohibition, as distinct from that contained in Protocol I, has found its way into the German humanitarian law manual. See GERMAN MANUAL, *supra* note 32, § 403.

69. ICC Statute, *supra* note 1, art. 8.2(b)(iv).

70. *Id.* art. 30.3.

71. *Id.* art. 66.3.

72. *Id.* art. 30.2(b).

73. *Id.* art. 25.3(b).

74. *Id.* art. 28.

to the competent authorities for investigation and prosecution."⁷⁵ Thus, the Statute adopts the principle of Command Responsibility that had previously been recognized in such noted war crimes trials as Yamashita,⁷⁶ and subsequently by the International Criminal Tribunal for the Former Yugoslavia in the Celebici case.⁷⁷

As to the quantum of harm necessary to commit this war crime, the Rome Conference adopted the "widespread, long term and severe" conjunctive standard of Additional Protocol I. These terms were, as in the Protocol, left undefined. Nor do the ENMOD definitions clarify matters, for recall that they are not directly applicable to other agreements. However, delegates at the Rome Conference decided, upon the suggestion of the United States, to develop elements of those offenses included in the Statute.⁷⁸ Scheduled to be finalized by June 30, 2000, the elements may finally elucidate the meaning of this illusive environmental standard. Of course, any resulting definitional formulae will not be directly binding on Parties to Additional Protocol I. Yet, because the ICC verbiage mirrors the Protocol's, and because most Parties to the latter are also signatories of the former (and likely to ratify it over time), the elements will comprise (assuming they address the subject) powerfully persuasive interpretive tools.

The ICC Statute also remedies what many have seen as a flaw in the Additional Protocol I prohibitions by factoring in the military necessity of the operation causing the damage.⁷⁹ Article 35(3) of Additional Protocol I simply set a level of maximum acceptable environmental

75. *Id.*

76. General Yamashita, who commanded Japanese troops in the Philippines during WWII, was tried by a U.S. Military Commission with having "unlawfully disregarded and failed to discharge his duty a commander to control the operations of the members of his command, permitting them to commit brutal atrocities and other high crimes against people of the United States and its allies, particularly the Philippines. . . ." United Nations War Crimes Commission, 3 REPORTS OF TRIALS OF THE WAR CRIMINALS 1, 3. Yamashita was convicted and executed, following an unsuccessful appeal to the U.S. Supreme Court primarily on the constitutionality and jurisdiction of the Military Commission. *Yamashita v. Styer*, 327 U.S. 1 (1946).

77. *Prosecutor v. Delalic (Celebici Camp Case)*, ¶¶ 333-42, IT-96-21-T, Nov. 16, 1998 (visited May 10, 1999) <<http://www.un.org/icty/celebici/jugement/main.htm>>. Interestingly, the Court found that the principle applied to civilians in positions of authority in addition to military superiors. *Id.* ¶ 363. On command responsibility generally, see Leslie C. Green, *War Crimes, Crimes Against Humanity, and Command Responsibility*, NAVAL WAR COLL. REV. 26 (1997); *War Crimes, Extradition and Command Responsibility*, in LESLIE C. GREEN, *ESSAYS ON THE MODERN LAW OF WAR*, ch. 10 (1st ed. 1973); W. Hays Parks, *Command Responsibility for War Crimes*, 62 MIL. L. REV. 1 (1973).

78. Final Act of the United Nations Diplomatic Conference of Plenipotentiaries on the Establishment of an International Criminal Court, July 17, 1998, U.N. Doc. A/CONF.183/10, Annex I, Resolutions Adopted by the United Nations Diplomatic Conference of Plenipotentiaries on the Establishment of an International Criminal Court (visited May 10, 1999) <<http://www.un.org/law/icc/statute/final.htm>>.

79. See Schmitt, *supra* note 2, at 72-73 (discussing a criticism of this approach).

harm, whereas Article 55(1) characterized prohibited harm in terms of its human consequences. Neither mandated any balancing against the value of the military operation. Theoretically, then, military operations that might garner significant, even determinative, results had to be forgone if the environment suffered the requisite degree of harm. This is true even if the military gains would have otherwise alleviated human suffering.

By the new ICC prospective prescriptive norm, the environmentally damaging act will only be forbidden if it is intentional, causes widespread, long-lasting and severe harm *and* that harm is excessive "in relation to the concrete and direct military advantage anticipated." This latter element derives from Additional Protocol I codification of the proportionality principle, discussed *infra*.⁸⁰ Thus, Article 8 introduces the first-ever balancing test into normative evaluation of environmental damage caused by armed conflict. The acknowledgement of the need to factor military considerations into attempts to preserve the environment may well explain the relative calm that surrounded inclusion of the provision in the Statute.

Interestingly, such environmental harm would presumably already be proscribed by Article 8's prohibition of "incidental. . . damage to civilian objects. . . which would clearly be excessive in relation to the concrete and direct overall military advantage anticipated."⁸¹ To fall within this facet of the article, the environment must be characterized as a "civilian object." Although the term is not defined in the Statute, Additional Protocol I explicates it as "all objects which are not military objectives."⁸² "Military objectives" comprise "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, offer a definite military advantage."⁸³ While the environment might constitute a military objective, as in high ground, in most cases it is best characterized as a civilian object.

That said, the environmental aspect of Article 8 does enjoy independent normative valence because should characterization of the environment as a civilian object be rejected in close cases, for example in situations involving damage to the atmosphere or ozone layer, the environmental specific prohibition would kick in to offer some degree of protection. Furthermore, even assuming a component of the environment was a military objective, widespread, long-term and severe damage to it would be forbidden if that damage outweighed any overall military ad-

80. ADDITIONAL PROTOCOL I, *supra* note 14, arts. 51(5)(b) & 57(2)(a)(iii).

81. ICC Statute, *supra* note 1, art. 8.2(b)(iv).

82. ADDITIONAL PROTOCOL I, *supra* note 14, art. 52, ¶ 1.

83. *Id.* art. 52, ¶ 2.

vantage accruing from the operation in question. This constitutes a rather unique formula in humanitarian law. In most cases, once an object is deemed military in nature there is seldom any inquiry into the extent of damage to it; instead, the value of its destruction or neutralization is measured against incidental injury to civilians or collateral damage to civilian objects (the proportionality principle). Yet, by the ICC approach there is no requirement that the portion of the environment damaged be civilian in nature to be protected. The closest analogy in humanitarian law is perhaps the protection afforded dams, dikes, and nuclear electrical generating stations, which, as discussed *infra*, generated much controversy over the very issue of being shielded from attack despite military utility to one's enemy.

Lastly, inclusion of an environmental provision in the ICC Statute is significant if for no other reason than the fact that to push through a statute creating the first permanent international criminal court, the Conference necessarily had to limit its reach to those offenses that would not generate widespread disagreement. As a result, in terms of substantive law, the effort was limited to codifying existing customary law and restating widely subscribed to conventional law norms.⁸⁴ Indeed, the subparagraph of Article 8 in which the environmental provision is located is styled "[o]ther serious violations of the laws and customs applicable in international armed conflict, within the established framework of international law."⁸⁵ That some 120 States signed the Statute with its environmental provision, and only seven voted against it (on other grounds), attests to the extent which environmental damage during armed conflict has entered the normative consciousness of humanitarian law.⁸⁶

B. Limits on Weapons Especially Likely to Cause Environmental Harm

Most weapons are capable of causing environmental harm of some sort, even though environmental harm may not be intended. For instance, during the First World War lead bullets imbedded in trees during the fierce battles of that conflict poisoned forests. More recently, US forces fired some 11,000 depleted uranium rounds from tanks and aircraft during Operation DESERT STORM. Such munitions are particularly valuable because of their ability to pierce armor. On the other

84. See Mahnoush H. Arsanjani, *The Rome Statute of the International Court*, 93 AM. J. INT'L L. 22, 29-36 (1999) (discussing the effort to forge consensus on the offenses to be included in the Statute).

85. ICC Statute, *supra* note 1, art. 8.2(b).

86. The United States was one of the States opposing the Statute, primarily due to its jurisdictional provisions. France, the United Kingdom and the Russian Federation supported it. For a discussion of the US rationale for opposition by the Ambassador who led the US Delegation, see David J. Scheffer, *The United States and the International Criminal Court*, 93 AM. J. INT'L L. 12 (1999).

hand, uranium is a radioactive heavy metal that poses risks to both the environment and human beings.⁸⁷ Although international humanitarian law has yet to limit use of any weapon because of its environmental consequences, it nevertheless provides *de facto* protection to the environment though prohibition of certain weapons that would almost inevitably harm it.⁸⁸

The 1925 Gas Protocol. Building on previous condemnation of the use of gas,⁸⁹ and in light of the widespread chemical warfare of the First World War, the 1925 Gas Protocol prohibited the use "asphyxiating, poisonous or other gases, and use of all analogous liquids, materials or devices."⁹⁰ The agreement, which is generally considered declaratory of customary international law, extends to both chemical and bacteriological agents. It provides significant environmental protection, in part because of the persistency of some chemicals and because chemicals spread easily across the environment though the food chain. Some have even asserted that the prohibited agents should be defined in part by their effect on the environment. Specifically, and in response to the US employment of chemicals in Vietnam, the UN General Assembly suggested that the Gas Protocol prohibits use of "any chemical agents of warfare. . . which might be employed because of their direct toxic effects on man, animals or plants" or "biological agents of warfare. . . which are intended to cause disease and death in man, animals or plants, and which depend for their effects on their ability to multiply in the person, animal or plant attacked."⁹¹ This interpretation would appear "politi-

87. Brigadier General Joseph G. Garrett, III, *The Army and the Environment: Environmental Considerations during Army Operations*, in PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT, *supra* note 2, at 42.

88. For an excellent discussion of the current state of the law of weaponry, see Christopher Greenwood, *The Law of Weaponry at the Start of the New Millennium*, in THE LAW OF ARMED CONFLICT: INTO THE NEXT MILLENNIUM 185 (Michael Schmitt and Leslie Green eds., 1998).

89. Instructions for the Government of Armies of the United States in the Field (Lieber Code), General Orders No. 100, art. 70, *reprinted in* THE LAWS OF ARMED CONFLICTS, *supra* note 35, at 3, 13 (use of poison); Project of an International Declaration Concerning the Laws and Customs of War (Brussels Declarations), art. 13(a), Aug. 27, 1874, *reprinted in* THE LAWS OF ARMED CONFLICTS, *supra* note 35, at 25, 29; Oxford Manual, art. 8(a), Sept. 9, 1880, *reprinted in* THE LAWS OF ARMED CONFLICTS, *supra* note 35, at 35, 38; Declaration (IV, 2) Concerning Asphyxiating Gases, July 29, 1899, 1 AM. J. INT'L L. 155 (Supp. 1907), *reprinted in* THE LAWS OF ARMED CONFLICTS, *supra* note 35, at 105; The Versailles Treaty, art. 171, June 28, 1919, *available in* The Yale Law School Avalon Project Archive (visited May 10, 1999) <<http://www.yale.edu/lawweb/avalon/imt/menu.htm>>; Treaty relating to the Use of Submarines and Noxious Gases in Warfare (Washington Treaty), Feb. 6, 1922, art. 5, 16 AM. J. INT'L L. 57 (Supp. 1922), *reprinted in* THE LAWS OF ARMED CONFLICTS, *supra* note 35, at 877, 878.

90. 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, 14 I.L.M. 49 (1975).

91. G.A. Res. 2603A (XXIV), U.N. GAOR, 24th Sess., Supp. No. 30, at 16, U.N. Doc.

cally" motivated; there is no solid evidence the 1925 Gas Protocol was meant to extend beyond human harm.⁹²

The scope of the 1925 Gas Protocol proved uncertain in the aftermath of its adoption. Many countries ratified or acceded to the agreement only after making a reservation that the prohibited agents could be used if enemy States resorted to them first.⁹³ This effectively transformed the Protocol into a no first-use pact. Its applicability to the use of riot control agents and herbicides also proved questionable.⁹⁴ Thus, the United States issued an Executive Order upon its ratification of the agreement in 1975. It generally renounced, *as a matter of policy*, their first use in war, with the exception of instances in which National Command Authority (NCA) approval has been secured. This general rule did not apply to situations in which the chemicals were not being used as a "method of warfare" (i.e., when the use was defensive). Examples include controlling riots, including rioting prisoners, rescuing downed aircrew members, dispersing civilians used as human shields, and protecting convoys in rear areas. Additionally, the Executive Order permitted use of herbicides without NCA approval in two specific instances: domestic use and use to control vegetation surrounding military installations.⁹⁵ Despite controversy over its reach, however, the agreement clearly limits the use of many agents dangerous to the environment.

The 1972 Biological Weapons Convention. In 1972 the international community expanded the prohibition on bacteriological weapons found in the 1925 Gas Protocol through adoption of the Convention on the Prohibition of Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction.⁹⁶ Whereas the 1925 protocol only restricted *use* of such weapons, in the 1972 convention, Parties agree "never in any circumstances to develop,

A/7630 (1969).

92. Wil D. Verwey, *Protection of the Environment in Times of Armed Conflict - Do We Need Additional Rules?*, in PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT, *supra* note 2, at 559, 563.

93. The United States Reservation reads "The Protocol shall cease to be binding on the government of the United States with respect to the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials, or devices, in regard to an enemy state if such state or any of its allies fails to respect the prohibitions laid down in the Protocol." This and other reservations are reprinted in THE LAWS OF ARMED CONFLICTS, *supra* note 35, at 121-27.

94. For instance, the US position is that riot control agents only have a transient effect and, therefore, are not "incapacitating." Thus, the Convention does not address them. OPERATIONAL LAW HANDBOOK, *supra* note 52, at 7-13.

95. Exec. Order No. 11,850, 40 Fed. Reg. 16, 187 (1975).

96. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Apr. 10, 1972, 26 U.S.T. 583, 11 I.L.M. 310 [hereinafter Biological Weapons Convention].

produce, stockpile or otherwise acquire or retain" them.⁹⁷ The Biological Weapons Convention also requires destruction or diversion to peaceful purposes of "all agents, toxins, weapons, equipment and means of delivery,"⁹⁸ and refraining from transferring them to others or assisting or encouraging others to acquire biological weapons capability.⁹⁹ Unlike the 1925 Gas Protocol, reprisals with biological weapons are effectively precluded, for States may neither retain nor develop them. The United States ratified this Convention in 1975.

The 1980 Conventional Weapons Convention. The Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or Have Indiscriminate Effects originally consisted of the convention itself, which simply expresses general principles regarding the use of conventional weapons, and three protocols: Protocol I on non-detectable fragments; Protocol II on mines, booby traps, and other devices; and Protocol III on incendiary weapons.¹⁰⁰ In 1995 a fourth protocol on blinding lasers was added,¹⁰¹ and in 1996 Protocol II was amended.¹⁰² The United States ratified the Convention, Protocol I and Protocol II in 1995. It has not ratified Protocol III, although it is considering doing so with a reservation that incendiaries can be used in areas with concentrations of civilians when doing so will result in fewer incidental injuries than would be the case with other types of weapons. As of March 1999, Amended Protocol II and Protocol IV have both been sent to the Senate for advice and consent. The convention and its protocols only apply in situations of international armed conflict.¹⁰³

The Conventional Weapons Convention does bear to some degree on environmental damage during armed conflict. First, it includes a preambular statement reaffirming the Additional Protocol I prohibition on the use of methods or means of warfare "which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment."¹⁰⁴ This led France and the United States to at-

97. *Id.* art. I.

98. *Id.* art. II.

99. *Id.* art. III.

100. Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or have Indiscriminate Effects, Oct. 10, 1980, 9 I.L.M. 1524, reprinted in THE LAWS OF ARMED CONFLICTS, *supra* note 35, at 179 [hereinafter Conventional Weapons Convention].

101. Additional Protocol on Blinding Laser Weapons (Protocol IV) to the Convention on Prohibitions and Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, Oct. 12, 1995, U.N. Doc. CCW/CONF.I/7 (1995), 35 I.L.M. 1218.

102. Amended Additional Protocol II, May 3, 1996, U.S.T. Doc. No. 105-1, 35 I.L.M. 1206 (1996).

103. Conventional Weapons Convention, *supra* note 100, art. 1.

104. *Id.* pmbi.

tach a reservation and understanding respectively to the effect that the verbiage only applied to States which were Party to Additional Protocol I.¹⁰⁵

Except, perhaps, for the purpose of arguing that the standard may slowly be maturing into customary law, the heart of environmental protection in the Conventional Weapons Convention lies in Protocols II (as amended) and III. It is well recognized that mines and similar devices render extensive areas of land unusable, in addition to posing a direct threat to humans and other living creatures. Landmines, according to the International Committee of the Red Cross, are scattered across 70 countries and kill or injure some 2,000 people each month.¹⁰⁶ The magnitude of the landmine dilemma is, obviously, enormous.

Protocol II prohibits the indiscriminate use of "mines, booby traps, and other devices." Indiscriminate use is use: "(a) which is not on, or directed against, a military objective; or (b) which employs a method or means of delivery which cannot be directed at a specific military objective; or (c) 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."¹⁰⁷ As a general matter, such use would already be prohibited by customary principles of international humanitarian law and Additional Protocol I. However, Protocol II goes on to limit employment in civilian population centers when combat is not ongoing (with certain exceptions), restrict various uses of remotely delivered mines, and require States to record and publish the location of minefields and cooperate in their removal following the armed conflict.¹⁰⁸

Due to the concern of many States that Protocol II had not gone far enough, and in light of the continued widespread use of the mines in the years following adoption of the Conventional Weapons Convention mines protocol, the problem was readdressed at a Review Conference in 1995. The 1996 Amended Protocol that resulted added substantial additional protection. Among the most important modifications were a ban on the use of difficult to detect anti-personnel mines, self-destruction and self-deactivation requirements, further restrictions on the use of remotely delivered mines, and enhanced clearance obliga-

105. All declarations, reservations, and understandings are *available at* The ICRC Treaty Data Base website (visited May 10, 1999) <http://www.icrc.org/unicc/ihl_eng.nsf/WEB?OpenNavigator> (including all signatures and ratifications by State).

106. ICRC, Issues and Topics, Landmines, The Problem (visited May 10, 1999) <http://www.icrc.org/unicc/icrcnews.nsf/DocIndex/home_eng?OpenDocument>.

107. Additional Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices (Protocol II), art. 3.3, Oct. 12, 1995.

108. *Id.* arts. 4, 5, 7, & 9.

tions.¹⁰⁹ When even these additional requirements were deemed insufficient by certain governments, an effort to ban anti-personnel mines altogether was launched. The result, discussed *infra*, is the 1997 Ottawa Treaty.

Also of environmental significance is Protocol III on incendiary weapons. Article 2.4 provides that "[i]t is prohibited to make forests or other kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal, or camouflage combatants or other military objectives, or are themselves military objectives."¹¹⁰ Of course, fire can cause significant environmental damage, both through direct destruction and by denying animal life its habitat.¹¹¹ What is noteworthy is that this prescription takes military concerns into account in much the same way the environmental war crimes provision of the ICC Statute does. Thus, it is much more widely palatable than absolute prohibitions such as that expressed in Article 35(3) of Additional Protocol I.

The 1993 Chemical Weapons Convention. Nearly 60 years after adoption of the 1925 Gas Protocol, the international community acted to expand the prohibitions on chemical weapons in the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction.¹¹² Unfortunately, the earlier agreement had not fully succeeded in removing such weapons from the battlefield. They were used by both sides in the war between Iran and Iraq and tragically targeted by Saddam Hussein's forces against the Kurds of Northern Iraq in the 1980s.¹¹³ There is, of course, also

109. Amended Additional Protocol II, *supra* note 102, arts. 4, 5, 6, 10, & 11.

110. Additional Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III), art. 2.4, Oct. 12, 1995.

111. In 1973, the Secretary General of the United Nations noted that "[a]lthough there is a lack of knowledge of the effects of widespread fire in these circumstances, such attempts may lead to irreversible ecological changes having grave long-term consequences out of all proportion to the effects originally sought. This menace, though largely unpredictable in its gravity, is reason for expressing alarm concerning the massive employment of incendiaries against the rural environment." U. N. DEP'T OF POLITICAL AND SEC. COUNCIL AFFAIRS, NAPALM AND OTHER INCENDIARY WEAPONS AND ALL ASPECTS OF THEIR POSSIBLE USE, at 55, U.N. Doc. A/8803/Rev. 1, U.N. Sales No. E.73.I.3 (1973).

112. Convention on the Prohibition of the Development, Production, Stockpiling and Use of and on Their Destruction, Jan. 13, 1993, 32 I.L.M. 800 [hereinafter *Chemical Weapons Convention*].

113. See Reports of Commission of Experts, U.N. Docs. S/17130 (Apr. 25, 1985), S/17932 (Mar. 21, 1986) and S/18863 (May 14, 1987). See also Statement of the President of the Security Council, Mar. 21, 1986, U.N. Doc. S/PV.2667, reprinted in RESOLUTIONS AND STATEMENTS OF THE UNITED NATIONS SECURITY COUNCIL 1946-92, 466 (Karel C. Welens ed., 1993); Julian Robinson & Jozef Goldblat, *Chemical Warfare in the Iran-Iraq War*, SIPRI Fact Sheet, May 1984, <<http://www.sipri.se/cbw/research/factsheet-1984.html>>. As a result of these incidents, the Conference on the Prohibition of Chemical Weapons adopted the Declaration on the Prohibition of Chemical Weapons condemning the States

speculation that they may have been used during the Gulf War in 1991.

The 1993 convention seeks to remedy this continued usage by imposing much more robust restrictions on chemical weapons. Indeed, whereas the 1925 Gas Protocol was a true humanitarian law instrument, the 1993 Chemical Weapons Convention is perhaps better characterized as a disarmament agreement. It provides that Parties must refrain from any use, or military preparation for the use, of chemical weapons, as well as undertake never to "assist, encourage, or induce, in any way, anyone to engage in any activity prohibited to a State Party."¹¹⁴ Like the Biological Weapons Convention, it also obligates Parties not to develop, produce, or otherwise acquire chemical weapons,¹¹⁵ and they must destroy their stockpiles and production facilities.¹¹⁶ Because of the difficulty of verifying State compliance, the agreement establishes an intrusive on-site inspection and monitoring regime.¹¹⁷ The Chemical Weapons Convention came into effect in 1997; at that time the Organization for the Prohibition of Chemical Weapons was established in The Hague to implement it.¹¹⁸ United States ratification came in 1997 as well.

A number of provisions are especially noteworthy. First, the convention bans use of chemical weapons "under any circumstances" and does not admit of reservations; this effectively forbids the use of chemical weapons in belligerent reprisal.¹¹⁹ Additionally, the "any circumstances" language extends the convention's reach from international to internal armed conflicts.¹²⁰ The 1925 Protocol, by contrast, was limited to the former. Finally, the 1993 Chemical Weapons Convention evoked questions regarding riot control agents. Recall that the United States interpretation of the 1925 Gas Protocol was that it did not apply to such use. The 1993 convention seemed to address this contention by disallowing the use of "riot control agents as an instrument of warfare."¹²¹ However, in its Resolution of advice and consent to the agreement, the Senate required the President to certify that the prohibition did not apply in peacekeeping under Chapter VI or peace enforcement under

that had chemical weapons them and renouncing their use. Final Declaration of the Conference of the States parties to the 1925 Geneva Protocol and Other Interested States on the Prohibition of Chemical Weapons, Jan. 11, 1989, 28 I.L.M. 1020. See also The United Kingdom Condemnation of the Use of Gas Against the Kurds, 59 BRIT. Y.B. INT'L L. 579 (1988).

114. Chemical Weapons Convention, *supra* note 112, art. I.1.

115. *Id.* art. I.1.

116. *Id.* arts. I.2-4.

117. *Id.* arts. V & Verification Annex.

118. For information on the Convention, see the Organization for the Prohibition of Chemical Weapons (OPCW) website available at <<http://www.opcw.nl/ptshome.htm>>.

119. Chemical Weapons Convention, *supra* note 112, arts. I.1 & XXII.

120. See WALTER KRUTZSCH & RALF TRAPP, A COMMENTARY ON THE CHEMICAL WEAPONS CONVENTION 13 (1994).

121. Chemical Weapons Convention, *supra* note 112, art. I.5.

Chapter VII of the UN Charter, when the United States was not a party to the conflict.¹²² It also required him to maintain Executive Order 11850.¹²³ Although the President complied with these requirements, US use of riot control agents during an armed conflict which the United States was participating in would be, at least from a political expediency perspective, questionable. Whatever the case, the 1993 Chemical Weapons Convention certainly does comprehensively ban use of those chemicals most likely to harm the environment.

1997 Ottawa Treaty. Although the 1996 Review Conference for the Conventional Weapons Convention resulted in amendment of the 1980 mines protocol, a number of States remained dissatisfied with anything short of a total prohibition on anti-personnel mines. Led by Canada, they gathered at a series of meetings to draft a convention banning them.¹²⁴ The resulting Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction was signed by over 120 countries in Ottawa in December 1997.¹²⁵ The treaty came into effect in March 1999, with nearly 70 ratifications deposited. Among the non-signatories was the United States, which believes anti-personnel mines might be of use in certain scenarios, such as stemming a numerically superior North Korean attack on South Korea.¹²⁶ However, the United States did indicate that by 2003 it would not use anti-personnel mines outside Korea and would seek to develop alternatives that allowed their removal from Korea by 2006. It also announced its intention to continue pursuing limitations on anti-personnel mines in the UN Conference on Disarmament.¹²⁷

122. S. Exec. Res. 75 – Senate Report, s3373, Apr. 24, 1997, § 2(26).

123. *Id.* § 2(26)(b).

124. See Stuart Maslen & Peter Herby, *An International Ban on Anti-Personnel Mines: History and Negotiation of the "Ottawa Treaty,"* INT'L REV. RED CROSS, Dec. 1998, at 693.

125. Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, Sept. 18, 1997, 36 I.L.M. 1507, reprinted in INT'L REV. RED CROSS, Sept.-Oct. 1997, at 563 [hereinafter *Ottawa Treaty*].

126. See The White House, Office of the Press Secretary, Fact Sheet: US Requirements for Landmines in Korea, Sept. 17, 1997 (visited May 11, 1999) <<http://www.pub.whitehouse.gov/white-house-publications/1997/09/1997-09-17-landmine-fact-sheets.text>>.

127. See The White House, Office of the Press Secretary, Fact Sheet: US Efforts to Address the Problem of Anti-Personnel Landmines (visited May 11, 1999) <<http://www.pub.whitehouse.gov/white-house-publications/1997/09/1997-09-17-landmine-fact-sheets.text>>. For a survey of the land-mine issue, with emphasis on operational concerns, see Andrew C.S. Efav, *The United States Refusal to Ban Landmines: The Intersec-*

Regardless of US nonparticipation, the Ottawa Treaty is now binding on its growing collection of Party States. Much like its biological and chemical weapons brethren, the agreement is comprehensive. By it, States undertake "never under any circumstances" to use, develop, acquire, retain, or transfer anti-personnel mines, or to assist or encourage anyone else to do so.¹²⁸ Parties are further obligated to destroy their existing stockpiles,¹²⁹ and States needing assistance in demining operations are entitled to seek help from other Party States.¹³⁰ Reservations to the treaty are impermissible.¹³¹ Given its remedial and prohibitory aspects, the Ottawa Treaty promises much in terms of safeguarding the environment and remediating the harmful effects of anti-personnel mines.

Nuclear Weapons. That the use of nuclear weapons poses extraordinary risks to the environment is indisputable. As noted *supra*,¹³² the legality of their use in armed conflict was brought into question by the International Court of Justice's 1996 advisory opinion on the subject.¹³³ Although the Court held that there is no per se prohibition on the use of nuclear weapons in either conventional or customary international law,¹³⁴ the threat or use of such weapons "would generally be contrary to

tion Between Tactics, Strategy, Policy, and International Law, 159 MIL. L. REV. 87 (1999).

128. Ottawa Treaty, *supra* note 125, art. 1.1.

129. *Id.* art. 1.2.

130. *Id.* art. 6.

131. *Id.* art. 19.

132. See generally GERMAN MANUAL, *supra* note 32 and accompanying text.

133. Legality of the Threat or Use of Nuclear Weapons, *supra* note 32. On the case, see VED P. NANDA & DAVID KRIEGER, NUCLEAR WEAPONS AND THE WORLD COURT (1998); Peter H.F. Bekker, *Legality of the Threat or Use of Nuclear Weapons*, 91 AM. J. INT'L L. 126 (1997); Richard A. Falk, *Nuclear Weapons, International Law and the World Court: A Historic Encounter*, 91 AM. J. INT'L L. 64 (1997); John H. McNeill & Ronald D. Neubauer, *The International Court of Justice Advisory Opinion in the Nuclear Weapons Cases (8 July 1996): A First Appraisal*, INT'L REV. RED CROSS, No. 316, Jan.-Feb. 1997, at 103; Schmitt, *supra* note 36, at 91.

134. There are numerous instruments, however, that address such aspects as the acquisition, manufacture, deployment, and testing of nuclear weapons. Regarding acquisition, manufacture, and possession, see Peace Treaties of 10 February 1947 (Treaty of Peace with Italy) 61 Stat. 1245; State Treaty for the Re-establishment of an Independent and Democratic Austria, May 15, 1955, 6 U.S.T. 2369, 217 U.N.T.S. 223; Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco), Feb. 14, 1967, 22 U.S.T. 762, 634 U.N.T.S. 762; Treaty on the Non-Proliferation of Nuclear Weapons (NPT), July 1, 1968, 21 U.S.T. 483, 729 U.N.T.S. 161; South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga), Aug. 6, 1985, 24 I.L.M. 1442 (1985), and its Protocols; Treaty on the Final Settlement with Respect to Germany, Sept. 12, 1990, 29 I.L.M. 1187 (1990). Regarding deployment, see Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71; Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205; Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof, Feb. 11, 1971, 23 U.S.T. 701, 955 U.N.T.S. 115. Regarding testing, see Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under

the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law."¹³⁵ At the same time, though, the Court suggested that use *might* be legal by stating that it could not "conclude definitely whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defense, in which the very survival of the State would be at stake."¹³⁶ The advisory opinion also side-stepped the issue of employment of nuclear weapons in belligerent reprisal.¹³⁷

The opinion is, of course, only advisory, and a number of key States, including the United States, oppose the Court's interpretation.¹³⁸ In particular, the opinion failed to fully consider scenarios in which the use of nuclear weapons might, arguably, not violate humanitarian norms.¹³⁹ Nevertheless, although its finding was merely persuasive in normative effect, as the opinion of the ICJ it will enjoy great deference. That the Court contemplated environmental harm in coming to its conclusion is clear. As it noted, nuclear weapons

Release not only immense quantities of heat and energy, but also powerful and prolonged radiation. . . . These characteristics render the nuclear weapons potentially catastrophic. The destructive power of nuclear weapons cannot be contained in either space or time. They have the potential to destroy all civilization and the entire ecosystem of the planet.¹⁴⁰

C. *Non-environmental Specific Humanitarian Law Treaty Norms*

Although there is a relative paucity of environment specific norms in humanitarian law, significant environmental protection for the environment derives from provisions not originally conceived of as encompassing the environment. These facets of conventional law extend back to the earliest treaties.

1868 St. Petersburg Declaration. The Declaration Renouncing the Use, in Time of War, of Explosive Projectiles under 400 Grammes

Water, Aug. 5, 1963, 14 U.S.T. 1313, 480 U.N.T.S. 43 [hereinafter Nuclear Weapons Test Case].

135. Nuclear Weapons Case, *supra* note 32.

136. *Id.* The Court paid particular attention to the principles of distinction and unnecessary suffering. *Id.* ¶ 78.

137. *Id.* ¶ 46. Reprisals are unlawful acts committed by a State that has itself been the victim of an unlawful act in order to compel the wrongdoer to desist.

138. See Written Statement of the Government of the United States of America, June 20, 1995, Nuclear Weapons Case, *supra* note 32.

139. For example, use of tactical nuclear weapons against armored forces in a remote area or use of nuclear mines at sea.

140. Nuclear Weapons Test Case, *supra* note 136, ¶ 94.

Weight (St. Petersburg Declaration)¹⁴¹ was the first modern treaty to limit the use of a weapon during armed conflict. In the 1860s Russia had developed an exploding bullet, primarily for use against ammunition wagons. However, in 1867, at Dumdum, India, it was modified to explode upon hitting a soft surface, including a human body. Concerned that such ordnance would be inhumane, and unwilling to face it itself, Russia urged an effort to outlaw small exploding projectiles. The ensuing St. Petersburg Declaration, which outlawed them, is most often cited as illustrating the now universally accepted principle of humanity and its prohibition on unnecessary suffering. It is also significant in its articulation of the related principle that "the only legitimate object which States should endeavor to accomplish during war is to weaken the military force of the enemy."¹⁴² Although the United States is not a Party to the agreement, the latter principle is well-recognized as part of customary international humanitarian law. By this principle, any destruction caused intentionally to the environment that did not reflect a military purpose would be prohibited.

1907 Hague Convention IV, with Annex. The effort to limit the means and methods employed in warfare continued as the 19th Century came to a close. In 1899 the First Hague Peace Conference convened to address the topic and build on earlier work in the field.¹⁴³ It enjoyed greater success than previous efforts, adopting three conventions and three declarations.¹⁴⁴ Convention II, the most important of these, sets forth general principles of land warfare.¹⁴⁵ The 1899 Final Act of the Hague Peace Conference called for a follow-on conference "in the near future" to address unresolved issues. However, due to the onset of the Russo-Japanese War, the Second Hague Peace Conference, convened upon the initiative of President Theodore Roosevelt, was delayed until 1907. It subsequently adopted thirteen conventions. Of these, the Annex to Hague IV, the Convention Respecting the Laws and Customs of War on Land,¹⁴⁶ contains the majority of provisions relevant to envi-

141. Declaration Renouncing the Use, in Time of War, of Explosive Projectiles under 400 Grammes Weight (St. Petersburg Declaration), *reprinted in* 1 AM. J. INT'L L. 96 (Supp. 1907).

142. *Id.*

143. In particular, that of the Brussels Conference of 1874, which had produced the Project of an International Conference on the Laws and Customs of War, *supra* note 35. That agreement was never ratified.

144. Final Act of the International Peace Conference, July 29, 1899, *reprinted in* 1 AM. J. INT'L L. 157 (Supp. 1907). The conventions concerned "peaceful adjustments of international disputes," "laws and customs of war on land," and adaptation of the 1864 Geneva Convention to maritime warfare. The declarations included a ban on launching projectiles or explosives from the air, a prohibition on the use of projectiles containing asphyxiating or deleterious gases, and a ban on bullets that expand or flatten in the body. *Id.*

145. Convention (II) with respect to the Laws and Customs of War on Land, July 29, 1899, 1 AM. J. INT'L L. 129 (Supp. 1907).

146. Convention (IV) respecting the Laws and Customs of War on Land, Oct. 18, 1907,

ronmental protection. In great part, it mirrors the annexed regulations of the 1899 Hague II Convention. The United States has ratified both the 1899 and 1907 agreements. Even had it not, Hague IV has been recognized as customary international law since at least the Nuremberg trials.¹⁴⁷

Of particular importance is Hague IV's restatement of the Martens Clause found in its 1899 counterpart.¹⁴⁸ That provision, which was subsequently incorporated in the 1949 Geneva Conventions,¹⁴⁹ Additional Protocols I¹⁵⁰ & II,¹⁵¹ and the Conventional Weapons Convention¹⁵², provides:

Until a more complete code of laws of war has been issued, the High Contracting Parties deem it expedient to declare that, in cases not included in the Regulations adopted by them, the inhabitants and the belligerents remain under the protection and the rule of the principles of the law of nations, established among civilized peoples, from the laws of humanity, and the dictates of the public conscience.

Considered a general principle of international law, the Martens Clause acts to preclude those who violate accepted, albeit not codified, prescriptive norms — customary law — from avoiding responsibility for their actions. Thus, it helps effectuate those customary norms discussed *infra*, as well as any emerging customary law on the subject of environmental damage (recall, e.g., the discussion of the ICC Statute). Inclusion of a Martens Clause in Additional Protocol II highlights its ap-

36 Stat. 2277, 205 Consol. T.S. 277 [hereinafter Hague IV].

147. In response to the assertion that Hague IV was not applicable because it contained an "all-participation" clause, the Tribunal stated:

In the opinion of the Tribunal it is not necessary to decide this question. The rules of land warfare expressed in the Convention undoubtedly represented an advance over existing international law at the time of their adoption. But the Convention expressly stated that it was an attempt "to revise the general laws and customs of war," which it thus recognized to be then existing, but by 1939 these rules laid down in the Convention were recognized by all civilized nations, and were regarded as being declaratory of the laws and customs of war which are referred to in Article 6(b) of the Charter.

International Military Tribunal (Nuremberg), Judgment and Sentences, Oct. 1, 1946 (visited May 11, 1999)

<<http://www.yale.edu/lawweb/avalon/imt/proc/judlawre.htm>>.

148. Hague IV, *supra* note 146. The clause is named after the Russian delegate, the Livonian professor Friedrich von Martens, who proposed it at the 1899 Conference. See Shigeki Miyazaki, *The Martens Clause and International Humanitarian Law*, in STUDIES AND ESSAYS ON INTERNATIONAL HUMANITARIAN LAW AND RED CROSS PRINCIPLES IN HONOUR OF JEAN PICTET 433 (Christophe Swinarski ed., 1984) (discussing the clause).

149. Geneva Convention I, *supra* note 43, art. 63; Geneva Convention II, *supra* note 43, art. 62; Geneva Convention III, *supra* note 43, art. 142; Geneva Convention IV, *supra* note 43, art. 158.

150. ADDITIONAL PROTOCOL I, *supra* note 14, art. 1.

151. Additional Protocol II, *supra* note 43, pmbl.

152. Conventional Weapons Convention, *supra* note 100, pmbl.

plicability to both non-international and international armed conflict.

Beyond the generality of the Martens Clause, Hague IV contains a number of other articles that serve as de facto limits on environmental harm during armed conflict. Article 22 provides that the "right of belligerents to adopt means of injuring the enemy is not unlimited."¹⁵³ Among others, Geoffrey Best has cited this article as a conceptual basis for restrictions on environmental destruction during hostilities.¹⁵⁴ Article 23(e) reiterates the premise first exemplified by the St. Petersburg Declaration that employment of "arms, projectiles or material calculated to cause unnecessary suffering" is forbidden.¹⁵⁵ Despite assertions to the contrary by certain commentators,¹⁵⁶ the unnecessary suffering envisaged is limited to human suffering. Thus, environmental protection would be derivative, either based on environmental damage that caused human suffering, or through employment of means (e.g., chemicals) that harmed the environment in addition to causing humans unnecessary suffering.¹⁵⁷

By contrast, Article 23(g) offers direct protection to the environment through codification of the principle of military necessity, discussed *infra*. It disallows the destruction or seizure of the "enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war."¹⁵⁸ The adjective "enemy's" encompasses both State-owned property and private property belonging to enemy citizens.¹⁵⁹ "Property," however, proves a bit more terminologically elusive when considered in the environmental context. Surely, there can be little doubt that land, water supplies, animals, or crops qualify.¹⁶⁰ But what of the atmosphere? Can one argue, e.g., that Iraqi ignition of Kuwaiti oil wells resulted in unnecessary damage to Kuwait's air? Might

153. Hague IV, *supra* note 147, art. 22.

154. Geoffrey Best, *The Historical Evolution of Cultural Norms Relating to War and the Environment*, in CULTURAL NORMS, WAR, AND THE ENVIRONMENT 18 (Arthur H. Westing ed., 1988).

155. Hague IV, *supra* note 147, art. 23(e).

156. For example, through reference to the French text of the article, one commentator has argued that the provision applies to "property damage, environmental damage, or damage to anything." Anthony Leibler, *Deliberate Wartime Environmental Damage: New Challenges for International Law*, 23 CAL. W. INT'L L. J. 67, 100 (1992). This position is particularly weak in light of Article 23(g).

157. Michael Bothe has argued that Iraqi action during the Gulf War violated Article 23(e). Michael Bothe, *Environmental Destruction as a Method of Warfare: Do We Need More Law?*, 15 DISARMAMENT 101, 104 (1992).

158. Hague IV, *supra* note 146, art. 23(g).

159. This is the position taken by both the US Army and the ICRC. 2 Dep't of the Army, International Law 174 (Pamphlet No. 27-161-2, 1962); INTERNATIONAL COMMITTEE OF THE RED CROSS, IV COMMENTARY: GENEVA CONVENTION RELATIVE TO THE PROTECTION OF CIVILIAN PERSONS 301 (Jean S. Pictet ed., 1958) [hereinafter IV COMMENTARY].

160. For instance, following WWII, the War Crimes Commission charges ten German administrators of Polish forests with violation of Article 23(g) for their unnecessary destruction of timber. See U.N. War Crimes Commission, Case No. 7150-469 (1948).

damage caused by oil releases to a straddling stock of fish or migratory bird species constitute Article 23(g) property damage? How do concepts of ownership, or even superior right to enjoyment (as in the exclusive economic zone), play themselves out in terms of prohibited *property* damage? Whatever the case may be, there is relative agreement that the Iraqi actions during the Gulf War did violate Article 23(g).¹⁶¹

Hague IV also deals with the duties of occupiers. Of particular interest in this regard is Article 55.

The occupying State shall be regarded only as administrator and usufructuary of the public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied country. It must safeguard the capital of these properties, and administer them in accordance with the rules of usufruct.¹⁶²

As a technical matter, the provision does not become operative until a state of occupation occurs, i.e., when the area in question is placed under the authority of enemy forces.¹⁶³ Thereafter, occupying forces are entitled to the enjoyment of the four categories of public property set forth, but, as usufructuaries, may not permanently alter or destroy it. Should the occupation end through the resumption of active hostilities in the territory, Article 55 would yield to the Article 23(g) military necessity requirements. Other duties imposed by Hague IV that may indirectly offer environmental protection include the duty to respect private property and the prohibition on pillage.¹⁶⁴

Geneva Convention IV. Following the carnage of the Second World War, the international community again returned to the negotiating tables in search of new, and more responsive, normative structures for the conduct of armed conflict. The result came in the form of four Geneva Conventions, the fourth of which, the Convention Relative to the Protection of Civilian Persons in Time of War, relates to the issue at hand.¹⁶⁵ Although some environmental protection will derive from sundry Geneva IV provisions such as that prohibiting pillage, it is Article 53 that has the greatest impact. It provides that "[a]ny destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military op-

161. FINAL REPORT, *supra* note 19, at 625. See also War Crimes Documentation Center, International Affairs Division, Office of the Judge Advocate General, US Army, Report on Iraqi War Crimes (Desert Shield/Desert Storm) (unclassified version), Jan. 8, 1992, at 13 [hereinafter Army Report].

162. Hague IV, *supra* note 146, art. 55.

163. *Id.* art. 42.

164. *Id.* arts. 46 & 47.

165. Geneva IV, *supra* note 43.

erations." ¹⁶⁶

Like Hague IV's Article 55, the Geneva IV provision only applies in occupied territory. This limitation was viewed as acceptable because Hague IV's Article 23(g) would act to limit damage in situations not amounting to occupation.¹⁶⁷ Of course, occupied territory is particularly susceptible to environmental damage not necessitated by military operations. For instance, many argue that the Iraqi action in destroying Kuwaiti oil wells and the intentional release of Kuwaiti oil into the Persian Gulf in 1991 constituted a violation of Article 53.¹⁶⁸

More problematic is the "absolutely necessary" language. The danger is two-fold. First, as noted by the author of the ICRC Commentary to the convention, Jean Pictet, "[I]t is to be feared that bad faith in the application of the reservation may render the proposed safeguards valueless; for unscrupulous recourse to the clause concerning military necessity would allow the Occupying Power to circumvent the prohibition set forth in the Convention."¹⁶⁹ His proposed remedy is reasonably interpreting the standard so as to evidence a "sense of proportion in comparing the military advantages to be gained with the damage done."¹⁷⁰ The dilemma lies in the fact that those who are "unscrupulous" are least likely to engage in reasonable interpretation. By the same token, acknowledgment that harm can be justified by military necessity is positive in the sense that it makes Article 53 militarily acceptable; but for such a limitation, this provision of humanitarian law risks desuetude as an impractical aspirational norm.¹⁷¹

166. *Id.* art. 53.

167. IV COMMENTARY, *supra* note 159, at 301.

168. *See, e.g.,* Kutner & Nanda, *supra* note 64, at 93. In Charge I, Specification 10, the Iraqis were charged with having "destroyed the real and personal property of protected persons and the State of Kuwait; this destruction was not absolutely necessary to military operations and occurred for the most part after military operations had ceased. . . ." *See also* FINAL REPORT, *supra* note 19, at 625; Army Report, *supra* note 161, at 13; John H. McNeil, *Protection of the Environment in Armed Conflict: Environmental Protection in Military Practice*, in PROTECTION OF THE ENVIRONMENT IN ARMED CONFLICT, *supra* note 18, at 536 & 540; Adam Roberts, *Environmental Issues in Armed Conflict: The Experience of the 1991 Gulf War*, in PROTECTION OF THE ENVIRONMENT IN ARMED CONFLICT, *supra* note 18, at 222 & 250.

169. IV COMMENTARY, *supra* note 159, at 302.

170. *Id.*

171. The relevance of military necessity was illustrated in the case of the German retreat from Norway. General Rendulic, who ordered a form of "scorched earth" operation as the Germans withdrew in the face of Russian advances, was acquitted on the basis of his (reasonably mistaken) belief that the actions were necessary to slow the Russian pursuit. *See* Hostage Case (U.S. v. List), 11 T.W.C. 759 (1950); *see also* High Command Case (U.S. v. Von Leeb), 11 T.W.C. 462 (1950) (involving destruction in the Soviet Union). The ICRC Commentary noted that:

[a] word should be said here about operations in which military considerations require recourse to a 'scorched earth' policy, i.e., the systematic destruction of whole areas by occupying forces withdrawing before the enemy. Various rulings of the courts after the Sec-

A final article of environmental import is Article 147. It extends "grave breach" status to "extensive destruction. . . of property, not justified by military necessity and carried out unlawfully and wantonly."¹⁷² Thus, once the quantum of damage violative of Article 53 reaches the "extensive" level, all Parties to Geneva IV must search out and try offenders or turn them over to another State for prosecution. They must also criminalize the offense through domestic legislation,¹⁷³ an obligation the United States complied with in 1996.¹⁷⁴ Again, it has been suggested that Iraqi Gulf War environmental destruction breached the Article 147 threshold.¹⁷⁵ A modicum of offshoot environmental protection is also afforded by Article 147's characterization of "willful killing [and] willfully causing great suffering or serious bodily injury to body or health" as a grave breach; again, the chemical weapons example is appropos.

1954 Hague Cultural Property Convention. In 1954 the Convention for the Protection of Cultural Property in the Event of Armed Conflict was adopted under the auspices of the United Nations Educational, Scientific and Cultural Organization.¹⁷⁶ Although the bulk of the protections contained therein pertain to objects that are not environmental in nature, broad destruction of the environment could place protected objects at risk. For instance, the Convention obligates Parties to safeguard and respect "movable or immovable property of great importance to the cultural heritage of every people, such as monuments of architecture, art or history, whether religious or secular; archeological sites; groups of buildings which, as a whole, are of historical or artistic inter-

ond World War held that such tactics were in practice admissible in certain cases, when carried out in exceptional circumstances purely for legitimate military reasons. On the other hand the same rulings severely condemned recourse to measures of general devastation whenever they were wanton, excessive or not warranted by military operations.

IV COMMENTARY, *supra* note 159, at 302.

172. Geneva IV, *supra* note 43, art. 147.

173. *Id.* art. 146. A party is simply required to take measures necessary for the suppression of a *simple* breach.

174. United States War Crimes Act of 1996, Pub.L. 104-192, 110 Stat. 2104, 18 USC. 2401, 35 I.L.M. 1539. This act grants Federal Courts jurisdiction over grave breaches of the 1949 Geneva Protocols. Until this time, the presumption was that any grave breaches would be tried as violations of the Uniform Code of Military Justice in military courts-martial. Note that active and passive jurisdiction (US actor/victim) are the bases for jurisdiction, not universal (all States) jurisdiction. The following year the Act was expanded to cover various violations of the 1907 Hague Regulations, common Article 3 of the 1949 Geneva Conventions (dealing with non-international armed conflict), and, when ratified, Protocol III (mines) to the Conventional Weapons Convention, as amended in 1996. Expanded War Crimes Act of 1997 (Section 583 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1998), Pub. L. 105-118.

175. FINAL REPORT, *supra* note 19, at 625; Army Report, *supra* note 161, at 13

176. Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, May 14, 1954, 249 U.N.T.S. 216.

est; works of art; manuscripts, books and other objects of artistic, historical or archeological interest; as well as scientific collections and important collections of books or archives or of reproductions of the property defined above."¹⁷⁷ The United States has not ratified the Convention, but ratification with minor understandings is currently under consideration.

Additional Protocol I. As noted earlier, Additional Protocol I is noteworthy for containing the key provisions of humanitarian law specifically addressing the environment. Joining these are a number of additional articles which offer further, albeit non-specific, protection. Many restate principles expressed elsewhere in the law. For instance, Article 35(1) mirrors the St. Petersburg Declaration and Hague IV in reiterating the principle that "the right of the Parties to the conflict to choose methods and means of warfare is not unlimited."¹⁷⁸ Similarly, Article 35(2) prohibits the causation of superfluous injury or unnecessary suffering, and, as noted, the Martens Clause is found in Article I of Additional Protocol I.¹⁷⁹

Certain axial customary principles that enjoy environmental consequence have been codified in the protocol. In great part, these reflect the principle of discrimination, which unifies a number of related but distinct sub-principles, and which exists as the principle of customary or conventional humanitarian law with greatest normative valence. The first sub-principle is distinction. Article 48 expresses the basic rule: "In order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives."¹⁸⁰ Article 52 further restates the prohibition against attacking civilian objects. Thus, to the extent the environment, or a portion thereof, constitutes a civilian object, it may not be directly targeted and combatants must seek to differentiate between it and legitimate targets.¹⁸¹ Of course, as noted in the context of the ICC Statute, it is not entirely clear whether all aspects of the environment are fairly characterized as civilian, let alone as "objects."¹⁸²

The principle of discrimination also includes the sub-principle of proportionality. In the context of civilian objects, Articles 57.2(a)iii and 57.2(b) express its requirements.

177. *Id.* arts. 1(a) & 2.

178. ADDITIONAL PROTOCOL I, *supra* note 14, art. 35(1).

179. *Id.* art 35(2).

180. *Id.* art. 48.

181. *Id.* art. 52.

182. *See* ICC Statute, *supra* note 1.

Article 57.2(a)iii

[Those who plan or decide upon an attack shall] refrain from deciding to launch any 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.

Article 57.2(b)

[A]n attack shall be cancelled or suspended if it becomes apparent that the objective is not a military one or is subject to special protection or that the attack 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 expected.

A similar prohibition is contained in Article 51.5(b) vis-à-vis injury or death to civilians.¹⁸³

Assuming that the environmental damage unintentionally (not the objective) but knowingly (foreseeable collateral damage) caused comprises damage to a civilian object, it will be balanced against the military advantage resulting from the operation. Before any balancing occurs, however, the military advantage sought must reach the "concrete and direct" threshold. The ICRC Commentary to Additional Protocol I indicates that the "expression... was intended to show that the advantages concerned should be substantial and relatively close, and that advantages which are hardly perceptible and those which would only appear in the long term should be avoided."¹⁸⁴

Beyond codifying broad preexisting norms of customary international law, Additional Protocol I includes various articles of narrower scope which also safeguard components of the environment. Article 54(2), for example, provides that:

[I]t is prohibited to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as food-stuffs, agricultural areas for production of food-stuffs, crops, livestock, drinking water installations and supplies and irrigation works, for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive.¹⁸⁵

Obviously, much of the environment (farmlands, water supplies, etc.) would fall within the ambit of potentially protected objects. Since

183. *Id.* art 57.1.

184. PROTOCOLS COMMENTARY, *supra* note 3, at 684.

185. ADDITIONAL PROTOCOL I, *supra* note 14, art. 54.2.

the items cited in the article's text are merely illustrative of those which may qualify, so too would certain others. For instance, fuel oil, electricity, and lines of communication could be essential to providing the civilian population sustenance and might be targeted so as to deny it to them. While none of these target sets are themselves components of the environment, attacks thereon might well risk environmental harm. The article would also prohibit use of the environment as a weapon in various circumstances. For instance, altering weather or climate could severely affect food production.

It is important to understand, though, that the protection only operates upon existence of a particular *mens rea* — the desire to deny sustenance. There are two exceptions. Even though the requisite state of mind may be missing, if the result of an attack is to cause starvation among the civilian population or cause it to move, Article 54 prohibits the operation.¹⁸⁶ Additionally, if the sustenance denied is used solely for an opponent's armed forces, then the objects that provide it are exempted from the prohibition.¹⁸⁷ Finally, the article's restrictions are inapplicable when the destruction is conducted by a Party to the conflict on its own territory and is motivated by "imperative military necessity."¹⁸⁸ By these standards, Article 54 generally outlaws the type of scorched earth tactics witnessed in the Second World War unless conducted defensively on one's own territory.

From a humanitarian point of view, the weakness in the article lies in its intent element. Unless the attacker harbors the desire to deny sustenance, the prescriptive norm does not apply, absent a resultant effect so severe as to occasion starvation or forced movement. Of course, the prohibition on targeting civilian objects moderates this stricture, for the only intent necessary to violate it is that the civilian object be directly struck. Effectively, then, the sole permissible attack on objects contributing to other than solely military sustenance occurs when the military advantage that accrues outweighs the impact on the civilian population and the underlying goal of the operation is unrelated to sustenance. Attacks resulting in civilian starvation would never meet the threshold, except, possibly, when conducted on one's own territory.

As noted, the United States has not ratified Additional Protocol I; however, it has no objection to any of the articles cited immediately above. It does object, for reasons to be described, to Article 56, a complex effort to provide protection to dams, dikes, and nuclear electrical generating stations.

Clearly, an attack on the enumerated facilities might pose severe

186. *Id.* art. 54.3(b).

187. *Id.* art. 54.3(a).

188. *Id.* art. 54.5.

environmental risks through release of flood waters or radioactivity.¹⁸⁹ The core prescriptions are as follows.

Article 56 – Protection of works and installations containing dangerous forces

Works or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations, 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. Other military objectives located at or in the vicinity of these works or installations shall not be made the object of attack if such attack may cause the release of dangerous forces from the works or installations and consequent severe losses among the civilian population.

The special protection against attack provided by paragraph 1 shall cease:

for a dam or a dyke only if it is used for other than its normal functions and in regular, significant and direct support of military operations and if such attack is the only feasible way to terminate such support;

for a nuclear electrical generating station only if it provides electric power in regular, significant and direct support of military operations and if such attack is the only feasible way to terminate such support;

for other military objectives located at or in the vicinity of these works or installations only if they are used in regular, significant and direct support of military operations and if such attack is the only fea-

189. The ICRC recounts numerous historical uses of the release of forces which caused environmental damage:

[I]n the seventeenth century the Dutch, despite protests from the peasants, did not hesitate to flood part of their cultivated land by breaching the dykes in order to prevent the advance of adverse troops. In 1938, the Chinese authorities breached the dykes of the Yellow River near Chang-Chow to stop the Japanese troops, resulting in extensive losses and widespread damage. In 1944, again in the Netherlands, German troops flooded many thousands of hectares of agricultural land with sea water to prevent the advance of the enemy.

It was also during the Second World War that deliberate attacks were mounted against hydro-electric dams. The best known are those which destroyed the dams in the Eder and the Möhne in Germany in May 1943. These operations resulted in considerable damage: 125 factories were destroyed or seriously damaged and in addition 3,000 hectares of cultivated land were lost for the harvest of that year, 1,300 persons were killed, including some deported persons and allied prisoners, and finally, 6,500 head of livestock were lost. During the war in Korea aircraft attacked dams used for irrigation in the north of the country. In the Viet Nam War attacks were mounted against dams and dykes, though the United States declared that the damage caused, insofar as this was established, was accidental or secondary.

PROTOCOLS COMMENTARY, *supra* note 3, at 667.

sible way to terminate such support.

... If the protection ceases and any of the works, installations or military objectives mentioned in paragraph 1 is attacked, all practical precautions shall be taken to avoid the release of dangerous forces.

It is prohibited to make any of the works, installations or military objectives mentioned in paragraph 1 the object of reprisal.

... [I]ninstallations erected for the sole purpose of defending the protected works or installations from attack are permissible and shall not themselves be made the object of attack, provided they are not used in hostilities except for defensive actions necessary to respond to attacks against the protected works or installations and that their armament is limited to weapons capable only of repelling hostile action against the protected works or installations.

Several points about the formula are worthy of mention. First, a similar provision exists in Additional Protocol II.¹⁹⁰ Therefore, the derivative environmental protection of these restrictions would apply in both international and non-international armed conflict. Second, although the article is styled "works and installations containing dangerous forces," the ICRC Commentary makes clear that protected objects include only those detailed in paragraph 1.¹⁹¹ Thus, even though strikes against targets such as oil storage facilities, wells, or tankers would, as glaringly demonstrated during the Gulf War, also release dangerous forces, they would not violate Article 56.¹⁹² Third, despite utilization of the term "severe" again, the threshold for prohibited damage is actually lower than might appear at first blush. The ICRC Commentary describes "severe losses" as "important" or "heavy." Anticipating criticism regarding the subjectivity of such non-quantifiable and difficult to predict standards, the Commentary cautions that "this concept is a matter of common sense and it must be applied in good faith on the basis of objective elements such as proximity of inhabited

190. Additional Protocol II, *supra* note 43, at 15.

191. This issue has caused some confusion. For example, Greenpeace has asserted in the context of Iraqi actions during the Gulf War that "[i]t is unclear whether oil wells constitute installations containing 'dangerous forces.' The examples given in Protocol I... are not meant to be exhaustive, and a liberal construction could say that the release of the force of the oil fires and spills is covered." WILLIAM M. ARKIN ET AL., ON IMPACT: MODERN WARFARE AND THE ENVIRONMENT: A CASE STUDY OF THE GULF WAR 140 (1991). However, the ICRC Commentary demonstrates that this contention is incorrect: "According to some amendments, the list which is given should have been merely illustrative. However, as the Rapporteur indicated, it was only after it was decided to limit the special protection granted by the article to dams, dykes and nuclear electrical generating stations and other military objectives located at or in the vicinity of these works or installations, that it was possible to draw up a text which was generally acceptable." PROTOCOLS COMMENTARY, *supra* note 3, at 668.

192. The ICRC Commentary cites the example of attack on a factory manufacturing toxic products that, if released as a gas, could endanger entire regions. *Id.* at 668.

areas, the density of population, the lie of the land, etc."¹⁹³

Fourth, and most importantly, the article admits of a number of exceptions. Before dams and dikes may be stuck, they must meet each of three criteria: 1) use for other than their intended purpose; 2) regular, significant and direct support of the enemy war effort;¹⁹⁴ and 3) attack must be the only option available for denying the enemy that support. Examples might include a dike forming a part of a system of fortifications or a road across a dam that is integral to the enemy's logistics system.¹⁹⁵ Military objectives in the vicinity of dams, dikes and nuclear electrical generating stations enjoy identical protection if an attack on them might risk severe losses from the release of the "dangerous forces." Nuclear electrical generating stations, given the critical role electrical generation plays in a war effort, need not meet the first of these criteria. Defensive emplacements at these locations employing only armament capable of defensive purposes are not subject to attack. If used offensively, or capable of offensive use, they still benefit from the greater than normal protection extended to military objectives near protected works and installations. Finally, reprisal attacks against the enumerated objects are proscribed.

As should be apparent, the protection afforded these three types of facilities is substantial. Moreover, even if the criteria for exception are met, other humanitarian norms, particularly the proportionality principle, could act to immunize the targets. The United States objects to Article 56 because it "create[s] a standard that differs from the customary definition of a military objective as an object that makes 'an effective contribution to military action.'"¹⁹⁶ Specifically, concern exists that attacks would be forbidden against highly valuable targets even if the resulting military advantage outweighed the severe losses. In addition, the difficulty of determining the end use of electricity produced in an integrated power grid triggers US anxiety about the provision.¹⁹⁷ De-

193. *Id.* at 669-70.

194. The ICRC Commentary attempts to objectify some of the subjectivity inherent in the terms, albeit from a military officer's point of view without much success. It begins by noting that the "terms merely express common sense, i.e., their meaning is fairly clear to everyone." *Id.* at 671. It goes on to explain that "regular" implies a time standard and is not "accidental or sporadic." "Significant" is more than "negligible" or "merely an incidental coincidence." "Direct" is explained as "not in an intermediate or roundabout way." *Id.*

195. *Id.*

196. OPERATIONAL LAW HANDBOOK, *supra* note 52, at 7-10.

197. Judge Abraham Sofaer, then Legal Adviser at the Department of State, expressed the U.S. concern over this point in 1987.

[P]rotection can only end if [a protected work or installation] is used in "regular, significant, and direct support of military operations." In the case of a nuclear power plant, this support must be in the form of "electric power." The negotiating history refers to electric power for "production of arms, ammunition, and military equipment" as removing a power plant's protection, but not "production of civilian goods which may also be used by the

spite objections, works and installations covered by Article 56 were not struck during Operations DESERT STORM, DESERT FOX, OR ALLIED FORCE.¹⁹⁸ Given the nature of combined operations,¹⁹⁹ in which US forces operate with Coalition allies that are Parties to Additional Protocol I, this should come as no surprise. Indeed, guidance issued by the US Army to its legal advisers states that while Article 56 is not "US law," it "should be considered because of the pervasive international acceptance of [Additional Protocol] I."²⁰⁰

Like Geneva Convention IV, Additional Protocol I provides for a grave breach regime. While violation of neither of the two environment specific articles constitutes a grave breach in and of itself, making the civilian population the object of attack, launching an indiscriminate attack against civilians or civilian objects, and striking works or installa-

armed forces." The Diplomatic Conference thus neglected the nature of modern integrated power grids, where it is impossible to say that electricity from a particular plant goes to a particular customer. It is also unreasonable for article 56 to terminate the protection of nuclear power plants only on the basis of the use of their electric power. Under this provision, a nuclear power plant that is being used to produce plutonium for nuclear weapons purposes would not use its protection.

Abraham D. Sofaer, *The Position of the United States on Current Law of War Agreements*, 2 AM. J. INT'L L. & POL'Y 460, 470-71 (1987). Arguably, he goes too far. By its own terms, the article only prohibits attacks on nuclear *electrical* generating facilities. Facilities that use electricity generated to directly produce other products, such as plutonium, would appear to fall outside its scope altogether; even if they did not, the targets could be struck based upon the regular, significant and direct exception. Moreover, the use of electricity produced is not restricted to military uses; instead, a facility is a valid target so long as the electricity is used in regular, significant and direct support of military operations, regardless of how else it might be used (assuming proportionality requirements are met). The term "only" is more logically interpreted to bear on the "regular, significant and direct" criteria, rather than "electric power." The reference to electrical power would seem to make clear that the facility can be struck even if it is engaged in its intended purpose, the production of electricity, because dams and dikes used for their intended purpose are immune. For an excellent discussion of attacks on electrical grids, see James W. Crawford, *The Law of Noncombatant Immunity and the Targeting of National Electrical Power Systems*, FLETCHER FORUM OF WORLD AFFAIRS, Summer/Fall 1997, at 101.

198. The Gulf War offensive operations by Coalition forces, the 1998 attacks on Iraq in response to Iraqi interference with the UN weapons inspection program, and the NATO air campaign against the Yugoslavia, respectively. Note that US aircraft have attacked Iraqi nuclear facilities, but not nuclear electrical generating stations. See Jozef Goldblat, *Legal Protection of the Environment Against the Effects of Military Activities*, 22 BULL. PEACE PROPOSALS 399 (1991) (discussing a critical approach regarding attacks on such facilities).

199. "Joint" operations include forces of more than one service. "Combined" operations include forces of more than one State.

200. OPERATIONAL LAW HANDBOOK, *supra* note 52, at 7-10. The issue of targeting nuclear facilities was raised at the 1990 Review Conference for the Nuclear Non-Proliferation Treaty. The Hungarian and Dutch delegates, with support from several other delegations, suggested an international agreement to address the topic. The US Delegation did not respond to the proposal. David Fischer & Harald Müller, *The Fourth Review of the Non-Proliferation Treaty*, 1991 STOCKHOLM INT'L PEACE RES. INST. Y.B. 555, 566.

tions containing dangerous forces can all amount to one if the acts are willful and death or serious bodily injury results.²⁰¹

Customary Humanitarian Law Norms

The final body of humanitarian law governing environmental damage during armed conflict consists of customary humanitarian law norms. To achieve the status of customary international law, a norm must be evidenced by both consistent and widespread state practice and *opinio juris vel necessitatis*, a conviction that the practice is legally obligatory.²⁰² In many cases, treaties may codify existing customary law; in others, treaty obligations, over time, mature into customary law. A number of the conventions discussed *supra* have achieved this status. For instance, when forwarding his Report on the Statute for the International Tribunal for the Prosecution of Persons Responsible for Serious Violations of International Humanitarian Law Committed in the Territory of the Former Yugoslavia since 1991, the Secretary-General of the United Nations noted:

That part of conventional international humanitarian law which has beyond doubt become part of international criminal law is the law applicable in armed conflict as embodied in: the Geneva Conventions of 12 August 1949 for the Protection of War Victims; the Hague Convention (IV) Respecting the Laws and Customs of War on Land and Regulations annexed thereto of 18 October 1907; the Convention on the Prevention and Punishment of the Crime of Genocide of 9 December 1948; and the Charter of the International Military Tribunal of 8 August 1945.²⁰³

The Report was unanimously approved by the Security Council, indicating its concurrence with the premises contained therein.²⁰⁴

201. ADDITIONAL PROTOCOL I, *supra* note 14, arts. 85.3(a)-(c).

202. The Statute of the International Court of Justice defines custom as "a general practice accepted by law." Statute of the International Court of Justice, June 26, 1977, art. 38(1)(b), 59 Stat. 1031, T.S. No. 933, 3 Bevans 1153, 1976 Y.B.U.N. 1052. The Restatement notes that custom "results from a general and consistent practice of states followed by them from a sense of legal obligation." Restatement (Third), Foreign Relations Law of the United States, § 102(2) (1987). See also *North Sea Continental Shelf Cases*, 1969 I.C.J. 3, 44 ("Not only must the acts concerned amount to settled practice, but they must also be such, or be carried out in such a way, as to be evidence of a belief that this practice is rendered obligatory by the existence of a rule requiring it."); *The Paquete Habana*, 175 U.S. 677, 20 S.Ct. 290, 44 L.Ed 320 (1900); *The Case of the S.S. Lotus (Fr. v. Turk.)*, 1927 P.C.I.J. (ser. A) No. 10(1927); *Asylum Case (Col. v. Peru)*, 1950 I.C.J. 266; *Case Concerning Right of Passage over Indian Territory (Port. v. India)*, 1960 I.C.J. 6.

203. Report of the Secretary-General Pursuant to Paragraph 2 of the Security Council Resolution 808 (1993), ¶ 35, May 3, 1993, U.N. Doc. S/25704, reprinted in 32 I.L.M. 1159, 1170, cited with approval in *Nuclear Weapons Case*, *supra* note 32, ¶ 81.

204. Security Council Resolution on Establishing an International Tribunal for the Prosecution of Persons Responsible for Serious Violations of International Humanitarian Law in the Territory of the Former Yugoslavia, SC Res. 827, U.N. Doc. S/RES/827 (1993).

Underlying the vast proportion of conventional law are four customary principles which enjoy further independent normative valence: chivalry, humanity, military necessity, and discrimination.²⁰⁵ Of these, the principle of chivalry, with its focus on perfidy, possesses little relevance to environmental destruction.²⁰⁶

Humanity. The principle of humanity forbids the causation of unnecessary suffering, including, according to US Army publications, unnecessary damage to property.²⁰⁷ Although formulations of the principle are generally expressed along these lines, were this to be the limit of the humanity, it would add little beyond the principles of military necessity and discrimination.

The inherent autonomy of the principle is not to be sought in the effect of the act in question, but rather in its nature, and is usually expressed in specific restrictions on methods and means of warfare. Thus, there are restrictions found on weaponry ranging from poison²⁰⁸ to chemical, biological, and blinding weapons. With the exception of poi-

Customary law did form a basis for prosecution of war crimes in the aftermath of the Second World War. The International Military Tribunal at Nuremberg specifically noted that, "All the defendants committed War Crimes. . . [pursuant to] a Common Plan or Conspiracy. . . . This plan involved. . . the practice of 'total war' including methods of combat and of military occupation in direct conflict with the laws and customs of war" (emphasis added). Indictment, International Military Tribunal, Nuremberg, 1 T.M.W.C. 42 (1947). Today, this premise is itself accepted as a principle of customary international law

205. The form in which the core principles are expressed often varies. For instance, the Air Force version employs the categories of military necessity, humanity, and chivalry, with proportionality folded into necessity, whereas the Navy uses necessity, proportionality and chivalry. DEP'T OF THE AIR FORCE, INTERNATIONAL LAW—THE CONDUCT OF ARMED CONFLICT AND AIR OPERATIONS (AFP 110-31), Nov. 19, 1976, ¶¶ 1-3; NWP 1-14M, §§ 5-2. In substance and application, though, the principles are identical across the military services. This article employs the typology of discrimination adopted by Christopher Greenwood. Greenwood, *supra* note 88, at 199-202.

206. The principle of chivalry is particularly important in undergirding the prohibition on perfidious acts such as misuse of protective emblems. See, ADDITIONAL PROTOCOL I, *supra* note 14, art. 37.

207. OPERATIONAL LAW HANDBOOK, *supra* note 52, at 7-4. Among the first formal expressions of the principle is the St. Petersburg Declaration of 1868. The Declaration provided:

Considering that the progress of civilization should have the effect of alleviating as much as possible the calamities of war;

That the only legitimate object which States should endeavor to accomplish during War is to weaken the military forces of the enemy;

That for this purpose it is sufficient to disable the greatest possible number of men;

That this object would be exceeded by the employment of arms which uselessly aggravate the sufferings of disabled men, or renders their death inevitable;

That the employment of such arms would therefore be contrary to the laws of humanity. . . .

St. Petersburg Declaration, *supra* note 141, at 95.

208. Burrus Carnahan has accurately noted that the prohibition poison weapons is one of the oldest in humanitarian law. Burrus M. Carnahan, *Unnecessary Suffering, The Red Cross and Tactical Laser Weapons*, 18 LOY. L.A. INT'L & COMP. L.J. 705, 714.

son, use of such weapons is generally not perfidious. Further, examples of use that would comply with the principles of necessity and discrimination are easily imagined in each case. As an example, tear gas or blinding lasers can be employed for perimeter defense of a fixed installation distant from a civilian population. Defense of military facilities in armed conflict certainly meets the military necessity criterion, and given the importance of this task, the military advantage accrued may well outweigh possible incidental injury. Of course, the fact that the weapons are "less-lethal"²⁰⁹ would offer additional support for their use. Yet, in both cases the prohibition imposed on their utilization as a means of warfare is absolute. Why?

The common thread is not that the forbidden acts, albeit possibly in compliance with the other principles, are inhumane. Rather, it is that they are *inhuman*. There seems to be a sense that despite both military logic and the acceptability of methods and means of greater harm, decent human beings simply do not commit certain acts. Arguably, these are the acts that, in the terminology of the Martens Clause, violate the "dictates of public conscience." As technology advances, and the dictates evolve, further categories seen as inhuman may emerge.

In the context of the environment, the principle offers protection in two ways. First, certain specific humanity prohibitions remove potentially deleterious weapons or tactics from the battlefield. As an example, the prohibition on the use of poisons would preclude poisoning an enemy's water supply. Similarly, the proscription of biological and chemical weapons affords the environment protection already described.

A second "benefit" lies in the principle's prospective application. To the extent it tracks evolving "public conscience," it may well develop an environmental component. For instance, although humanity has traditionally been viewed as a brake on human suffering, the US Army explicates its scope as including "property suffering."²¹⁰ If the environment qualifies as property (ascertaining the reach of the juridical concept of property as it relates to the environment poses its own problems), it benefits from such extensions. Environmental attacks during the Gulf War offer an apt illustration. The official Department of Defense (DOD) report on the war opined that the level of destruction caused by the Iraqi environmental oil attacks probably did not violate the Additional Protocol I restrictions in Articles 35 and 55.²¹¹ However, the immediate public reaction to them was vociferous; President Bush

209. A term of art used to indicate weapons with an intended purpose, or likely result, of *not* causing death or serious bodily injury.

210. OPERATIONAL LAW HANDBOOK, *supra* note 52, at 7-4.

211. FINAL REPORT, *supra* note 19, at 625.

labeled the actions "environmental terrorism,"²¹² even though positing an Iraqi military motivation was not beyond credulity.²¹³ Thus, we may be seeing a twinkling of an emerging norm, based in the humanity principle, that precludes extensive environmental damage as a method or means of warfare — because decent human beings simply do not engage in such acts.

Military Necessity. The principle of necessity disallows the use of force beyond that required for the partial or complete submission of the enemy.²¹⁴ It was articulated by the International Military Tribunal following the Second World War in an oft cited passage from the *Hostage Case*.

[Military necessity] does not permit the killing of innocent inhabitants for purposes of revenge or the satisfaction of a lust to kill. The destruction of property to be lawful must be imperatively demanded by the necessities of war. Destruction as an end in itself is a violation of international law. There must be some reasonable connection between the destruction of property and the overcoming of the enemy forces.²¹⁵

This seemingly simplistic proposition is relatively difficult to apply except at the margins. It would seldom be the case that the actual degree of force employed against a valid military objective would, in and of itself, be questioned (beyond compliance with the principle of proportionality). Instead, the linchpin issue is generally that of motive. Why did the actor destroy the object? Was the motive simply wanton destruction? Was the motive other than military in nature, such as terrorizing the civilian population? In the post-WWII war crimes trials, certain scorched earth operations were deemed legitimate as necessary, whereas others were labeled wanton.²¹⁶ Despite the similarity of destruction, the rationale varied. If it can be demonstrated that the actor harbored a determinative subjective intent unrelated to advancing, in a direct way, his or her military situation, the act in question will be unlawful.

212. Address Before a joint Session of Congress on the State of the Union, 1 PUB. PAPERS 74, 79 (1991). One commentator suggested that among the possible motives was "ecological terrorism in retaliation for the bombing." Robert McFadden, *Oil Threatens Fishing and Water Supply*, N.Y. TIMES, Jan. 26, 1991, at 4.

213. For example, and very theoretically, the purpose of the release of oil into the Gulf may have been to foil Coalition amphibious operations, whereas the igniting of the oil wells might have occurred to create an obscurant, thereby shielding Iraqi forces from Coalition air and ground attacks. Interestingly, and somewhat paradoxically, Greenpeace posed a number of possible military explanations for the Iraqi actions. PROTOCOLS COMMENTARY, *supra* note 187, at 141.

214. See Hilaire McCoubrey, *The Nature of the Modern Doctrine of Military Necessity*, 30 REVUE DE DROIT MILITAIRE ET DE DROIT DE LA GUERRE 216 (1991) (regarding military necessity).

215. Hostage Case, *supra* note 171, at 1253-54.

216. See IV COMMENTARY, *supra* note 159, at 302.

The practical problem is ascertaining state of mind. Given the impossibility of doing so with certainty, the objective circumstances surrounding the act must generally be evaluated before impugning intent. Can an "imperative demand" for the destruction be expressed in the context of the conflict as it stood at the moment of the act (or as the conflict could reasonably be predicted to unfold)? Would a similarly situated reasonable actor have included the act among possible actions necessary to overcome enemy forces? Returning to the environmentally destructive acts of the Iraqis during the Gulf War, the DOD has opined that even assuming one purpose was to obscure potential Coalition targets, that purpose could well have been accomplished by simply opening the valves to the wells and igniting the resulting oil spill. To have actually destroyed the wells suggests, instead, a punitive motive.²¹⁷ Regardless of this proposition's persuasiveness, or lack thereof, it illustrates the type of reasoning required to apply the principle of necessity in close cases, especially those involving acts directly harmful to the environment.

Discrimination. The principle of discrimination, which is well represented in conventional law such as Additional Protocol I,²¹⁸ includes limits on both indiscriminate *weapons* (or techniques of warfare), i.e., those incapable of discriminating between legitimate military targets and civilians or civilian objects, and indiscriminate *use* of weapons otherwise capable of discrimination. Most existing methods and means of warfare incapable of adequate discrimination and likely to harm the environment have already been prohibited through conventional law. Biological weapons, chemical weapons and environmental modification are examples. Nevertheless, should future weaponry indiscriminately endanger the environment, a civilian object, its employment in armed conflict would be forbidden.

Greater protection is found in the latter aspect of discrimination, indiscriminate use. There are three components of this principle: distinction, minimizing collateral damage and incidental injury, and proportionality. Distinction forbids directly targeting objects protected under humanitarian law, particularly civilians and civilian objects.²¹⁹ Therefore, unless the environment constitutes a military objective, it may not be directly targeted.²²⁰

Minimizing collateral damage and incidental injury requires those conducting military operations to forgo causing that which is reasona-

217. FINAL REPORT, *supra* note 19, at 625-26.

218. ADDITIONAL PROTOCOL I, *supra* note 14, pt. IV.

219. *Id.* arts. 48 & 51, ¶ 4.

220. See Horace B. Robertson, Jr., *The Principle of Military Objective in the Law of Armed Conflict*, in *THE LAW OF MILITARY OPERATIONS* 195 (Michael Schmitt ed., 1998) (discussing military objectives).

bly avoidable, even if the intended target is a military objective, the destruction of which would otherwise be justified by the military advantage likely to accrue to the attacker.²²¹ By this principle, military operations must seek to avoid harm to the environment when operationally feasible. In the oil fire smoke as an obscurant example cited in the DOD Gulf War Report, even if the Iraqis had intended to frustrate Coalition target acquisition, they could have done so by continuously spilling and igniting the oil instead of destroying the wellheads themselves. Destroying them made it necessary to undertake the complicated task of capping the wells, a task that occupied much time and allowed oil and oil fires to continue despoiling the environment long after any possible military benefit was acquired.

Finally, discrimination includes the principle of proportionality.²²² Proportionality, codified in Articles 51 and 57 of Additional Protocol I, prohibits acts likely to bring about collateral damage or incidental injury that is disproportionate to the military advantage reasonably anticipated from the operation. Damage to the environment would be factored into the balancing against military advantage, assuming, as discussed *supra*, that the component of the environment suffering the harm qualifies as a civilian object.

The dilemma is that performing proportionality calculations requires valuation of both the military advantage and the collateral damage/incidental injury. Understandably, this injects significant subjectivity into the process, not only because value may shift relative to the context in which a proposed action takes place, but also because different individuals will often arrive at very different conclusions as to the (negative) value to attribute to the unintended harm caused.

ASSESSING THE NORMATIVE ENVIRONMENT

While it is only the purpose of this article to catalogue norms of international humanitarian law most relevant to protection of the environment in armed conflict, several brief comments on the adequacy of that corpus of law may serve to encourage further reflection. In any such assessment, humanitarian law must be tested against its two foundational objectives — separating non-participants and non-participant objects from the effects of a conflict and limiting the scale and quality of violence, even that involving combatants. Discrimination exemplifies the former, unnecessary suffering the latter. With one exception, a shallow textual analysis would suggest that existing norms of

221. See also ADDITIONAL PROTOCOL I, *supra* note 14, art. 57.

222. See William J. Fenrick, *The Rule of Proportionality and Protocol I in Conventional Warfare*, 98 MIL. L. REV. 91 (1982); Judith G. Gardam, *Proportionality and Force in International Law*, 87 AM. J. INT'L L. 391 (1993) (discussing the general subject of proportionality).

humanitarian law meet these needs vis-à-vis the environment. Assuming the environment is characterized as a civilian object, and it would be wrong for it not to be, the various principles appear to set, in theory, an appropriate level of protection. In particular, the codified and customary iterations of the principles of military necessity and proportionality impose sensible standards disallowing both direct targeting of the environment in most cases, and collateral damage thereto unless outweighed by military advantage. Other limitations, ranging from specific weapons prohibitions to the Martens Clause, further strengthen the regime.

The exception is Article 35 of Additional Protocol I. Whereas other norms are either specifically posed in the context of human suffering, such as the Article 55 requirement that environmental damage be assessed relative to its prejudicial effect on the health or survival of the population, or logically interpreted in that fashion, as with the proportionality principle's weighing of *all* collateral damage and incidental injury against military advantage, Article 35's prescription operates in a contextual vacuum.²²³ Only *environmental* damage is measured to assess compliance. Thus, whereas the greater part of humanitarian law appraises the environment anthropocentrically, Article 35 treats it as possessing intrinsic value (value not measured by its contribution to humankind) that is autonomous to some degree.

This reality has two dramatic consequences. First, it is possible to conceive of a situation in which a particular tactic, target or weapon is unavailable because the resulting environmental harm would breach the "widespread, long-term and severe" threshold. This may force planners and commanders to turn to alternatives that generate greater civilian casualties or damage to civilian property than would otherwise be the case, but that would nevertheless comport with proportionality mandates. It is, of course, certainly appropriate to view the environment as enjoying independent, and truly unique, value — value which often exceeds that of other civilian objects. After all, human beings and the environment comprise an interconnected and interdependent ecosystem. The general irreplaceability of the environment exacerbates this dependency relationship. Yet, to elevate the environment over human well-being without considering the contextual milieu then holding would seem the height of folly.

It is equally foolhardy to ignore, as Article 35 type intrinsic value formulae do, the military advantage anticipated from the environmentally destructive operation in question. Military advantage is not a morally neutral phenomenon, nor does the destruction that results from armed conflict necessarily represent a negative in net humanitarian

²²³ ADDITIONAL PROTOCOL I, *supra* note 14, arts. 35 & 55.

calculations. On the contrary, military operations often serve positive humanitarian ends and advance morally worthy causes. Self-defense against aggression, for instance, is universally accepted as justified. Similarly, humanitarian intervention in the face of the horrendous violence that so tragically (and frequently) characterizes human interaction may well alleviate — when proportional, necessary, and wisely executed — great suffering. Standards of environmental protection that fail to take considerations of military advantage into account risk failure to see the forest for the trees.

In an optimal normative edifice, such standards would discount military advantage that did not serve just ends. Yet to do so would severely test the humanitarian rationale underpinning the distinction between the morally hued *jus ad bellum* and the morally neutral *jus in bello*. Relativity threatens, for very practical reasons, the willingness of belligerents and combatants to uniformly apply the latter body of law. This being so, prescriptive norms which acknowledge the need to factor in military advantage, as the ICC Statute's Article 8 does and Additional Protocol I's Article 35 does not, evince a grasp of war's realities.²²⁴ Thus, they run the greatest chance of adherence by all participants.

Although the textual norms, and standard recitations of customary humanitarian law, generally take the right conceptual approach to safeguarding the environment, to be fully effective they must be comprehensible to those engaging in armed conflict, capable of application on the battlefield, and politically and judicially enforceable. Do those described in this article achieve these *sine qua non* criteria?

At the extremes, they do. Certain acts of violence and destruction during armed conflict are on their face wanton, spasmodic, or malevolent and would clearly breach the normative sea walls. They exhibit *res ipsa loquitor* quality.

In most cases, however, acts harmful to the environment enjoy less normative clarity. For instance, recall the definitional legerdemain characterizing each of the environment specific prescriptions. What is meant by "widespread, long-term and severe," the standard of choice for all such formulae? Though developed contemporaneously, ENMOD and Additional Protocol I lead those engaged in interpretation on divergent journeys. This being so, applicability on the battlefield for those forces bound by Additional Protocol I, will inevitably be limited to cases of extreme destruction that all reasonable actors would agree upon. Of course, benevolent policy decisions may lower the bar of acceptable harm, but beyond the most aggravated cases autointerpretation will be the rule. This conundrum will equally occupy attempts at enforceability.

²²⁴ ICC Statute, *supra* note 1, art. 8; ADDITIONAL PROTOCOL I, *supra* note 14, art. 35.

The environment specific provisions are not alone in lacking clarity. What does the Hague IV, Article 23(g) phrase "imperatively demanded" mean in practice? The *Hostage Case's* explication of the standard as a "reasonable connection between the destruction and overcoming the enemy" would seem less stringent than the plain meaning of the phrase. Likewise, when is damage to real property in occupied territory "absolutely necessary" in the Geneva IV, Article 53 context? What is the nature and scope of the threat that rises to the level of absolute necessity? Such imprecision is hardly new to humanitarian lawyers or military officers; yet, it would be a disservice to fail to recognize that it exists when judging the adequacy of the relevant law.

Even if terminological precision existed, the nascent state of scientific knowledge regarding the environmental impact of specific military operations complicates application of most of the instruments and customary norms discussed. The Gulf War illustrates the problematic scientific lacuna on the subject. When Saddam Hussein threatened to destroy Kuwaiti oilfields if Coalition forces carried out their threat to expel him from occupied territory,²²⁵ reputable scientists predicted that igniting the oilfields could generate smoke equal to that of a nuclear explosion. The smoke would, according to these experts, be sufficient to blot out sunlight, thereby causing temperatures to drop by as much as 68 degrees, a phenomenon that would have reverberating effects on air currents.²²⁶ Wholesale destruction of ecosystems and severe human health problems also topped the list of likely outcomes. Of course, nothing of the sort happened despite Iraqi ignition of over 500 wellheads. The environment, with significant human help, revived with unexpected vigor.²²⁷

225. On September 23, 1990, the Iraqis released a statement following the joint meeting of the Iraqi Revolution Command Council and the regional command of the Arab Socialist Baath Party, chaired by Saddam Hussein. It read, in part, that "(t)he oil, its areas, and Israel will be transformed into something different from what they are now. Thus will be the deluge. . . . The oil areas in Saudi Arabia and in other parts of the states of the region and all the oil installations will be rendered incapable of responding to the needs of those who came to us as occupiers in order to usurp our sovereignty, dignity and wealth." *Partial Text of Statement by Iraq's Revolution Command*, REUTERS, Sept. 23, 1990, available in LEXIS/NEXIS, News Library, ALLNWS File. See also Nora Boustany, *Saddam Threatens Mideast's Oil Fields: "Choking" Embargo Cited as Justification*, WASH. POST, Sept. 24, 1990, at A1. The threat appeared credible. That month the Iraqis detonated six oil wells to practice for later operations. Arkin, *supra* note 18, at 119.

226. *Scientists Warn of Environmental Disaster from a Gulf War*, REUTERS, Jan. 2, 1991, available in LEXIS/NEXIS, News Library, ALLNWS File. See also *Experts Warn of Global Fallout from Warfare: Environment; Scientists Say that Smoke from Blazing Kuwait Oil Fields Could Affect the Climate*, L.A. TIMES, Jan. 3, 1991, at A8.

227. See State of the Environment: Updated Scientific Report on the Environmental Effects of the Conflict Between Iraq and Kuwait, 17th Sess., at 12-13, U.N. Doc. UNEP/GC.17/Inf.9 (1993), at 12-13. See also United Nations Environment Program, Report on the Inter-Agency Plan of Action for the ROPME Region, U.N. Environment Pro-

Thus, definitional issues aside, scientific uncertainty would continue to frustrate both efforts to shape conduct to the normative boundaries and attempts to impugn knowledge (knew or should have known) to those who create environmental harm during their operations. Without understanding the science, how can one appraise destruction against, for instance, the "imperatively demanded" standard of Hague IV, Article 23(g), the "in the knowledge that such attack will cause" criterion of ICC Statute, Article 8, or the prevailing "widespread, long-term and severe" verbiage? Along these same lines, the greater the difficulty of anticipating likely collateral damage to the environment, the more imprecise the proportionality calculation. If one cannot measure likely harm, there is no reliable value against which to weigh the value of anticipated military advantage.

Valuation difficulties engendered by the state of the science are compounded by the existence of disparate, and possibly discordant, valuation paradigms. Consider the value-laden principle of proportionality. While the norm is easily articulated, its exercise in the morally, politically, and viscerally charged morass of modern combat proves elusive. Recall the recent furor over collateral damage and incidental injury of Operation ALLIED FORCE. Few can harbor doubts that the destruction of a passenger train, refugee convoys, or the Chinese Embassy in Belgrade were anything but accidental; and accidents are an unfortunate — and inevitable — by-product of armed conflict. Yet, their accidental nature does not excuse them unless either absolutely unforeseeable despite reasonable care in planning and executing a mission²²⁸ or foreseeable (in either a specific or general sense), but outweighed by the military advantage likely to accrue the attacker by striking the intended target. The enigma lies in the weighing process.

Since proportionality employs a balancing test, it is necessary to conceptually quantify the values being compared. Yet, the values involved in proportionality — collateral damage and incidental injury versus military advantage — are of a differing nature. How does one weigh the military value of destroying a bridge along a line of communication, for instance, against the value to the civilian population of using the same route for transport of purely civilian commerce or even relief supplies? The difficulty arises because values are being calculated from within disparate valuation paradigms.

Now factor in the environment as a subject of collateral damage. What if, as discussed above, protection of the environment comes at a cost to civilians or civilian objects? Even if it does not, different indi-

gramme, Oct. 12, 1991, *reprinted in* IRAQ AND KUWAIT: THE HOSTILITIES AND THEIR AFTERMATH 339 (Mark Weller ed. 1991).

228. The principle was enunciated in the case of General Rendulic. Hostage case, *supra* note 171.

viduals view the environment, and thereby value it, differently. The anthropocentric-intrinsic value distinction is one illustration of how value may be conceptually determined. It may also be culturally determined. Different cultures (or States) attribute different value to the environment. A distressed State will understandably be less likely to value environmental health than a 1st tier State, not because it is in fact less valuable, but because other concerns facing the distressed country, including survival, dominate its own cognitive paradigm.²²⁹ Finally, value may be temporally determined. The rise of normative environmental consciousness in the 1960s and 1970s tracked a broader trend towards environmental sensitivity. Inclusion of environmental harm as a war crime in the ICC Statute demonstrates that this consciousness has achieved a degree of maturity. As the global community struggles to stem growing environmental risk factors, this trend can be expected to continue. Valuation of the environment will continue to evolve with it, thereby complicating reliable proportionality calculations.

A more lengthy and robust analysis would be needed to identify further faultlines in the protection of the environment during armed conflict and fully develop those cited. However, the discussion should suggest that the law lacks a certain degree of clarity, a fact exacerbated by insufficient scientific knowledge. These two realities will make it difficult for policy makers, field commanders, legal advisers, and those charged with enforcing humanitarian law to reliably and consistently apply it.

But the sky is not falling. Environmental "Chicken Littles" are unlikely to foster enhanced protection of the environment; indeed, they risk distorting its appropriate place (as with intrinsic value standards) in the normative architecture. Humanitarian law does extend measurable safeguards and the International Criminal Court is likely to help address what many see as the seminal problem, enforcement. Most importantly, the issue of environmental damage has finally made it into the operational calculations of a number of militaries.

CONCLUSION

Then what is to be done? A convention addressing the issue, or at

229. Note that the issue here is not *context* (beyond cultural context). For example, a field of corn is of greater value in a starving society than a well-fed one. The difference is contextual; it is not the *society* that drives the distinction, but rather the relative degree of hunger. Culturally disparate valuations of the environment, on the other hand, are driven by cultural perspectives. One group of people may simply be more sensitive to the environment than another, whether due to uniform education, common upbringing, reliance on the environment for well-being, dominant religious affiliation, shared experiences and needs, etc. See Michael N. Schmitt, *War and the Environment*, ARCHIV DES VÖLKERRECHTS, Mar. 1999, at 25, 48-56 (discussing valuation paradigms).

least greater development of the subject in broader instruments, would surely help. However, the time is not ripe. The controversy that erupted over the Ottawa Treaty and ICC Statute hardly make this a propitious time to take on such a complex topic; the political wounds that resulted from those affrays need time to heal before any enterprise could possibly hope to avoid stillbirth. Moreover, much additional scientific work needs to be done before standards that reliably reflect State expectations can be crafted.

Until the political and scientific foundations for such a convention exist, a number of interim measures are certainly possible.²³⁰ First, significant resources should be dedicated to exploring the environmental consequences of armed conflict. To hope to protect the environment without understanding the dynamics of the risks it faces is a pipe dream. Second, additional emphasis needs to be placed on the subject when training military operators and humanitarian law attorneys. Some progress is being made in this field, but more is merited. In particular, judge advocate schools, war colleges, service academies, and international courses such as those held at the Institute for International Humanitarian Law, should seriously reassess their curricula to ensure adequate attention is being paid to exploring the topic's normative and operational dynamics. Similarly, the prospect of environmental damage should be made a regular component of war gaming and military exercises. Third, the fact the key military players, in particular the United States, are not Party to certain of the most important agreements regulating environmental harm during armed conflict frustrates the international effort to avert it (and isolates non-Parties politically). Non-Party States should be encouraged to reassess their non-participation when the circumstances that motivated it evolve. Finally, additional thought needs to be devoted by legal scholars and practitioners to various related, and relatively unexplored, topics — peacekeeping/peace enforcement and the environment, protecting the environment in non-international conflict, environmental terrorism, investigation of environmental destruction during armed conflict, remediation, etc.

Ultimately, of course, success will depend on internalizing environmental values, but only while maintaining humanitarian perspective. Whether the appropriate balance will be maintained as this increasingly important area of humanitarian law evolves remains to be seen.

230. Among the best practical recommendations to date are Professor Adam Roberts'. See

Adam Roberts, *The Law of War and Environmental Damage*, in ENVIRONMENTAL CONSEQUENCES OF WAR: LEGAL ECONOMIC, AND SCIENTIFIC PERSPECTIVES, *supra* note 2.

APPENDIX

*INTERNATIONAL COMMITTEE OF THE RED CROSS**GUIDELINES FOR MILITARY MANUALS AND INSTRUCTIONS ON THE PROTECTION OF THE ENVIRONMENT IN TIMES OF ARMED CONFLICT*²³¹

I. Preliminary Remarks

(1) The present Guidelines are drawn from existing international legal obligations and from State practice concerning the protection of the environment against the effects of armed conflict. They have been compiled to promote an active interest in, and concern for, the protection of the environment within the armed forces of all States.

(2) Domestic legislation and other measures taken at the national level are essential means of ensuring that international law protecting the environment in times of armed conflict is indeed put into practice.

(3) To the extent that the Guidelines are the expression of international customary law or of treaty law binding a particular State, they must be included in military manuals and instructions on the laws of war. Where they reflect national policy, it is suggested that they be included in such documents.

II. General Principles of International Law

(4) In addition to the specific rules set out below, the general principles of international law applicable in armed conflict—such as the principle of distinction and the principle of proportionality—provide protection to the environment. In particular, only military objectives may be attacked and no methods or means of warfare which cause excessive damage shall be employed. Precautions shall be taken in military operations as required by international law.

G.P.I. Arts. 35, 48, 52 and 57

(5) International environmental agreements and relevant rules of customary law may continue to be applicable in times of armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict.

231. U.N. GAOR, 49th Sess., Annex, Agenda Item 139, at 49-53, U.N. Doc. A/49/323 (1994), reprinted in Hans-Peter Gasser, *For Better Protection of the Natural Environment in Armed Conflict: A Proposal for Action*, 89 AM. J. INT'L L. 637, 641-43 (1995).

Obligations relating to the protection of the environment towards States not party to an armed conflict (e.g., neighboring States) and in relation to areas beyond the limits of national jurisdiction (e.g., the High Seas) are not affected by the existence of the armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict. (6) Parties to a non-international armed conflict are encouraged to apply the same rules that provide protection to the environment as those which prevail in international armed conflict and, accordingly, States are urged to incorporate such rules in their military manuals and instructions on the laws of war in a way that does not discriminate on the basis of how the conflict is characterized.

(7) In cases not covered by rules of international agreements, the environment remains under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience.

H.IV preamble, G.P.I Art. 1.2, G.P.II preamble

III. Specific Rules on the Protection of the Environment

(8) Destruction of the environment not justified by military necessity violates international humanitarian law. Under certain circumstances, such destruction is punishable as a grave breach of international humanitarian law.

H.IV.R. Art. 23(g), G.IV Arts. 53 and 147, G.P.I Arts. 35.3 and 55

(9) The general prohibition to destroy civilian objects, unless such destruction is justified by military necessity, also protects the environment.

H.IV.R Art. 23(g), G.IV Art. 53, G.P.I Art. 52, G.P.II Art. 14

In particular, States should take all measures required by international law to avoid:

(a) making forests or other kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives;

CW.P.III

(b) attacks on objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas or drinking water installations, if carried out for the purpose of denying such objects to the civilian population;

G.P.I Art. 54, G.P.II Art. 14

(c) attacks on works or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations, even where they are military objectives, if such attack may cause the release

of dangerous forces and consequent severe losses among the civilian population and as long as such works or installations are entitled to special protection under Protocol I additional to the Geneva Conventions;

G.P.I Art. 56, G.P.II Art. 15

(d) attacks on historic monuments, works of art or places of worship which constitute the cultural or spiritual heritage of peoples.

H.CP, G.P.I Art. 53, G.P.II Art. 16

(10) The indiscriminate laying of landmines is prohibited. The location of all pre-planned minefields must be recorded. Any unrecorded laying of remotely delivered non-self-neutralizing landmines is prohibited. Special rules limit the emplacement and use of naval mines.

G.P.I Arts. 51.4 and 51.5, CW.P.II Art. 3, H.VIII

(11) Care shall be taken in warfare to protect and preserve the natural environment. 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 and thereby prejudice the health or survival of the population.

G.P.I Arts. 35.3 and 55

(12) The 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 is prohibited. The term "environmental modification techniques" refers to any technique for changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.

ENMOD Arts. I and II (13) Attacks against the natural environment by way of reprisals are prohibited for States party to Protocol I additional to the Geneva Conventions.

G.P.I Art. 55.2

(14) States are urged to enter into further agreements providing additional protection to the natural environment in times of armed conflict.

G.P.I Art. 56.6

(15) Works or installations containing dangerous forces, and cultural property shall be clearly marked and identified, in accordance with applicable international rules. Parties to an armed conflict are encouraged to mark and identify also works or installations where hazardous activities are being carried out, as well as sites which are essential to human health or the environment.

e.g. G.P.I Art. 56.7, H.CP. Art. 6

IV. Implementation and Dissemination

(16) States shall respect and ensure respect for the obligations under international law applicable in armed conflict, including the rules providing protection for the environment in times of armed conflict.

G.IV Art. 1, G.P.I Art. 1.1

(17) States shall disseminate these rules and make them known as widely as possible in their respective countries and include them in their programmes of military and civil instruction.

H.IV.R Art. 1, G.IV Art. 144, G.P.I Art. 83, G.P.II Art. 19

(18) In the study, development, acquisition or adoption of a new weapon, means or method of warfare, States are under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by applicable rules of international law, including those providing protection to the environment in times of armed conflict.

G.P.I Art. 36

(19) In the event of armed conflict, parties to such a conflict are encouraged to facilitate and protect the work of impartial organizations contributing to prevent or repair damage to the environment, pursuant to special agreements between the parties concerned or, as the case may be, the permission granted by one of them. Such work should be performed with due regard to the security interests of the parties concerned.

e.g. G.IV Art. 63.2, G.P.I Arts. 61-67

(20) In the event of breaches of rules of international humanitarian law protecting the environment, measures shall be taken to stop any such violation and to prevent further breaches. Military commanders are required to prevent and, where necessary, to suppress and to report to competent authorities breaches of these rules. In serious cases, offenders shall be brought to justice.

G.IV Arts. 146 and 147, G.P.I Arts. 86 and 87

SOURCES OF INTERNATIONAL OBLIGATIONS CONCERNING THE PROTECTION OF THE ENVIRONMENT IN TIMES OF ARMED CONFLICT

1. General principles of law and international customary law

2. International conventions

Main international treaties with rules on the protection of the environment in times of armed conflict:

Hague Convention (IV) respecting the Laws and Customs of War on Land, of 1907 (H.IV), and Regulations Respecting the Laws and Customs of War on Land (H.IV.R)

Hague Convention (VIII) relative to the Laying of Automatic Submarine Contact Mines, of 1907 (H.VIII)

Geneva Convention relative to the Protection of Civilian Persons in Time of War, of 1949 (GC.IV)

Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, of 1954 (H.CP)

Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques, of 1976 (ENMOD)

Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), of 1977 (G.P.I)

Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), of 1977 (G.P.II)

Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, of 1980 (CW), with:

— Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices (CW.P.II)

— Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (CW.P.III)

