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The International Law of Environmental Warfare: Active and Passive Damage During Armed Conflict

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ABSTRACT

One of the constant elements of warfare is its degrading effects on the environment. Many writers blame this destruction of the environment on inadequate standards in the international law of environmental warfare. To remedy this shortfall, the international law of environmental warfare should be categorized as either passive or active environmental warfare. Active environmental warfare requires the intentional "use" of the environment as a weapon of waging armed conflict. Passive environmental warfare includes acts not specifically designed to "use" the environment for a particular military purpose but that have a degrading effect on the environment. Passive environmental warfare violates international law only when it produces effects that are widespread, long-term, and severe. Active environmental warfare against the sustainable environment that is not de minimus *violates international law* per se *and should not require environmental damage to reach the standard of widespread, long-tasting, and severe to be considered a violation of international law. A well-recognized differentiation between active and passive environmental warfare will help solidify the standards of state responsibility and provide increased protection for the environment.*

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> And it came to pass, as they fled from before Israel, and were in the going down to Bethhoron, that the LORD cast down great stones from heaven upon them unto Azekah, and they died: they were more which died with hailstones than they whom the children of Israel slew with the sword.
>
> And the sun stood still, and the moon stayed, until the people had avenged themselves upon their enemies.[1]

I. INTRODUCTION

From the beginning of recorded history, war has played a major role in shaping the course of events. Though geography changes, nations come and go, vanquished turn into conquerors, and victors become victims, one of the constant elements of warfare is its

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1. *Joshua* 10:11, 13 (King James).

degrading effects on the environment.[2] Concurrent with war's deleterious effects on the environment, man has from time to time attempted to harness the overwhelming powers inherent in the environment and unleash them on his enemies.[3]

This was graphically demonstrated as recently as the 1991 Gulf War. The environmental destruction that occurred in that short war appalled the world[4] and set new levels in man's willingness to destroy his surroundings while waging hostilities.[5] Many observers

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2. *See* Margaret T. Okorodudu-Fubara, *Oil in the Persian Gulf War: Legal Appraisal of an Environmental Warfare*, 23 ST. MARY'S L.J. 123, 128 (1991); *see also* Sebia Hawkins, *The Gulf War: Environment as a Weapon, Proceedings of the Eighty-Fifth Annual Meetings of the American Society of International Law*, 85 AM. SOC'Y INT'L L. 220, 220 (1991).

3. *See* STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE, WARFARE IN A FRAGILE WORLD: THE MILITARY IMPACT ON THE HUMAN ENVIRONMENT, 14-19 (1980) [hereinafter SIPRI] (giving an account of the history of environmental warfare); Mark A. Drumbl, *Waging War Against the World: The Need to Move From War Crimes to Environmental Crimes*, 22 FORDHAM INT'L L.J. 122, 123 (1998); Laurent R. Hourcle, *Environmental Law of War*, 25 VT. L. REV. 653, 654-60 (2001); Okorodudu-Fubara, *supra* note 2, at 142; Rymn James Parsons, *The Fight to Save the Planet: U.S. Armed Forces, "Greenkeeping," and Enforcement of the Law Pertaining to Environmental Protection During Armed Conflict*, 10 GEO. INT'L ENVTL. L. REV. 441, 441-42 (1998); Peter J. Richards & Michael N. Schmitt, *Mars Meets Mother Nature: Protecting the Environment During Armed Conflict*, 28 STETSON L. REV. 1047, 1051-54 (1999); Michael N. Schmitt, *Humanitarian Law and the Environment*, 28 DENV. J. INT'L L. & POL'Y 265, 266-68 (2000) [hereinafter Schmitt, *Humanitarian Law*]; Timothy Schofield, Comment, *The Environment as an Ideological Weapon: A Proposal to Criminalize Environmental Terrorism*, 26 B.C. ENVTL. AFF. L. REV. 619, 634-35 (1999); Ensign Florenzio J. Yuzon, *Deliberate Environmental Modification Through the Use of Chemical and Biological Weapons: "Greening" the International Laws of Armed Conflict to Establish an Environmentally Protective Regime*, 11 AM. U.J. INT'L L. & POL'Y 793, 794-96 (1996).

4. *See* Richards & Schmitt, *supra* note 3, at 1054-56; Schmitt, *Humanitarian Law*, *supra* note 3, at 309-11; Jesica E. Seacor, *Environmental Terrorism: Lessons from the Oil Fires of Kuwait*, 10 AM. U.J. INT'L L. & POL'Y 481, 481-82 (1994); Aaron Schwabach, *Ecocide and Genocide in Iraq: International Law, the Marsh Arabs, and Environmental Damage in Non-International Conflicts*, 15 COLO. J. INT'L ENVTL. L. & POL'Y 1, 1-2 (2004).

5. *See* Mark J.T. Caggiano, Comment, *The Legitimacy of Environmental Destruction in Modern Warfare: Customary Substance over Conventional Form*, 20 B.C. ENVTL. AFF. L. REV. 479, 479-81; Anthony Leibler, *Deliberate Wartime Environmental Damage: New Challenges for International Law*, 23 CAL. W. INT'L L. J. 67, 67-68 (1992); Luan Low & David Hodgkinson, *Compensation for Wartime Environmental Damage: Challenges to International Law after the Gulf War*, 35 VA. J. INT'L L. 405, 408-10; Walter G. Sharp, Sr., *The Effective Deterrence of Environmental Damage During Armed Conflict: A Case Analysis of the Persian Gulf War*, 137 MIL. L. REV. 1, 40-41 (1992). *See generally*, Suzanne M. Bernard, *Environmental Warfare: Iraq's Use of Oil Weapons during the Gulf Conflict*, 6 N.Y. INT'L. L. REV. 106, 106-09 (1993); Laura Edgerton, *Eco-Terrorist Acts During the Persian Gulf War: Is International Law Sufficient to Hold Iraq Liable?*, 22 GA. J. INT'L & COMP. L. 151, 151-54 (1992); Okorodudu-Fubara, *supra* note 2, at 129-32.

expected similar environmental warfare during the 2003 Gulf War,[6] and there is clear evidence that there were plans to do so that were never executed.[7]

Many writers blame this intended destruction of the environment on inadequate standards in the international law of environmental warfare.[8] After the first Gulf War, there was a flurry of comment on the status of the law. A host of writers urged the international community to adopt either a new convention to protect the environment during times of armed conflict,[9] create a "Green Cross" counterpart to the Red Cross,[10] convene an International Environmental Court,[11] or to enforce more strictly existing standards of international law.[12] Others argued that the current law was sufficiently clear and the standards easily applied.[13] Making the discussion even more difficult is a debate as to whether the damage

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6. *Cf.* Schmitt, *Humanitarian Law*, *supra* note 3, at 266-68 ("Recognition that armed conflict encroaches on the environment hardly represents historiographic epiphany."); *see Experts Warn of Environmental Catastrophe, International Law Violations in Iraq War*, U.S. NEWSWIRE, Mar. 18, 2003, LEXIS, Nexis Library, CURNWS File [hereinafter *Experts Warn*]. *But see* Aaron Schwabach, *Environmental Damage Resulting From the NATO Military Action Against Yugoslavia*, 25 COLUM. J. ENVTL. L. 117, 118 (2000) [hereinafter Schwabach, *Environmental Damage*] (stating that like Gulf War I, the environmental damage that occurred in Kosovo was less than originally anticipated).

7. *See Iraqi Workers Helped Save Southern Wells, US Says*, PLATT'S OILGRAM NEWS, Apr. 11, 2003, *available in* LEXIS, Nexis Library, CURNWS File.

8. *See* Hourcle, *supra* note 3, at 687; Stephanie N. Simonds, *Conventional Warfare and Environmental Protection: A Proposal for International Legal Reform*, 29 STAN. J. INT'L L. 165, 187-88 (1992); *see generally* Nicholas G. Alexander, *Airstrikes and Environment Damage: Can the United States Be Held Liable for Operation Allied Force?*, 11 COLO. J. INT'L ENVTL. L. & POL'Y 471, 479-81 (2000); Low & Hodgkinson, *supra* note 5, at 481-83.

9. Hawkins, *supra* note 2, at 220-21; Myron H. Nordquist, *Panel Discussion on International Environmental Crimes: Problems of Enforceable Norms and Accountability*, 3 ILSA J. INT'L & COMP. L. 697, 702 (1997) (calling for a Protocol V to the 1980 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); Parsons, *supra* note 3, at 472-74 (discussing Greenpeace's proposal of a Fifth Geneva Convention).

10. Seacor, *supra* note 4, at 519-21.

11. *See* Susan M. Hinde, Note, *The International Environmental Court: Its Broad Jurisdiction as a Possible Fatal Flaw*, 32 HOFSTRA L. REV. 727, 727 (2003).

12. Caggiano, *supra* note 5, at 123-24; Low & Hodgkinson, *supra* note 5, at 481; Parsons, *supra* note 3, at 475-76 (discussing a U.S. Naval War College-sponsored symposium that concluded "more effective and efficient enforcement of the existing laws is needed") (internal citation omitted)Sharp, *supra* note 5, at 55-56.

13. Richard M. Whitaker, *Environmental Aspects of Overseas Operations*, ARMY LAW., Apr. 1995, at 27, 32.

done during the first Gulf War violated the current international standard.[14]

The resilience of the environment over time ought not to excuse from international accountability military leaders who intentionally target the environment as a method of warfare. Rather, treatment of the environment during international armed conflict should be classified as either active, meaning using the environment as a weapon, or passive, meaning acts that do not "use" the environment but have deleterious effects on the environment. Active environmental warfare that damages the sustainable environment should be viewed as a violation of both international law and the law of war, and it should not require evidence of widespread, long-term, and severe damage.

This Article will initially discuss the definition of "environment," and then divide wartime treatment of the environment into two categories, active and passive. The international law of environmental warfare, including man's attempts to protect the environment during times of hostilities as well as exclude the environment as a means of warfare, will be analyzed, and these protections will be categorized as regulating either passive or active environmental warfare. The Article will then argue that the current effects-based analysis, which is described below, is effective only against passive environmental warfare. Active environmental warfare against the sustainable environment that is not *de minimus* violates international law per se and should not require environmental damage to reach the standard of widespread, long-lasting, and severe to be considered a violation of international law. In addition, the paper will discuss the justification of military necessity and analyze why such a justification can apply only to passive and not to active environmental warfare. Finally, a Convention on the Protection of the Environment During Armed Conflict will be proposed and explained as a method to proscribe active environmental warfare. This convention will codify the active and passive environmental warfare distinction and clarify international responsibility for violations of international environmental law.

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14. *See* Low & Hodgkinson, *supra* note 5, at 408-14 (discussing how Saddam Hussein's attacks on the environment during the 1991 Persian Gulf War may not have met the threshold requirements to violate international law); *cf.* Schwabach, *supra* note 6, at 118. *But see* Sharp, *supra* note 5, at 48 (stating that the world community has clearly stated that Saddam's actions were violations of the laws of armed conflict).

II. THE ENVIRONMENT

Arriving at an acceptable definition of "environment" presents an initial difficulty in trying to analyze the current state of international law in the area of environmental warfare. Many international treaties and conventions have endeavored to define environment in this context, most with only limited success,[15] and others have avoided the problem by not offering a definition at all.[16] Scholars have also made attempts in this area with similarly limited success.[17]

One of the most descriptive definitions of environment is found in the 1977 United Nations Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD).[18] The ENMOD Convention defines environment as "the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or . . . outer space."[19] Although descriptive, this definition provides little clarity. Based on this definition, it is difficult to imagine any form of warfare that would not have serious environmental effects,

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15. The 1972 Declaration of the United Nations Stockholm Conference on the Human Environment refers to the environment as that which "gives man physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth." *Report of the United Nations Conference on the Human Environment*, ch. 1, ¶ 1, U.N. Doc. A/CONF. 48/14/Rev.1 (1972).

16. *See, e.g., United Nations Convention on the Law of the Sea* (UNCLOS), 3d Sess., U.N. Doc. A/CONF 62/122 (1982).

17. *See* John Alan Cohan, *Modes of Warfare and Evolving Standards of Environmental Protection Under the International Law of War*, 15 FLA. J. INT'L L. 481, 485 (2003); Parsons, *supra* note 3, at 459-60, where the author states:

> One might define the environment as the sum total of the components and constituents of the atmosphere, biosphere, geosphere, hydrosphere, and lithosphere. Another definition is that the environment is anything not made by humans. States have been reluctant to expand the definition of environment to include such things as natural resources, climate modification, biodiversity, and ecosystems for fear of limiting their military options. The U.S. Council on Environmental Quality's definition of the environment is "the natural and physical environment and the relationship of people with that environment." This definition illustrates the problems of breadth, ambiguity, and circularity that plague this most basic concept, *viz.*, exactly what are we attempting to protect.

Id. (citations omitted).

18. *See* DOCUMENTS ON THE LAWS OF WAR 377 (Adam Roberts & Richard Guelff eds., 2d ed. 1989) [hereinafter LAWS OF WAR].

19. *Id.* art. II, p. 380. But, as discussed below, this convention has very limited application. Thus it can be argued that the definition is so broad only because the convention has such a narrow application.

making it equally hard to provide adequate protections for the environment.[20]

One scholar has proposed defining environment as "anything that is not man-made."[21] There may be real utility in this broad definition in that it may remove the importance of defining the environment at all. He argues "[t]he only reason for defining [environment and environmental damage] more explicitly would be to attempt to place an absolute limit on environmental damage that cannot be exceeded by a military commander,"[22] an unnecessary limitation in his view.

These broadly inclusive definitions, and similar definitions in other multinational documents and writings, reflect the increasing desire of the international community to broaden environmental protections in all situations, especially those that are known to be potentially the most dangerous to the environment.

Compounding the difficulty of applying international legal regulation to the environment are competing views as to why the environment merits protection. One view, known as the anthropocentric or utilitarian view, is that the environment is worth protecting only insofar as it provides some benefit to humans.[23] The opposing view is the intrinsic value view, which holds that the environment is worth protecting as an end in itself, regardless of potential utility to humans.[24] This intrinsic value view of the environment, while not generally accepted by nations, would almost

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20. *See* Betsy Baker, *Legal Protections for the Environment in Times of Armed Conflict*, 33 VA. J. INT'L L. 351, 364-65 (1993), where, in discussing recent attempts to have the environment accorded "civilian object" status as a means of providing greater protection, the author writes, "[t]hese suggestions, however, are hard to implement because difficulties in defining 'the environment' make it impractical to exclude that category entirely as a military objective under article 52(2) [of the 1977 Protocol I]" (citations omitted).

21. Sharp, *supra* note 5, at 32.

22. *Id.*

23. *See* Cohan, *supra* note 17, at 486.

24. *See id.* at 486-87. Cohan goes on to state:

> The balancing test under the law of armed conflict (military necessity and proportionality) may well need to take into account the evolving nature of environmental concerns. That is, the value of the environment may be greater now than it was a few years ago. Many think that the traditional notions of proportionality and military necessity are evolving and leaning more towards the intrinsic value perspective so that today a higher degree of protection may be conferred on the environment when it comes to applying balancing tests, given the international community's heightened recognition of the environment's unique status.

Id. at 535.

certainly provide greater protections for the environment over time[25] and may be gaining favor.[26]

Despite the inability of the international legal community to agree on a useful definition of environment, it is clear that the trend in the international community is to view the environment as a very broad and inclusive entity. In fact, the lack of definitional precision seems to be a result of not wanting to narrow the scope of legal coverage for the environment.[27] Therefore, although a specific definition may be useful in a general sense, the lack of clarity and broader coverage of environmental protections it will provide may prove more valuable over time.

III. PASSIVE AND ACTIVE ENVIRONMENTAL WARFARE

Adopting a broad definition of environment allows extensive inclusion of wartime acts and their effects on the environment in analyzing what wartime acts are illegal. Because the environment is so expansive, virtually all wartime acts will have some effect on the environment.[28] The difficulty then becomes differentiating the severity of specific acts and determining which are violations of international law or the law of war. This is a vital inquiry because unless an act has repercussions under international law or the law of war, wartime leaders, such as Saddam Hussein in Gulf Wars I and II, have little incentive to abide by environmental preservation requirements.

Under the current application of the law of war, the inquiry is completely an effects-based inquiry. As will be discussed in detail below,[29] unless it can be determined that a specific wartime act will result in "widespread, long-lasting, and severe" damage to the environment, neither international law nor the law of war is effective in deterring or sanctioning military leaders who inflict grievous damage to the environment, regardless of their intentions. This current state of the law is unacceptable. Not only is it unlikely that the international community will be able to make such a determination without the benefit of the passage of time—making a

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25. *See* Michael N. Schmitt, *The Environmental Law of War: An Invitation to Critical Reexamination*, 6 U.S.A.F. ACAD. LEGAL STUD. 237, 238 (1996) [hereinafter Schmitt, *Environmental Law of War*].

26. *See* Baker, *supra* note 20, at 351-52.

27. *See* PATRICIA W. BIRNIE & ALAN E. BOYLE, INTERNATIONAL LAW & THE ENVIRONMENT 2 (2002).

28. See Cohan, *supra* note 17, at 483, where the author lists six main sources of environmental harm in times of war.

29. *See infra* Part IV.B.1.

timely sanction impossible[30]—but the standard relies completely on the effects of the act on the environment and takes no account for the intention of the actor.[31]

The best way to clarify existing international law and provide greater legal protection to the environment would be to classify environmental damage as either passive or active. This classification would allow for differentiating the severity of international law violations based on the target of the attack rather than on waiting to see the effects of the attack and, therefore, provide the international community the opportunity to determine the intent of the actor and seek more appropriate remedies for such violations.

Passive environmental warfare includes acts not specifically designed to "use" the environment for a particular military purpose but rather that have a degrading effect on the environment. These wartime acts may be completely unrelated to the environment in terms of the intent of the parties, yet they still have consequences that directly affect the surrounding environment.

An example of passive environmental warfare is the use of artillery. While artillery bombardment is not a "use" of the environment, it has secondary environmental effects on as destruction of plant life, disruption of natural animal habitats, etc. Another example is the disruption of the natural environment caused by the mass movement of large military armored vehicles.[32] It is most likely not the intent of the belligerents to cause environmental damage in this way. They are not moving their vehicles in order to damage the environment, but it occurs as a secondary effect of waging war.

In contrast to passive environmental warfare, active environmental warfare requires the intentional "use" of the environment as a weapon of waging armed conflict. Employing the environment as an "instrument of warfare" has been defined as "the use of the environment that might cause damage to the enemy or interference with an enemy military or combat activity."[33] This can occur through the operation of any conceivable instrument, such as conventional or unconventional weapons, natural forces, or resources.

Excluded from this definition is military action in connection with existing environmental conditions. For example, launching a military satellite to track weather information and to advise military

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30. *See* Cohan, *supra* note 17, at 495, 503.

31. *See infra* Part IV.A.3.

32. *See* Okorodudu-Fubara, *supra* note 2, at 136.

33. Harry H. Almond, Jr., *The Use of the Environment as an Instrument of War*, 2 Y.B. INT'L ENVTL. L. 455, 460 (1991) [hereinafter Almond, *Environment as Instrument*].

units so they can avoid possible damage does not rise to the level of "use" in the foregoing definition.[34]

Active environmental warfare includes inducing earthquakes or other natural disasters, weather manipulation, and climate modification,[35] where these activities are intentionally conducted to disrupt enemy movements or to destroy enemy forces. Other examples include redirecting waterways or releasing stored water to flood trafficable areas,[36] seeding clouds to produce rain, setting forest fires to direct military forces, and fouling internal waters to prevent movement of forces.[37] In short, active environmental warfare involves the deliberate harnessing of the environment as an instrument for conducting hostilities. In this sense the environment is not just the field upon which war takes place, but instead it is an actively used tool of war.

Therefore, in active environmental warfare the environment is the weapon, whereas, in passive environmental warfare the environment is merely the victim of wartime acts. The differentiation between active and passive environmental warfare becomes significant when analyzing the standards under which a nation violates international law. The determination of whether a nation's breach is one of active use or passive result is pivotal in deciding liability and potential consequences of such a breach. It is unlikely that warfare can ever be cleansed of its passive effects on the environment. But to protect the environment from the most serious dangers, it is essential to eliminate the intentional use of the environment as a weapon during armed conflict.

This is a key distinction given the events of the past few decades, including the Persian Gulf Wars. Had the active and passive differentiation been in place before the environmental destruction of the 1991 Gulf War, it may have been easier for the international community to have exacted reparations in line with Security Council Resolution 687.[38] A clear understanding and concrete application of this differentiation will increase the international community's

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34. *Id.* at 460-63.

35. *See* Sharp, *supra* note 5, at 51; *see also* QIAO LIANG & WANG XIANGSUI, UNRESTRICTED WARFARE 15 (FBIS trans. 1999) (describing environmental modification techniques such as "man-made earthquakes, tsunamis, weather disasters, or subsonic wave" weapons as "new concept" weapons).

36. Schofield, *supra* note 3, at 634.

37. *See* Low & Hodgkinson, *supra* note 5, at 409-10.

38. *See* Low & Hodgkinson, *supra* note 5, at 412-14 (pointing to the inadequacy of current international environmental law as a reason Security Council Resolution 687 could not be properly implemented and reparations actually collected); *see also* Bernard, *supra* note 5, at 109-41, for an excellent discussion on the significance of customary international law in holding Iraq liable for violations and damages during the Gulf War.

ability to hold a nation, and its leaders, responsible for specific damage done to the environment during armed conflict.

IV. INTERNATIONAL LAW OF ENVIRONMENTAL WARFARE

It has become commonplace in the last decade to say that "the importance of protecting the environment has become increasingly obvious."[39] The events of the Persian Gulf Wars have only served to accelerate that trend.[40] While there are more than 900 treaties that have provisions dealing with environmental protection,[41] none attempts to create an integrated approach to environmental warfare regulation. The following is a brief analysis of the most significant international law documents that directly or indirectly provide protections for the environment during war. This analysis will be divided into two areas: protection of the environment from passive wartime effects (when the environment is the victim of hostilities), and prevention of and limitations on active environmental warfare (when the environment is the weapon in hostilities).[42]

A. *Passive Environmental Warfare: The Environment as Victim*

Attempts to protect the environment from the ravages of war began much sooner than attempts to limit man's ability to use the environment as a weapon. Consensus that the natural environment was a victim of warfare began to solidify in the 1800s, and it started with the growing commitment that warfare was limited, that combatants were constrained in their means and methods of conducting hostilities, and that their right to injure the enemy was not unlimited. Growing concurrently with that principle was the "no harm" principle, the idea that one state cannot use or permit the use of its territory to harm another state. The establishment of these

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39. Whitaker, *supra* note 13, at 27. *See generally*, Cynthia G. Wagner, *War Crimes Against Nature*, THE FUTURIST, May-June 2003, at 9-10.

40. *United Nations Decade of International Law: Report of the Secretary-General on the Protection of the Environment in Times of Armed Conflict*, U.N. General Assembly, 48th Sess., Provisional Agenda Item 144, at ¶¶ 56-57, U.N. Doc. A/48/269, ¶¶ 56-57 (1993) [hereinafter *Environment in Times of Conflict*].

41. Hourcle, *supra* note 3, at 674-75.

42. Some commentators have urged that the use of nuclear, biological, and chemical weapons should be treated as violations of international environmental law. *See generally* Schofield, *supra* note 3, at 620-22. But these weapons do not actually "use" the environment as the "instrument of warfare," but rely on the environment for effective implementation or as a vehicle for deployment. *Id.* While these weapons do not fit into the category of active environmental warfare, international law has proscribed their use through conventional and customary law—therefore not leaving a gap in protection of the environment. *Id.* at 625-42.

general principles led to the development of a number of specific provisions more focused on the environment and its protections.

1. Limitation of the Right to Injure the Enemy

As international law developed over the centuries, sovereigns and their military commanders began to place voluntary limits on their right to conduct warfare.[43] Most of these voluntary limitations developed because they served a tactical purpose,[44] but others were based on a moral view of warfare and that some actions were not right, even in open hostilities.[45] Codification of this principle appeared as early as 1863 in the U.S. Civil War. President Abraham Lincoln issued General Order 100[46] as part of the Army's Lieber Code that placed a number of restrictions on how the Union Army fought. These restrictions "strongly influenced the further codification of the laws of war and the adoption of similar regulations by other states"[47] and were considered representative of the standard rules of war. With regard to the environment, the Lieber rules restricted the destruction of property that was not militarily necessary.[48] While this provision does not specifically refer to the environment, it began to form the basis for later provisions that would.

On September 9, 1880, the Institute of International Law published *The Laws of War on Land*,[49] which contained provisions stating limitations on the ability to injure the enemy and also dealt with issues concerning public and private property. This was followed by the First Hague Peace Conference in 1899,[50] which produced the Convention (II) with Respect to the Laws and Customs of War on Land.[51] The 1899 Hague Convention was followed by the Second International Peace Conference in 1907, also at The Hague.

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43. Eric C. Krauss & Michael O. Lacey, *Utilitarian vs. Humanitarian: The Battle Over the Law of War*, PARAMETERS, Summer 2002, at 73-74.

44. *Id.*

45. *Id.*

46. *See* THE LAWS OF ARMED CONFLICTS 3, (Dietrich Schindler & Jiri Toman eds. 3d ed. 1988) [hereinafter LAWS OF ARMED CONFLICTS].

47. *See id.*

48. *See id.* at 6.

49. *See id.* at 35. The applicable articles of this manual include Articles 3 (conformity to laws of war), 4 (ability to injure is not unlimited), 32 (pillage, destruction of private property only if necessity of war), 41 (definition of territorial occupation), 50-53 (dealing with public property), and 54-60 (dealing with private property). *Id.*

50. This Conference was initiated by Tsar Nicholas II of Russia, with the intent of "seeking the most effective means of ensuring to all peoples the benefits of a real or lasting peace, and, above all, of limiting the progressive development of existing armaments" (Russian note of 30 December 1898/11 January 1899). *Id.* at 49 (introductory text).

51. *Id.* at 63. This treaty was signed on July 29, 1899. *See id.* at 63.

The states at this conference produced the Convention (IV) Respecting the Laws and Customs of War on Land.[52] The Convention (IV) revised the 1899 Convention (II), leaving it in force for all parties who did not sign on to the newer 1907 convention.[53]

Article 22[54] of the 1907 Convention mirrors Article 4 of *The Laws of War on Land*[55] and states that "the right of belligerents to adopt means of injuring the enemy is not unlimited."[56] Article 23, particularly (e) and (g), continue to provide constraints, even if not explicit, to environmental damage during hostilities.[57] Article 23(e) disallows any weapons that would "cause unnecessary suffering,"[58] and Article 23(g) makes it unlawful to "destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war."[59]

More clearly tied to the environment, Article 55 of Section III (dealing with the Military Authority over the Territory of the Hostile State), declares:

> The occupying State shall be regarded only as administrator and usufructuary of 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.[60]

In this sense, "usufruct" means "the right of one state to enjoy all the advantages derivable from the use of property which belongs to another state."[61]

In general, the 1899 Convention (II) and the 1907 Convention (IV) taken together, with included Regulations, represent the first major movement in providing legal constraints that also protect the environment from wartime damage.[62] These two conventions

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52. *Id.* at 71-72. Beginning at page 63 is an excellent comparison between the 1899 Hague Convention (II) and the 1907 Hague Convention (IV).

53. *Id.* art. IV.

54. All applicable references will be to the 1907 Convention (IV), as it is the most widely ratified and most often quoted. *Id.*

55. *See id.* at 35.

56. *Id.* at 82.

57. Articles 22 and 23 do not specifically mention the environment. But the principles they espouse underlie the current principles upon which the international community has built explicit environmental protections. *Id.*

58. *Id.* at 83.

59. *Id.*

60. *Id.* at 91.

61. *See* Sharp, *supra* note 5, at 11 (quoting James P. Terry, *The Environmental and the Laws of War: The Impact of Desert Storm*, NAVAL WAR C. REV., Vol. XLV, No. 1, at 61 (Winter 1992)).

62. their true significance (and limitations) for providing protection to the environment are clearly shown in an article by Major Richard M. Whitaker, an international law instructor at the Army's school for lawyers. Whitaker, *supra* note 13.

represent the base of international environmental warfare regulation and are generally accepted as part of customary international law.[63] As elements of international custom, they are binding on all states, regardless of whether they are signatories to the Conventions.[64] Although these authorities do not represent explicit protections for the environment, they firmly establish that there are some things that cannot be done, even in war.

2. The "No Harm" Principle

As this limitation on the ability to injure an enemy became more and more entrenched in international law, concurrent constraints on states' interactions with each other in peacetime began to develop. One of the basic principles is reflected in the *Trail Smelter* arbitration.[65] In this decision, the United States was awarded damages from Canada because of air pollution that had drifted across the border. The decision stated what has become a foundation for much of current international environmental law: "no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another. . . ."[66]

This principle was confirmed and extended to a wartime environment in the *Corfu Channel*[67] case in which the International Court of Justice held Albania responsible for not warning British

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He wrote, "[T]aken together, these rules [The Hague Convention No. IV and accompanying Hague Regulations] require commanders to balance the importance of a particular military objective (military necessity) against the potential destruction to the environment. *Id.* For example, when the accomplishment of a mission appears extremely important, the degree of permissible destruction increases." *Id.* at 32-33. The fact that the soldier on the ground is taught to balance military interests against environmental protection is a testament to the value and effectiveness of the Hague rules.

63. *See* Source: Custom, 1 HACKWORTH DIG. § 3, at 15-17 (outlining basic tenants of customary international law); Simonds, *supra* note 8, at 188-98; *see also* Hans-Peter Gasser, *Current Development: For Better Protection of the Natural Environment in Armed Conflict: A Proposal for Action* 89 AM. J. INT'L L. 637, 638-39; Low & Hodgkinson, *supra* note 5, at 442-43; Morris, *Protection of the Environment in Wartime: The United Nations General Assembly Considers the Need for a New Convention*, 27 INT'L LAW 775, 780 (1993); Schwabach, *supra* note 4, at 6-7; Whitaker, *supra* note 13, at 33.

64. *See* Source: Custom, 1 HACKWORTH DIG. § 3, at 2; *see also* Caggiano, *supra* note 5, at 498-99 (1993) (asserting that customary international law may be preferable to treaty and convention law because of its wider application [i.e., to non-signatories] and the lack of a requirement of consent to hold a nation accountable for violations).

65. Trail Smelter (U.S. v. Can.), 3 R.I.A.A. 1911 (1949).

66. *Id.* at 1965.

67. Corfu Channel (U.K. v. Alb.), 1949 I.C.J. 4; *see* Caggiano, *supra* note 5, at 503 (asserting that the *Trail Smelter* and *Corfu Channel* decisions make it clear that "the world community should not countenance Iraq's military action against the environment [in Gulf War I]").

warships that mines had been placed in its territorial waters. The Court held that it was "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States."[68]

This principle was expanded in the *Lac Lanoux* arbitration[69] and the *Nuclear Tests* case.[70] The environment was directly implicated in these cases, which not only confirmed the application of the "no harm" principle to the environment, but also stand for the basic principle that nations must co-operate in avoiding adverse effects on their neighbors through a system of impact assessment, notification, consultation, and negotiation.[71] While the significance of these few decisions should not be over-stated, they represent a clear indication that customary international law does not allow unilateral degradation of the environment at the expense of another nation, and that the "no harm" principle is a firm principle of international environmental law.[72]

Further evidence of the "no harm" principle is found in the 1972 Stockholm Declaration of the United Nations Conference on the Human Environment.[73] At the conclusion of the U.N. sponsored conference, representatives of 103 nations adopted[74] a declaration expressing their combined understanding of states' roles in this area. Principle 21 declares:

> States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or

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68. Corfu Channel (U.K. v. Alb.), 1949 I.C.J. 4.

69. Lac Lanoux (Fr. v. Spain), 24 I.L.R. 101 (1957). France diverted water from Spain for its own use. *Id.* While the ICJ found no violation of international custom, it confirmed the principle that a state cannot arbitrarily cause harm to another state. *Id.*

70. Nuclear Tests (Austl. v. Fr.), 1974 I.C.J. 253. This case involved Australia petitioning the Court to keep France from performing nuclear tests that Australia (and New Zealand) claimed would detrimentally affect the environment. Although the ICJ never actually ruled on the merits because France unilaterally withdrew its intention to conduct further tests, the Court did make some findings, including that although a state maintains its environmental responsibilities even in armed conflict, becoming party to environmental restrictions does not abrogate the right of self-defense. Deborah L. Houchins, *Extending the Application of the ICJ's July 8, 1996 Advisory Opinion to Environment-Altering Weapons in General: What is the Role of International Environmental Law in Warfare?*, 22 J. LAND RESOURCES & ENVTL. L. 463, 473-74 (2002).

71. BIRNIE & BOYLE, *supra* note 27, at 104-05.

72. *See generally id.* at 103 (particularly ch. 3).

73. *See* BURNS H. WESTON, ET AL., BASIC DOCUMENTS IN INTERNATIONAL LAW AND WORLD ORDER 691 (2nd ed. 1990).

74. *Id.* at 943.

> control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.[75]

This pronouncement of sovereignty, coupled with the statement of accompanying responsibility, has become a basis for many international documents supporting the "no harm" principle,[76] and is accepted as customary international law.[77] This principle, combined with the limitation on belligerents during hostilities, has led to a number of specific provisions affecting the international law of environmental warfare.

3. Specific Protections for the Environment as a Victim

As states embraced these general principles of environmental protection, more specific provisions began to appear in customary and conventional international law. At the Nuremberg trials after World War II, nine civilian German administrators were tried for carrying out the Nazi policy of ruthless exploitation of Polish forests. Others were tried for "massive devastation of the environment."[78] Although the decision by the court was not decisive, the fact that the Tribunal pursued crimes against the environment is very significant and represents the first such judicial action resulting from acts on another state's land during wartime. The influence of the Nuremberg Tribunals on international law is uncontested[79] and reflects an international inclination that evidences itself in other international law documents.

The Geneva Convention Relative to the Protection of Civilian Persons in Time of War of 1949 (GCC)[80] has many provisions that

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75. *Id.* at 694.

76. Schofield, *supra* note 3, at 641-42.

77. Timothy J. Heverin, Comment, *Legality of the Threat or Use of Nuclear Weapons: Environmental and Humanitarian Limits on Self-Defense*, 72 NOTRE DAME L. REV. 1277, 1284 (1997) (the International Court of Justice declares the duty not to do transboundary harm as customary international law); Aaron Schwabach, *Ecocide and Genocide in Iraq: International Law, the Marsh Arabs, and Environmental Damage in Non-International Conflicts*, 15 COLO. J. INT'L ENVTL. L. & POL'Y 1, 16-17 (2004).

78. *See* Caggiano, *supra* note 5, at, 486-87; Bernard K. Schafer, *The Relationship Between the International Laws of Armed Conflict and Environmental Protection: The Need to Reevaluate What Types of Conduct are Permissible During Hostilities*, 19 CAL. W. INT'L L.J. 287, 310-11 (1988-1989).

79. *See Judicial Decisions*: International Military Tribunal (Nuremberg), Judgment and Sentences, 41 AM. J. INT. L. 172, 248-49 (1947); *see also* G.A. Res. 95 (I), U.N. Doc. A/236 (1946), at 1144 (recognizing the principles of the Charter of the Nuremburg Tribunal as customary international law).

80. *See* Convention (IV) Relative to the Protection of Civilian Persons in Time of War, *opened for signature* Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S 287, *reprinted in* THE LAWS OF ARMED CONFLICTS 495 (Dietrich Schindler & Jiri Toman eds., 3d ed. 1988).

reflected customary international law of the time but also has many others that reflected emerging norms in response to the atrocities of World Wars I and II. The fourth of four Conventions, this convention was aimed primarily at the protection of non-combatants, including inanimate non-combatants. Article 53 prohibits an occupying power from destroying "real or personal property . . . except where such destruction is rendered absolutely necessary by military operations."[81] Though this represented little actual protection,[82] it reflected the attitude of the post-war community that environmental effects were a consideration in warfare and that potential degradation to the environment had its limits, even during war.

As acceptance of the 1949 Convention grew, so did the recognition of the environment as a resource that deserved protection during war. In 1978, the 1977 Protocol I to the Geneva Conventions[83] entered into force. Starting where the GCC left off, it is acknowledged by many as the first specific attempt to protect the environment during armed conflicts. Article 55 deserves special attention. Article 55 states:

> 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 use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.
>
> 2. Attacks against the natural environment by way of reprisals are prohibited.[84]

The duty of care contained in the first sentence of Article 55 is the current statement of passive environmental warfare regulation.

It is significant to note that the issue here is the effect an act has on the environment, not the means or methods or even the intention

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81. *Id.* at 517.

82. Whitaker, *supra* note 13, at 27, 30 (Violations of this provision would be classified merely as a simple breach of the Geneva Conventions unless the damage to the environment was extensive, an undefined standard in the Conventions or Commentary:

> The distinction between a simple and a grave breach is important. A grave breach requires parties to the conventions to search out and then either prosecute or extradite persons suspected of committing a grave breach. A simple breach only requires parties to take measures necessary for the suppression of the type of conduct that caused the breach.

Id.

83. Protocol Additional to the Geneva Conventions of Aug. 12, 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), *opened for signature* Dec. 12, 1977, 1125 U.N.T.S. 3, *reprinted in* THE LAWS OF ARMED CONFLICTS 621 (Dietrich Schindler & Jiri Toman eds., 3d ed. 1988).

84. THE LAWS OF ARMED CONFLICT, *supra* note 83, at 653.

of the actors. This limitation places a clear, unqualified restriction on military operations, regardless of how that damage might occur.[85] While lesser damage is permitted, any military operations that would cause environmental damage of this magnitude are proscribed. This is in contrast to the rest of the language in paragraph 1 and its application to active environmental warfare, which will be discussed below.

In addition to this Article, Article 52 provides protection to civilian objects; Article 53 protects cultural objects and places of worship; Article 54 provides protection to objects indispensable to the survival of the civilian population, including such things as agricultural areas and irrigation works; and Article 56 protects works and installations containing dangerous forces such as dams, dikes, and nuclear electrical generating facilities.[86] These provisions of Protocol I are the clearest statement in conventional law of the prohibition on passive environmental warfare in which the effects reach a prescribed intensity.

The World Charter for Nature,[87] adopted in 1982 by almost unanimous consent of the United Nations General Assembly,[88] proclaimed "principles of conservation by which all human conduct affecting nature is to be guided and judged."[89] One of the principles specifically deals with environmental degradation in times of war and states that "[n]ature shall be secured against degradation caused by warfare or other hostile activities."[90]

The 1992 United Nations Conference on the Environment, held in Rio de Janeiro, Brazil, reflected many of these same principles including a particular reference to the environment in times of armed conflict.[91] Principle 24 of the Rio Declaration states:

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85. Richards & Schmitt, *supra* note 3, at 1064-65.

86. *See* THE LAWS OF ARMED CONFLICTS, *supra* note 83, at 652-53.

87. *See World Charter for Nature*, U.N. GAOR, 37th Sess., Annex, Agenda Item 21, U.N. Doc. A/37/C.4 (1982); *see* Parsons, *supra* note 3, at 457 (stating that "the normative assertions of the Charter, though not themselves sufficient, build support for strengthening international law through a comprehensive regulatory framework which is the outcome of a multinational lawmaking process").

88. Weston, *supra* note 73, at 946.

89. *Id.* at 742.

90. *Id.* at 743.

91. *See* Parsons, *supra* note 3, at 456.

Some states fear that Principle 2 of the Rio Declaration, akin to Principle 21 of the Stockholm Declaration, may lead to an overwhelming liability for all parties to a conflict. "States have, in accordance with the Charter of the United Nations and the principles of international law . . . the responsibility to ensure that activities within their jurisdictions or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction." Interpreted literally, this language imposes responsibility for environmental damage during armed conflict even when such damage is

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.[92]

This statement marks a clear challenge for those nations willing to embrace it, and it is quoted as authority for requiring compliance with various peacetime environmental rules during armed conflict.[93]

The acts of the Security Council during the 1991 Gulf War may have "created legal precedent for future armed conflicts."[94] In April 1991, the Security Council passed resolution 687 holding Iraq liable under international law for "any direct loss, [or] damage, including environmental damage and the depletion of natural resources."[95] Although this liability has not yet been fully implemented, it sets an important pattern for future responses to similar environmental degradation.[96]

Several other documents have been written by scholars and jurists that relate to this issue, including the International Committee of the Red Cross' *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*[97] and the International Law Commission's *Draft Code of Crimes Against Peace and Security of Mankind.*[98]

These specific provisions of international law indicate that a trend in international law and policy is developing and illustrate the wide acceptance on the national and international level of the limitations on passive environmental warfare.

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justified under the law of armed conflict and humanitarian law, and imposes responsibility for incidental damage to global resources beyond the jurisdiction of individual states. Many states are wary of exposing themselves to this type of liability and would therefore object to the recognition of these provisions as customary international law.

Id.

92. *Report of the United Nations Conference on Environment and Development*, U.N. Doc. A/CONF./151/26 (Vol.I) (1992).

93. Government of the Solomon Islands, *International Court of Justice: Advisory Proceedings on the Legality of the Threat or Use of Nuclear Weapons (Questions Posed by the General Assembly): Written Observations on the Request by the General Assembly for an Advisory Opinion*, 7 CRIM. L.F. 299, 383-84 (1996).

94. Simonds, *supra* note 8, at 178.

95. S.C. Res 687, U.N.S.C.O.R., U.N.Doc. S/Res/687 (1991).

96. *See* Low & Hodgkinson, *supra* note 5, at 477-79.

97. *Follow-up to the International Conference for the Protection of War Victims*, 311 INTERNATIONAL REVIEW OF THE RED CROSS, 230, 231-37 (1996); *see also* Drumbl, *supra* note 3, at 131-32 (discussing the Guidelines).

98. INTERNATIONAL LAW COMMISSION DRAFT CODE OF CRIMES AGAINST THE PEACE AND SECURITY OF MANKIND, *reprinted in* Drumbl, *supra* note 3, at 140.

4. Conclusion

Passive environmental warfare, including wartime acts not specifically designed to use the environment for a particular military purpose but that have a degrading effect on it, is constrained by both treaty and convention and also by customary international law. The principles mentioned above exhibit a clear trend toward providing greater protections for the environment from passive environmental warfare. In fact, a review of existing conventional law at the Proceedings of the Eighty-Fifth Annual Meeting of the American Society of International Law (Thursday, April 18, 1991), led Paul Szasz to assert, "I think it can safely be concluded that the principle expressed in all these instruments—that nature is no longer fair game in mankind's conflicts—is well on its way to becoming an accepted principle of international law."[99]

Further, the defining statement on prohibited passive environmental warfare is found in Protocol I, placing on commanders the responsibility to protect the environment from any warfare effects that will result in widespread, long-term, and severe impacts on the environment. The conjunctive nature of this standard mitigates its precision in application and allows a significant amount of passive environmental damage. Although this standard is not very precise, it is clear enough for the commander as he analyzes his proposed military operations. As with the Hague Conventions,[100] in most cases the fact that the standard is raised and the commander must be aware of it is adequate to provide sufficient protections from passive environmental warfare effects.

B. *Active Environmental Warfare: Environment as Weapon*

Along with the harm on the environment caused by hostilities, it is increasingly possible with developing technology to use the environment as a weapon. This transforms the environment from the surroundings in which man fights, into a tool by which he fights. This type of warfare is particularly appealing in a world of military asymmetry[101] in which those countries with limited technological

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99. Paul Szasz, *The Gulf War: Environment as a Weapon*, 85 PROC. AM. SOC'Y INTL'L L. 214, 217 (1991).

100. *See* Sharp, *supra* note 5.

101. Asymmetric warfare occurs when a state, weak in a traditional reading of military strength, develops a capability that off sets its inferior position. *See* Ryerson Christie, *Homeland Defence and the Re/Territorialization of the State, available at* http://www.cda-cdai.ca/symposia/2002/christie.htm (last visited Apr. 27, 2004).

means are looking for any way to counter their shortfalls.[102] In contrast to passive environmental effects, actively using the environment as a weapon requires an element of intent on the part of the manipulator. Active use cannot occur through a negligent act. It is only triggered by a purposeful use of the environment as a means of waging war. This possibility of harnessing the environment and using it for such active military purposes is drawing increasing attention at the international level.[103]

1. International Law and Active Environmental Warfare

Although history is not without record of active environmental warfare,[104] using the environment as a means of war is a fairly new technological development. Further, the distinction between active and passive use of the environment has not been previously recognized. Therefore, international law is less developed in this area. It is possible, however, to conclude that since only a few nations actively use the environment to carry on warfare, the requisite state practice exists to establish an international customary norm.[105] On the other hand, many argue that analyzing what actions states have not taken is a flawed approach and does not result in a binding principle of international law without a greater show of acceptance by states.[106] These dissenters would require some overt act to confirm the state-practice element, rather than relying solely on non-derogation.

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102. Low & Hodgkinson, *supra* note 5, at 409-12 (discussing how Saddam Hussein's attacks on the environment during the 1991 Persian Gulf War may have been attempts to counter the Coalition's advanced weapons technology); *see also* Hourcle, *supra* note 3, at 675 n.105; Schofield, *supra* note 3 (discussing the use of the environment as a weapon as an increasingly inviting option to terrorists).

103. *See The Exploitation of the Environment as a Weapon in Times of Armed Conflict and the Taking of Practical Measures to Prevent Such Exploitation*, U.N. GAOR 6th Comm., 46th Sess., Annex, Agenda Item 140, U.N. Doc. A/46/693 (1991).

104. *See supra* note 3.

105. In the Case of the S.S "Lotus" (Fr. v. Turk.), 1927 P.C.I.J., (ser. A), No. 9., the Permanent Court of International Justice dealt with the question of whether the abstinence from committing some act created an international norm. This is often termed the negative approach to international lawmaking. The Court, in this case, decided that it did not.; *See also*, Parsons, *supra* note 3, at 482 (discussing proving the existence of customary law by establishing that states refrain from taking a certain action); Aaron Schwabach, *Ecocide and Genocide in Iraq: International Law, the Marsh Arabs, and Environmental Damage in Non-International Conflicts*, 15 COLO. J. INT'L ENVTL. L. & POL'Y 1, 20 (2004).

106. *See* INTERNATIONAL LAW AND WORLD ORDER 114-16 (Burns H. Weston, et al. eds., 2d ed. 1990)

Recently, several wars,[107] beginning with the Vietnam War and continuing with the Gulf Wars, have raised the international community's awareness of the issue, and states have begun to take overt steps and establish conventional legal constraints on active environmental warfare.[108] The most significant of these as they apply to active environmental warfare are the ENMOD and the Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflict (GPI). Although neither of these documents was formulated with the benefit of the distinction between active and passive environmental warfare, they contain the underlying principles that have ripened into this vital distinction. Therefore, an analysis of these two documents and the interaction between them is vital to understanding the rules regarding active environmental warfare.

On December 10, 1976, the United Nations adopted General Assembly Resolution 31/72, which later became the ENMOD Convention.[109] The ENMOD convention was created in response, at least partially, to the unsuccessful attempts of the United States to use weather modification techniques as a weapon in the Vietnam War.[110] This convention represents the foundation document regulating the "active" use of the environment in warfare.[111] It "regulates the use of the environment as a means to wage war, rather than damage to the environment as an ancillary result of war."[112] Article I of the convention states:

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107. *See* Cohan, *supra* note 17, at 487-88 (discussing the various methods of environmental warfare used during the Vietnam war and the public outcry that resulted).

108. *See The Report of the Secretary-General on the Protection of the Environment in Times of Armed Conflict* U.N. GAOR, 48th Sess., Annex Agenda Item 144, U.N. Doc. A/48/269 (1993); Conference, A "Fifth Geneva Convention" on the Protection of the Environment in Time of Armed Conflict (co-sponsored by the Centre for Defence Studies, Greenpeace International, and the London School of Economics) on June 3, 1991, in London; and Conference of Experts on the Use of Environment as a Tool of Conventional Warfare (sponsored by Canada and held in Ottawa) in July, 1991; *cf.* Schmitt, *Environmental Law of War*, *supra* note 25, at 317 (discussing evolving standards of environmental consciousness). *But see* Gasser, *supra* note 63, at 638 (asserting that only GPI, CCW, and ENMOD apply any real safeguards for the environment during armed conflict).

109. See LAWS OF WAR, *supra* note 18, at 379.

110. *See* Schmitt, *Environmental Law of War*, *supra* note 25, at 239; STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE, WEAPONS OF MASS DESTRUCTION AND THE ENVIRONMENT 59 (1977).

111. *See* Schmitt, *supra* note 25, at 260-61.

112. *See* Cohan, *supra* note 17, at 524 (asserting that it is generally agreed that Iraqi actions during the Gulf War would not have violated ENMOD even if Iraq had been a party to it because the environment was not used as a "weapon."); Simonds, *supra* note 8, at 185-86; Whitaker, *supra* note 13, at 36-37; *cf.* Yuzon, *supra* note 3, at 804-05 (discussing pre-ENMOD studies concerning potential environmental targets to be covered by the Convention).

> 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.[113]

This provision sets up a two-part test for falling within the restrictions of the Convention: (1) there must be an intentional environmental modification technique[114] and (2) widespread, long-lasting, or severe effects resulting from that modification. The first of these elements requires that the offending nation use "deliberate manipulation of natural processes,"[115] not that environmental damage is simply a result of the action.[116] As stated above, this requirement of intent is one of the key issues in "active" environmental warfare.

The second requirement is that the damage is of a certain type and duration. The words "widespread," "long-lasting," and "severe" are given more specific meaning in the first Understanding to the Convention:

It is the understanding of the Committee that, for the purposes of this Convention, the terms "widespread", "long-lasting", and "severe" shall be interpreted as follows:

> (a) "widespread": encompassing an area on the scale of several hundred square kilometers;
>
> (b) "long-lasting": lasting for a period of months, or approximately a season;
>
> (c) "severe": involving serious or significant disruption or harm to human life, natural and economic resources or other assets.
>
> It is further understood that the interpretation set forth above is intended exclusively for this Convention and is not intended to

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113. *See* LAWS OF WAR, *supra* note 18, at 379.

114. *See* Cohan, *supra* note 17, at 512.

> The Understanding refers to "earthquakes, tsunamis; an upset in the ecological balance of a region; changes in weather patterns (clouds, precipitation, cyclones of various types, 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." This list is intended to be illustrative, not exhaustive—thus, the use of techniques producing other phenomena could also be appropriately included, such as volcanic eruptions, tectonic plate movements, sea level changes, lightning, hail, and changes in the energy balance of the planet.

Id.

115. *Id.* at 380, art. II.

116. *See* Laura Edgerton, *Eco-Terrorist Acts During the Persian Gulf War: Is International Law Sufficient to Hold Iraq Liable?*, 22 GA. J. INT'L & COMP. L. 151, 172 (1992) (arguing that the first of these two elements was not met, making it impossible to hold Iraq responsible under current international law).

> prejudice the interpretation of the same or similar terms if used in connection [*sic*] with any other international agreement.[117]

The importance of this Understanding is clearer when compared with similar language in the 1977 Additional Protocol I to the 1949 Geneva Convention. Despite the similarity, it is clear that these linguistic interpretations apply only to ENMOD, not to Protocol I,[118] and set a more stringent limitation when conducting active environmental warfare.

Protocol I has two key provisions,[119] Article 35 and Article 55, that deserve special attention. Article 35 states:

> 1. In any armed conflict, the right of the Parties to the armed conflict to choose methods or means of warfare is not unlimited.
>
> 2. It is prohibited to employ weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering.
>
> 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.[120]

By placing subparagraph 3 in the same Article as the well-established subparagraph 1, the Protocol raises the restraint on wartime environmental damage to a new level. Further, Article 36 obligates parties to ensure any new means or methods of warfare comply with existing international norms.[121]

Article 55, which has been discussed earlier in connection with passive environmental warfare, states:

> 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 use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population. [122]

There is some discussion as to whether the provisions of Articles 35(3) and 55(1) apply to non-conventional warfare only, but this is not the case.[123]

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117. *See* LAWS OF WAR, *supra* note 18, at 377-78. *But see* Yuzon, *supra* note 3, at 806-09 (stating that not all states accepted these interpretations).

118. Richards & Schmitt, *supra* note 3, at 1064-65.

119. *But see* Cohan, *supra* note 17, at 518 (arguing that Protocol I "contains prohibitions on damaging, as opposed to using, the environment").

120. *See* LAWS OF ARMED CONFLICTS, *supra* note 46, at 644-45

121. *Id.* at 645.

122. *Id.* at 653.

123. *See* Low & Hodgkinson, *supra* note 5, at 427-28 (stating that the consensus among writers is that the Articles do not apply to conventional warfare).

Trying to come to a common understanding of the law when comparing Articles 35(3) and 55 is difficult.[124] It appears that these two provisions, which seem to take different approaches, and hence lead to different results, may have been an attempt to satisfy both the intrinsic value and anthropocentric views of the environment.[125] Article 35 takes an intrinsic value approach[126] to environmental protection, not tying the protections to any value the environment provides to man. In contrast, Article 55 appears to take the same methodology in its passive environmental approach in the first sentence, but then allows for a *de minimus* exception to the intrinsic value approach when discussing the knowing or intentional use of the environment.[127] This *de minimus* exception appears to embrace the anthropocentric view of environmental protection, at least in terms of active environmental warfare. The confusion caused by applying the standard of "which are intended, or may be expected" to the quantitative limitation of Article 35 and the qualitative limitation of Article 55 is resolved when properly analyzed under the principles of passive and active warfare.

As previously stated, the first sentence of Article 55 states the standard for passive environmental warfare. Any military operations must not have the passive results of such significant environmental degradation. The second sentence is encompassed by the prohibition on active environmental warfare. While it does not specifically deal with using the environment in the same terms as the ENMOD, an analysis of this provision provides the same results, leaving the *de minimus* exception for active actions that do not affect the sustainable environment.

To clarify, the second sentence to Article 55 appears to be a prohibition on targeting the environment rather than "using" the environment as the definition of active environmental warfare requires. But beginning with the assumption that the environment is a civilian object,[128] it is inherently illegal to target the environment unless it becomes a military objective by its nature, location, purpose,

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124. Richards & Schmitt, *supra* note 3, at 1060-62.
125. *Id.* at 1062.
126. *Id.*; *see supra* notes 22-23.
127. Schmitt, *Humanitarian Law*, *supra* note 3, at 313-14.
128. *See id.* at 262.

> [E]nvironmental protection represents a *new* value, particularly when one moves beyond a purely anthropocentric perspective. If the law is to adequately adapt, it must recognize the uniqueness of the environment. To date, there is little evidence that is being done. Instead, the environment is usually treated as merely another civilian object.

Id.

or use, and there is a military necessity to attack.[129] Assuming a commander can establish the military necessity to do so, he must still be able to show that the targeted portion of the environment meets the nature, location, purpose, or use test.

By its nature, the environment is not a military objective. Things such as weapons, equipment, transports, fortifications, and depots are military objects by their nature.[130] The environment does not meet this definition. Nor could it be considered by its nature to be a "dual-use" target, one which serves both military and civilian purposes, as there is nothing intrinsic in the environment to make it such.

Location requires a different analysis. These are objects that

> by their nature have no military function but which, by virtue of their location, make an effective contribution to military action. This may be, for example, a bridge or other construction, or it could also be . . . a site which is of special importance for military operations in view of its location, either because it is a site that must be seized or because it is important to prevent the enemy from seizing it, or otherwise because it is a matter of forcing the enemy to retreat from it.[131]

It could certainly be that the movements of an enemy might make a commander consider attacking a portion of the environment based on the location of the enemy. For example, Saddam Hussein's lighting of oil wells in the first Gulf War to create a thick cloud of smoke to cover his retreat could possibly be justified under the location analysis of Article 52.[132] As stated earlier, however, causing damage to the enemy or interference with an enemy military or combat activity by using the environment turns the environment into an instrument of warfare and is active environmental warfare.[133] Hussein's targeting of the environment based on its location was really an active use of the environment because it was intended to have a direct effect on his enemy's combat activities.

Purpose is generally "concerned with the intended future use of an object"[134] and would include such things as targeting buses that were on their way to military barracks to pick up troops and carry them to the front lines. For example, Hussein's fouling of the waters to prevent a potential amphibious landing is an attack on the

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129. *See* LAWS OF ARMED CONFLICT, supra note 46, at 652.

130. *See* COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 1949, ¶ 2020 (S. Pictet et al. eds., 1958) [hereinafter COMMENTARY].

131. *Id.* at ¶ 2021.

132. *See* LAWS OF ARMED CONFLICTS, *supra* note 46, at 652.

133. *See* Almond, *Environment as Instrument*, *supra* note 33.

134. *See* COMMENTARY, *supra* note 130, at ¶ 2022.

environment based on the purpose to which the environment was going to be used.[135]

Finally, intentionally targeting the environment may be based on its use by the enemy. The typical example of this is targeting forests or jungles that provide cover and concealment of enemy troop movements. Again, this type of attack is active environmental warfare because it causes damage to the enemy or interference with an enemy military or combat activity.

Therefore, intentional targeting of the environment, a civilian object, is in fact a "use" of the environment and fits within the definition of active environmental warfare. Such targeting should therefore be prohibited unless it is *de minimus*, meaning it will not affect the health or survival of the population or damage the sustainable environment.

This still leaves a discussion of Article 35.3 of the Protocol I, which prohibits "methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment."[136] Article 35's intrinsic value approach is laudable in principle but has been a significant contributor to the inability to enforce environmental standards. The Article's complete prohibition on active warfare actions only when they reach a quantitative level of damage provided a good basis upon which to build in 1977, but it has not produced sufficient clarity to provide the necessary deterrence or enforcement. The law of environmental warfare must take a step forward and remove the quantum portion when active environmental warfare is contemplated.[137]

Continuing the comparison of Articles 35 and 55, it is significant that the Protocol lists the terms "widespread, long-term, and severe" in the conjunctive, meaning that all three requirements must be satisfied for a breach of the Protocol, causing some commentators to argue the destruction in World Wars I and II "would not have met this threshold requirement."[138] In contrast, the disjunctive[139] nature of the same terms in the ENMOD Convention illustrates the lower threshold of damage required to constitute a breach when dealing

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135. *Cf.* Low & Hodgkinson, *supra* note 5, at 408-10.

136. See LAWS OF ARMED CONFLICTS, *supra* note 46, at 645.

137. *See* Yuzon, *supra* note 3, at 841 (arguing that adding an intent element to the crime of environmental modification could make any degree of damage a crime, regardless of whether it was widespread, long-term, or severe).

138. *See* CLAUDE PILLOUD, INTERNATIONAL COMMITTEE OF THE RED CROSS, COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949, AT 390-91 (Yves Sandoz ed., 1987) *quoted in* Whitaker, *supra* note 13, at 38.

139. *See* Schwabach, *supra* note 6, at 22.

with the "active" use of the environment in warfare.[140] This lower threshold of needing to satisfy only one of the elements will result in a violation of international environmental law at a much earlier stage of damage and will provide added protection to the environment.

Further, the meaning given to the terms "widespread, long-term, and severe" are also more relaxed than those of the ENMOD.

> Most experts agree with the commentary to GPI, which states that "long-term" should be measured in decades (twenty to thirty years). Although the other two terms remain largely subject to interpretation, a number of credible interpretations have been forwarded. Within GPI, the term "widespread" probably means several hundred square kilometers, as it does in the ENMOD Convention. While "severe" can be explained by Article 55's reference to any act that "prejudices the health or survival of the population."[141]

It is important to remember that despite the lower threshold for damage, the ENMOD convention also requires that the acts be intentional, a threshold requirement of active environmental warfare.

The ENMOD Convention, although somewhat unique in its terms, represents the starting point for future active environmental warfare conventions and treaties. Its clear prohibition of wartime environmental modification techniques represents a significant stepping stone, moving the international community in the direction of greater environmental protection.

In 1992, the Second Review Conference of the ENMOD Convention answered some significant questions concerning the interpretation of the ENMOD Treaty. First, and most significant to this Article, the Conference determined that it did not matter whether the "damage" resulted from the technique that affected the modification or was caused by the environmental modification itself. Second, the Conference clearly stated that herbicides fall within the proscriptions of the ENMOD.[142]

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140. *See* Almond, *Environment as Instrument*, *supra* note 33, at 135 (writing that "environmental regulation against the damaging impacts of warfare is tantamount to taking at least some measures to protect the environment from being part of the arena of warfare. *The extent and duration of protection needed may vary substantially, and perhaps inversely, with the destructive potential of warfare.*") (emphasis added); Harry H. Almond, Jr., *Strategies for Protecting the Environment: The Process of Coercion*, 23 U. TOL. L. REV. 295, 339 (1992) (writing concerning these two similar provisions: "[t]he standard applied [in the 1977 Geneva Protocols] is similar to that of the ENMOD Convention except that the term 'and' is used rather than 'or' as to the identification of damage so that the damage that falls within the prohibition [of the 1977 Geneva Protocols] would be larger than that controlled by the ENMOD provisions.").

141. Whitaker, *supra* note 13, at 38 (citations omitted).

142. *See* Low & Hodgkinson, *supra* note 5, at 432-33.

Although both the ENMOD and Protocol I seem reasonably clear when analyzed on their own, a combined analysis leads to some grave ambiguity.[143] Given the trend toward increasing environmental protection, this recognized ambiguity is unhelpful and should be resolved. Some commentators have already urged that the "widespread, long-lasting, and severe" standard be discarded and a strict liability standard be applied.[144] It is not unreasonable to advocate changes to terms that were molded almost thirty years ago at a time when warfare's effects on the environment were not so potentially catastrophic. Applying these well-known standards to the differentiation of active and passive warfare will resolve this ambiguity, allowing military commanders to understand the standard and apply it while conducting military operations.

By applying the quantum limitation on environmental damage to only passive environmental damage, commanders still must consider the environmental repercussions of all military operations. On the other hand, by removing the quantum portion from active environmental warfare, commanders cannot justify weaponizing the environment by claiming limited effects. Rather than a quantitative analysis, the qualitative analysis of damage to the sustainable environment is the appropriate examination when the environment is used to accomplish military purposes.

In addition to the ENMOD and Protocol I, there are other international agreements and pronouncements that deal with active environmental warfare. While less significant, they provide an indication of the path the law is taking. The 1981 Convention on Prohibitions or Restrictions on the Use of Certain Conventional

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143. Numerous commentators have drawn their own conclusions concerning the similarities and differences of these two articles. *See* Cohan, *supra* note 17, at 504 arguing that:

> Article 35(3) sets forth a defining limit based on concern for the environment qua environment, conferring an intrinsic value principle on the environment, without regard to other considerations, while Article 55(1) adds a clause that takes into account the extent to which the widespread, long-term, and severe environmental damage will impact the population, thus suggesting an anthropocentric approach. . . . Apparently, this ambiguity was an intentional feature of Protocol I in an effort of the drafters to appease two competing camps, those who supported the intrinsic value theory and those who believed the environment should be evaluated principally based on anthropocentric considerations and who therefore sought to model the provision in terms of human harms.

Id.; Richards & Schmitt, *supra* note 3, at 1061-62; Schmitt, *Humanitarian Law*, *supra* note 3, at 276 (arguing that article 35(3) "requires that the damage be caused by a method or means of warfare and imposes a scienter/intent requirement" while Article 55 takes the same approach but only applies when the environmental damage affects humans).

144. *See* Cohan, *supra* note 17, at 521-22.

Weapons which may be Deemed to be Excessively Injurious or to have Indiscriminate Effects[145] (CCW) and some recent actions by the United Nations and other organizations are worthy of review.

The CCW and its additional Protocols restrict the use of inhumane weapons.[146] Protocol III[147] of this convention, which concerns prohibitions and restrictions on the use of incendiary weapons, is particularly on point. Article 1 contains definitions, and Article 2 contains a specifically applicable provision:

> 4. It 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.[148]

Although this provision is weakened by the applicable exceptions of cover, etc., it is significant in the type of weapons that it encompasses. The key is that it protects a specific portion of the environment from a particular type of weapon. While carving out only a very small area, Protocol III illustrates that the international community realizes that the combined standards of ENMOD and Protocol I did not go far enough to protect the environment from active environmental warfare.

This realization that ENMOD and Protocol I were insufficient was also clearly demonstrated in the aftermath of Gulf War I. In response to the destruction of the first Gulf War, some nations resorted to overt acts (and sought them from others) to try and remove the doubt as to the existence of international law in the area of active environmental warfare. For example, Jordan proposed that the forty-sixth session of the United Nations General Assembly (1991) consider the "[e]xploitation of the environment as a weapon in times of armed conflict."[149] Although the scope of this suggestion was later broadened to include general protection for the environment in times of war,[150] much of what came from the efforts of the United Nations Sixth Committee[151] and further consideration by the United

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145. See LAWS OF WAR, *supra* note 18, at 473 (discussing its impacts on international environmental law); Schmitt, *Humanitarian Law*, supra note 3, at 287-90 (discussing the history and the provisions of the convention).

146. It is often termed the Inhumane Weapons Convention. *See* Simonds, *supra* note 8, at 177-78.

147. *See* LAWS OF WAR, *supra* note 18, at 484.

148. *Id.* at 485.

149. *Request for the Inclusion of an Additional Item in the Provisional Agenda of the Forty-Sixth Session*, U.N. GAOR, 46th Sess., U.N. Doc. A/46/141 (1991).

150. Morris, *supra* note 63, at 776.

151. *Exploitation of the Environment as a Weapon in Times of Armed Conflict and Taking of Practical Measures to Prevent Such Exploitation*, U.N. GAOR 6th Comm., 46th Sess., Agenda Item 140, U.N. Doc. A/46/693 (1991).

Nations General Assembly[152] directly affects on active environmental warfare. For instance, the International Committee of the Red Cross (ICRC) raised again the call for greater clarification between the previously mentioned provisions of the ENMOD Convention and Protocol I[153] prohibiting environmental destruction that is widespread, long-lasting, and/or severe.

This response to recent developments and the prolific discussion in academic journals, as well as at least ten meetings of experts in the field,[154] provide ample evidence that this is an area of deep concern in international law. More clarification and increased action can be expected in the future and is needed for the standard of environmental protection to be sufficient.

The recent adoption of the Rome Statute and formation of the International Criminal Court[155] provided an opportunity to resolve some of this ambiguity and clarify wartime environmental protections.[156] Unfortunately, that opportunity was missed. The Rome Statute criminalizes active environmental warfare by making intentional infliction of harm to the environment a "war crime," but it is prosecutable only if it is done as "part of a plan or policy or as part of a large-scale commission of such crime[]."[157] Further, the Rome Statute follows Protocol I[158] with no additional definition of the elements of "widespread, long-term, [and] severe."[159]

Although not nearly as exhaustive as passive environmental warfare documents, the ENMOD Convention, Protocol I, the CCW,

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152. *See* G.A. Res. 47/37, U.N. GAOR, 47th Sess., Agenda Item 136, at 1, U.N. Doc. A/Res/47/37 (1992).

153. *See Environment in Times of Conflict*, *supra* note 40, ¶ 2.

154. *See* Baker, *supra* note 20, at 351 n.4; Schmitt, *Humanitarian Law*, *supra* note 3, at 266-68 (outlining many of the scientific predictions of calamity that would result from Saddam Hussein's actions in the Gulf War that never materialized); *Experts Warn*, *supra* note 6; *c.f.* Alexander, *supra* note 8, at 479-80; Schwabach, *supra* note 6, at 118.

155. UNITED NATIONS, ROME STATUTE OF THE INT'L CRIMINAL COURT art. 8(2)(b)(iv), U.N. Doc. A/CONF. 183/9th (1998), *available at* http://www.un.org/law/icc/statute/romefra.htm (last visited Feb. 7, 2004) (although the U.N. Secretariat initially served as Secretariat of the International Criminal Court, the Court voted on September 12, 2003 to establish the Permanent Secretariat of the Assembly of States Parties to the Rome Statute, which assumed its role on January 1, 2004). For a broad analysis of the Rome Statue and its impact on environmental warfare, see Drumbl, *supra* note 3, at 122.

156. Schmitt, *Humanitarian Law*, *supra* note 3, at 281-82.

157. Drumbl, *supra* note 3, at 124-25.

158. Schmitt, *Humanitarian Law*, *supra* note 3, at 281-83.

159. UNITED NATIONS, PREPARATORY COMM'N FOR THE INT'L CRIMINAL COURT FINALIZED DRAFT TEXT OF THE ELEMENTS OF CRIMES, art. 8(2)(b)(iv), U.N. Doc. PCNICC/2000/1/Add.2 (2000), *available at* http://www1.umn.edu/humanrts/instree/iccelementsofcrimes.html (last visited Feb. 7, 2004); *see* Drumbl, *supra*, note 3, at 129-30 (arguing that the definitional difficulties of the term may make it more effective to reduce the standard to mere "harm").

and the Rome Statute set the baseline and create some conventional law standards for active environmental warfare, both as to the *mens rea* of the parties and as to the resulting effects. The effectiveness of these documents in controlling environmental warfare has been limited, however, and has caused at least some commentators to conclude that they fail to provide "an unambiguous, cohesive approach to the international problem of wartime environmental destruction."[160] There is a need for additional clarification, particularly in the area of active environmental warfare, if the environment is to be meaningfully protected during times of armed conflict.

For example, even though Saddam Hussein's actions did not violate the ENMOD convention, they certainly violated the "intended or may be expected" standard of Protocol I. There is no doubt that Hussein intended to cause environmental harm. But as many commentators have concluded,[161] it is far from agreed that Hussein's actions violated international law or the law of war, despite his intentional destruction of the environment because of the quantum of damage requirement. Whether or not he is an "eco-criminal," the world's reaction was insufficient to prevent him from engaging in similar activities again.[162]

Despite the world's inability to deter Hussein, there is "strong indicia of a general and consistent practice among states [of] prohibiting ecological warfare, and of acceptance by signatory states of a legal obligation to refrain from attacking the natural environment."[163] The shortage of modern treaty or convention law, the corresponding scarcity of international custom, and the fluid nature of international law generally make coming to a precise conclusion concerning the current status of the law in the area of active environmental warfare problematic. The disjunctive wording of the ENMOD Treaty, however, provides strong evidence that a lower threshold of action is allowed when active environmental warfare is at issue.

Further, the recent trends illustrated by the work of the ICRC and the United Nations provide an indication that world opinion is strongly opposed to any use of the environment as a weapon during hostilities. That there has been neither derogation from the ENMOD convention to present day by its signatories nor any act that would be considered a violation by non-signatories (continuing arguments concerning Iraq's actions excepted)—*and* that many recent treaties

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160. Richards & Schmitt, *supra* note 3, at 1073.

161. *See supra* note 14.

162. *See supra* note 9.

163. Suzanne M. Bernard, *Environmental Warfare: Iraq's Use of the Oil Weapon During the Gulf Conflict*, 6 N.Y. INT'L L. REV. 106, 113 (1993).

and conventions attempt to codify such a principle—indicates that a customary norm against active environmental warfare now exists.

2. Military Necessity

Even if the law of environmental warfare were clear, some have argued that the environment would still not be sufficiently protected because of the doctrine of military necessity[164] (as found in the 1907 Hague Rules), which requires a commander to balance destruction of the environment, along with other property, against the military necessity of the action.[165] A commander may destroy civilian property, including the environment, only if he deems there is a sufficient military purpose. In fact, this doctrine is so fundamental to military operations that one commentator has stated "[o]nly one obligation in the law of war actually relates to the environment: The prohibition on the destruction of enemy property that is not justified by military necessity."[166] Others argue, "[m]ilitary necessity has . . . become the main justification for deviation from restrictions in customary law. . . . While a number of principles relate to protection of the environment during warfare, they are all subordinated to the principle of military necessity."[167]

Historically, military necessity has been used to justify attacks against the environment. For example, military necessity was used to justify attacks on dams in North Korea but to preclude attacks on others.[168] Some argued that Saddam Hussein used military necessity as his justification for intentionally destroying the environment in Gulf War I.[169] Detractors of the military necessity doctrine, particularly as it relates to protections for the environment, argue "[i]f there is no information in [the commander's] consciousness about the potential environmental effects of his or her action, how can he or she be expected to validly use a military necessity balancing test? If

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164. Schwabach, *supra* note 6, at 134.

165. Whitaker, *supra* note 13, at 32-33.

166. Low & Hodgkinson, *supra* note 5, at 414 (citations omitted).

167. GURUSWAMY ET AL., INT'L ENVTL. LAW AND WORLD ORDER 1069 (1999), *quoted in* Arkin et al., *On Impact: Modern Warfare and the Environment - A Case Study of the Gulf War* 116, 123 (1991), *reprinted in* Cohan, *supra* note 17, at 531-32.

168. *See* Burrus M. Carnahan, *Lincoln, Lieber and the Laws of War: The Origins and Limits of the Principle of Military Necessity*, 92 AM. J. INT'L L. 213, 229 (1998) (stating that U.S. and U.N. forces in the Korean War would only authorize the bombing of dams as a "military necessity" when the result would cut off communications and not food production).

169. *Id.* at 231 (rejecting Iraq's use of "environmental terrorism" as an exercise of military necessity); Sharp, *supra* note 5, at 46 (stating "The Deputy Legal Advisor of the Department of State stated that the principle of military necessity 'was repeatedly and wantonly violated by Iraq in the Gulf War'").

one side of the balance is always perceived as zero, the scale will always tip in the other direction—military necessity."[170]

Compounding the problem, "the risks of normative imprecision grow when retroactive judgments on reasonableness and necessity are required."[171] A commander's application of military necessity is based on the facts as he knows them at the time of decision,[172] after sufficient attempts to gain all possible information.[173] Reviewing a commander's decision, including a determination of what information he knew and had available to him at the time of the decision, is not the most effective means of protecting the environment.

Of vital importance in this area, however, is the fact that military necessity is not a justification for violating the law of war.[174] This is particularly important when considering the value of differentiating between active and passive environmental warfare. While the doctrine of military necessity is an important consideration when a commander considers the passive environmental effects of his military actions, non *de minimus* active environmental warfare is a violation of the law of war per se and could not, therefore, be justified by the doctrine of military necessity.

When considering the passive environmental effects of warfare, a commander must balance his proposed actions between the amount of damage those actions might cause and the necessity of the military action. Once the results of his actions have reached the GPI standard of widespread, long-term and severe, he can no longer justify his actions by military necessity because GPI has set "an absolute ceiling of permissible destruction" to the environment.[175] "In other words, once the threshold is reached, the action violates the prescriptions even if it is militarily necessary and clearly proportional under traditional balancing tests."[176] In contrast, active environmental warfare cannot be justified by military necessity as it violates the law of war.

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170. Hourcle, supra note 3, at 690.

171. Richards & Schmitt, *supra* note 3, at 1076.

172. *See* United States v. Wilhelm List et al., XI Trials of War Criminals Before the Nuremberg Military Tribunals Under Control Council Law No. 10, 1295 (1950) [hereinafter Wilhelm]; Cohan, *supra* note 17, at 493 (recounting the acquittal of German General Lothar Remdulic for destruction of property after initiating a scorched earth policy in Finmark during World War II).

173. *See* Eric T. Jensen, *Unexpected Consequences From Knock-On Effects: A Different Standard for Computer Network Operations?*, 18 AM. U. INT'L L. REV. 1145, 1181-87 (2003) (applying the Court's standard for judging General Rendulic's scorched earth policy of whether he has given "consideration to all factors and existing possibilities ... as they appeared to [him] at the time" plus the concept of "feasibility" to the permissibility of computer network attacks as an exercise of military necessity).

174. *See* Wilhelm *supra* note 172, at 1256.

175. Whitaker, *supra* note 13, at 37.

176. Cohan, *supra* note 17, at 505.

> Attacks in which environmental harm is the primary goal, whether by forcing an axe against trees which produce fruit or by spraying defoliants on tropical rainforests from airplanes, has invariably met with condemnation. Attacks in which damage to the environment is an unsought consequence of the achievement of some other objective, such as the impairment of an enemy's ability to produce weapons, has generally been excused on the basis of "military necessity."[177]

Some have argued that there is a danger in minimizing the application of military necessity in favor of environmental protection. One commentary rightly asks, "On what grounds can we justify a categorization that makes humanity less worthy of protection than the rest of the ecosystem?"[178] The authors pose the hypothetical situation of international environmental law proscriptions forcing a commander to "launch an attack through a village rather than around it to avoid Article 35(3) damage to a large, environmentally fragile area on the village's outskirts."[179] It is likely "that a commander would not be expected to sacrifice a soldier to save a tree."[180]

Distinguishing between the application of military necessity to passive and active environmental warfare solves this problem. Because the destruction of the environmentally protected area to avoid killing innocent civilians would come under a passive environmental analysis, the commander would balance military necessity against the necessity of the action unless he determined that his actions reached the GPI standard of widespread, long-term, and severe damage. In contrast, because active environmental warfare deals with choices of means and methods of warfare, if the commander's choice was between an active use of the environment against the enemy and some other method or means, he could not rely on military necessity and would be forced to attack some other way.

Thus, the doctrine of military necessity remains intact for passive environmental damage, allowing a commander to balance accomplishing the mission against incidental damage to the environment until it reaches the standard of widespread, long-term, and severe damage. But military necessity is no defense to active environmental damage because it is a violation of the law of war per se.

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177. Schwabach, *supra* note 6, at 139.

178. Richards & Schmitt, *supra* note 3, at 1088.

179. *Id.* at 1084.

180. Michael D. Diederich, Jr., *"Law of War" and Ecology - A Proposal for a Workable Approach to Protecting the Environment Through the Law of War*, 136 MIL. L. REV. 137, 157 (1992).

3. Conclusion

There is an obvious trend in international environmental law to protect the environment. While numerous international documents provide protections, there is no clear standard or pattern that emerges. Though GPI and ENMOD provide standards, their use of similar language and different application of restraints confuse an already difficult area of the law. Further, the undifferentiated application of the doctrine of military necessity to environmental warfare will lead to false allegations while not providing legitimate protections. Applying the distinction between active and passive environmental warfare adds clarity that is greatly needed. ENMOD began this process but did not go far enough—as Protocol III, CCW, and subsequent state actions have amply illustrated. For the environment to gain the protections it needs to continue so it can provide sustenance to the human race regardless of armed conflict, further changes in international law are needed, based on the distinction between active and passive environmental warfare.

V. THE NEED FOR A CHANGE

> All wars are destructive—to people, to countries and to the environment. That is why the Geneva Conventions and Protocols and other international laws discourage the worst excesses of armed conflict, including the targeting of civilians, the mistreatment of prisoners of war, and the destruction of sensitive infrastructure such as large dams and nuclear power stations.
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> However, with the increasingly devastating potential of modern warfare, it has become apparent that existing international laws do not fully address the danger that conflict poses to the environment. That danger takes many forms, including the indiscriminate use of landmines, the ecological destruction caused by mass movements of refugees, and the potential devastation threatened by weapons of mass destruction. While instances in which the environment is deliberately targeted are relatively few, there remain too many grey areas where more care could, and should, be exercised to protect the environmental base on which sustainable development and recovery from conflict largely depend.
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> . . . [T]he international community . . . [should] examine how legal and other mechanisms can be strengthened to encourage environmental protection in wartime. Ensuring environmental sustainability is not a

> luxury; it is a prerequisite for the future peace and prosperity of our planet.[181]

There is no doubt that international law is moving in the direction of greater protection for the environment in all situations, including warfare. But this may be a very slow and unguided process. An excellent starting point is recognition by the international community of the distinction between active and passive environmental damage. If this distinction were written into future treaties and conventions and discussed openly and fully by state governments and in United Nations Declarations and Resolutions, it would quickly become a usable standard by which environmental damage could be differentiated. Once differentiated, the appropriate remedies could be tied to specific acts of active and passive damage and a regimen for enforcement implemented. Crucial to effective enforcement of international wartime environmental standards, as shown by the international community's inability to act after the first Gulf War, is a clear understanding of what constitutes a violation and how severe that violation is. The categorization of wartime environmental damage as active or passive on the international level will be a significant step in that process.

VI. A PROPOSED SOLUTION

A beginning effort in enhancing the wartime protections for the environment is the following proposal for a Convention on the Protection of the Environment During Armed Conflict.[182] Although some have argued for a fifth Geneva Convention,[183] this would not be the best solution. Two of the hallmarks of the four Geneva Conventions of 1949 are Articles 2 and 3. These Articles, known as "common" articles because they are identical in all four Conventions, define the application of the conventions, making them only applicable in cases of international armed conflict.[184] Any new proposal to protect the environment must be fashioned to protect it in

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181. *Existing Laws Not Sufficient to Address Danger Posed to Environment by Conflict, Secretary-General Says in International Day Message*, M2 PRESSWIRE, Nov. 6, 2003, *available at* LEXIS, Nexis Library, CURNWS File.

182. Richards & Schmitt, *supra* note 3, at 1089-90 (discussing the problems with proposing a new convention to protect the environment until the international community has clarified what it wants the convention to accomplish).

183. *See supra* note 9.

184. *See* David Kaye & Steven A. Solomon, *CURRENT DEVELOPMENTS: The Second Review Conference of the 1980 Convention on Certain Conventional Weapons*, 96 AM. J. INT'L L. 922, 925 (2002) (highlighting the fact that the Geneva Conventions apply more fully to international rather than domestic conflicts as a result of historical trends and an unwillingness of leaders to give up perceived rights in the domestic context).

all types of armed conflict, not just those between two states. Similarly, calls for a Protocol V to the CCW[185] would also fall short of the desired coverage because this convention is also limited in scope to international armed conflict.[186]

To truly provide the breadth of protection required for the environment, a new international agreement is necessary. It must govern all forms of armed conflict[187] and not be subject to modification or derogation by domestic law. It must be built on the distinction between passive and active damage to the environment and confirm the application of existing principles to passive armed conflict while expanding and clarifying the prohibitions on use of the environment as a method of armed conflict. Such a convention would resolve the confusion that currently exists and provide a solid foundation upon which to build remedies for violations of the law.

The following section is the proposed text for a convention that will accomplish these purposes. Section B contains a textual analysis of the proposed convention.

A. *Convention on the Protection of the Environment During Armed Conflict*

The High Contracting Parties,

Recognizing the unique nature of the environment and the universal human reliance upon the environment for continued existence,

Recalling Principle 21 of the Stockholm Declaration of the United Nations Conference on the Human Environment, the World Charter for Nature, and Principle 24 of the Rio Declaration from the 1992 United Nations Conference on the Environment,

Have agreed as follows:

Article 1

The purpose of this Convention is to protect the environment during times of armed conflict.

Article 2: Definitions

For purposes of this Convention, the following definitions apply:

1. Active Environmental Warfare: the intentional use of the environment as a weapon of waging armed conflict.

2. Armed Conflict: any conflict as defined in Articles 2 or 3 common to the Geneva Conventions of 12 August 1949.

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185. *See supra* note 9.

186. *See* LAWS OF ARMED CONFLICTS, *supra* note 46, at 180.

187. *See* Parsons, *supra* note 3, at 444-45 (arguing that as technology changes the nature of warfare, the world must unify to ward against the increased potential for environmental calamity).

3. Passive Environmental Warfare: acts not specifically designed to use the environment for a particular military purpose but that have a degrading effect on the environment.

4. Sustainable Environment: those aspects of the natural environment necessary to sustain itself, including the continued existence of all forms of human, animal, and plant life.

Article 3: Obligations

Each State Party to the Convention undertakes, during times of armed conflict, to:

1. Not engage in active environmental warfare that will damage the sustainable environment.

2. Not engage in passive environmental warfare that will result in widespread, long-term, and severe damage to the natural environment.

Article 4: Implementation

Each State Party to the Convention agrees to implement fully and expeditiously domestic laws and military regulations that will ensure understanding and compliance with the provisions of this Convention.

B. *Textual Analysis*

The Preamble refers to some of the prior United Nations statements on protections for the environment. The initial statement recognizes both the intrinsic and anthropocentric views of valuing the environment.

Article 1 states the overall purpose of the Convention. For the Convention to achieve its purpose, it must apply to armed conflict generally, not simply international armed conflict. The acceptance as customary law of the "no harm" principle, and in particular its relevance to armed conflict in the *Corfu Channel* case discussed above,[188] make this the necessary application of the Convention.

Article 2 contains definitions that apply to the Convention. While some of these definitions may seem broad, particularly the natural environment and sustainable environment, this is done intentionally. In this case, greater detail may serve to limit the Convention's initial usefulness.[189] The principles are sufficiently clear, and state practice will fill in the nuances over time.

The definitions of active and passive environmental warfare have been discussed at great length above.[190] The use of the term warfare may initially appear problematic because the Convention applies to all forms of armed conflict, not just traditional war between two states. As it is used here, it is not a comment on the

188. *See supra* note 67.
189. Parsons, *supra* note 3, at 467.
190. *See supra* Part III.

type of conflict, but rather on the type of employment. The use of the term warfare in this Convention limits these terms to the application between belligerents or other hostile forces in armed conflict.

The definition of Armed Conflict is meant to coincide with Pictet's commentary to the Geneva conventions[191] and is meant to have the same understanding given therein.

The definition of sustainable environment is meant to be broadly inclusive. As written, there could be instances in which active environmental warfare damaged the natural environment but did not damage the sustainable environment. This gap is deliberate. Not all intentional uses of the environment as a weapon are proscribed. Uses that do not affect the sustainable environment would be of such minor import that they would not violation the Convention. The foundation of the proscription on damaging the sustainable environment is found in the second sentence of Article 55 of GPI as analyzed previously.

The actual restrictions of the Convention are stated in Article 3. They rely heavily on the definitions as described in this Article. The intention of the Convention is still to apply the GPI standard to passive environmental warfare as found in the first sentence of Article 55 and allow the *de minimus* exception of the second sentence of Article 55 to active environmental warfare.[192] Some commentators have urged that intentional damage to the environment ought to be prohibited per se.[193] But tying the quantum portion of the prohibition to the sustainable environment is a much better compromise between the intrinsic value approach and the anthropocentric approach. It is also founded on the current principles of international law, such as Articles 54 and 55 of Protocol I.[194]

VII. CONCLUSION

Environmental warfare, both active and passive, is a part of modern warfare. The Stockholm International Peace Research Institute has concluded that as the technology of weapons has increased, the number of munitions used to kill an enemy soldier has

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191. *See* COMMENTARY, *supra* note 130, at 35-36 (advocating a wide application of an extensive list of criteria attempting to distinguish "a genuine armed conflict from a mere act of banditry or an unorganized and short-lived insurrection").

192. Yuzon, *supra* note 3, at 843.

193. Drumbl, *supra* note 3, at 143.

194. Richards & Schmitt, *supra* note 3, at 1069; Schmitt, *Environmental Law of War*, *supra* note 25, at 256; Yuzon, *supra* note 3, at 817-23.

likewise increased. This led to the conclusion that the amount of environmental damage caused in warfare is also escalating.[195]

Gulf War I has amply illustrated the difficulties of holding a state responsible for environmental damage caused during warfare under the current effects-based paradigm. A well-recognized differentiation between active and passive environmental warfare, and an understanding of its application, will help solidify the standards of state responsibility and provide increased protection for the environment.

The lower threshold for breaching international environmental law when engaged in active environmental warfare will lead to heightened state liability and will preclude commanders from weaponizing the environment. This, in turn, will give the world community greater legal impetus for holding violating states individually liable and increase the legal basis for enforcement of international obligations. This increase in legal enforcement will draw the line of acceptable behavior a little closer to ensuring a protected environment.

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195. See STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE, *Warfare in a Fragile World: Military Impact on the Human Environment*, 4 (1980) (hypothesizing an increase in environmental harm caused by an apparent shift in military targets from concentrated target bombing to less defined area bombing).

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