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Protecting Vulnerable Environments in International Humanitarian Law

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I. Introduction: The Uneasy Relationship Between International Humanitarian Law And The Protection Of The Environment

International Humanitarian Law\(^1\) sets limits on the rights of belligerents, within the course of hostilities, to “cause suffering and injury to people and to wreak destruction on objects, including the natural environment.”\(^2\) While the main focus of IHL has always been humanitarian concerns, the public conscience currently recognises a need for IHL to encompass environmental considerations. Unfortunately, the law is slow to adapt and does not currently reflect these changing values. The current protection the law affords to environments from the devastation of hostilities is ambiguous, limited, and unenforceable; moreover, the law does not account adequately for the special needs of certain environments, which are referred to here as “vulnerable environments”. The existing literature over-generalises the multi-faceted nature of environments and elides the highly specific issues that must be considered.

Vulnerable environments are those in which even slight changes in the biosphere can exponentially increase harm, potentially resulting in wide-scale, if not world-wide, repercussions. It is not that vulnerable environments constitute a class of their own with distinct rules; the distinction lies, rather, in how the general rules protecting the environment are to be applied. The rules of IHL should require a context sensitive interpretation, which allows the general features of IHL to be applied appropriately to the peculiarities of vulnerable environments.

In today’s interconnected world, serious issues are not confined to national borders. The issues each country faces, whether related to politics, security, or the environment, are inextricably linked and resonate within the international community.

Few threats to peace and survival of the human community are greater than those posed by the prospects of cumulative and irreversible

\(^{1}\) Henceforth known as “IHL”.

degradation of the biosphere on which human life depends. True security cannot be achieved by mounting buildup of weapons, but our survival depends not only on military balance, but on global cooperation to ensure a sustainable environment.  

As “security anywhere depends on sustainable development everywhere,” there is a growing unmet need for an international legal framework that adequately reflects this interconnectivity. The degradation of the environment is a critical, global concern with severe consequences beyond strictly environmental concerns. Environmental degradation, in the context of conflict, could even affect the political stability of a country.

Until the 1970s, the term “environment” did not appear in any IHL instruments, although some indirect protections for the environment are found. While the environment is not explicitly mentioned, it is arguable that some of the terminology used in these texts can be interpreted to provide direct protection. Although not generally considered rules of IHL, treaties of International Environmental Law can also afford protection to the environment during armed conflict. The most direct sources of environmental protection within IHL are: the 1977 Additional Protocol I to the Geneva Conventions of 1949 and the 1976 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques. Certainly, these are innovative instruments by linking environmental protection and IHL, but the question remains, are they actually effective?

Beyond pure treaty law, the environment could perhaps receive protection from customary principles of IHL. The customary principles of proportionality and military

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3 Independent Commission on International Development Issues, *North-South: A Programme for Survival*, 15


7 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, Dec. 10, 1976, 1108 U.N.T.S. 17119, henceforth known as “ENMOD”.

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necessity could play a significant role in protecting vulnerable environments if there were a way to establish an objective valuation of these elements. Such an objective valuation could be achieved by adopting an anthropocentric approach to environmental protection. The problem is, if the environment is protected solely as a human asset, vulnerable environments may be left unprotected. For example, only a small portion of the Arctic is inhabited by humans. It is arguable that disturbances in vulnerable environments such as the Arctic have significant effects on the rest of the world and it is therefore in the interest of humankind to protect these areas notwithstanding the small human population. However, as global effects can take years to manifest, it is extremely difficult to determine future impact on human populations. Therefore, avoiding an anthropocentric threshold, and instead focusing on protecting the environment in and of itself is more effective. But is pure ecocentrism politically realistic?

An examination, such as is undertaken here, of the various protections IHL currently provides for the environment demonstrates that the current state of the law is manifestly inadequate to protect vulnerable environments. The current legal framework does have the potential to provide sufficient protection, but the law is rife with ambiguities, inconsistencies, and ineffective enforcement mechanisms, leaving vulnerable environments dangerously exposed to the devastation of warfare. Although a new comprehensive treaty or convention could be an important step forward, any new instrument would likely contain the same uncertainties; realistically, the tradeoffs in drafting, may leave environmental protection at the “lowest common denominator.”

8 Rather than a new treaty, the international community must focus on clarifying and interpreting existing law in a manner that gives adequate consideration to vulnerable environments.

II. Vulnerable Environments

A. “Environment” as Defined by International Law

Before determining how far IHL protects vulnerable environments, the meaning of “environment,” as defined by international law, must be established. Unfortunately, there is no concrete or universally agreed upon definition of the “environment.” Guidance can be

8 See the discussion in section IV(D).
obtained from the International Committee of the Red Cross Commentary on Additional Protocol I, which suggests that the environment “should be understood in the widest sense to cover the biological environment in which a population is living – i.e. the fauna and flora – as well as ‘climatic elements’.” The environment in this context encompasses the entire complex of factors (living and non-living) that influence an organism’s form and survival.

Further complicating the definition of “environment,” is the tendency of some international instruments to refer to a “natural” environment as opposed simply to the “environment”. Does reference to a natural environment mean that there is a separate concept for a “human environment”? According to Hulme, if there were such a distinction, a human environment would refer only to “immediate surroundings in which the civilian population lives.” Hulme believes that the drafters of AP-I envisioned three distinct categories of environment: 1) immediate human surroundings; 2) cultivated environment; and 3) natural environment. Accepting this distinction would result in a further restriction in AP-I’s ability to protect the multi-faceted nature of environments because of the sole reference to natural environments.

As a result, it could be argued that artificially created environments would not be protected by AP-I, as evidenced by the fact that there are separate articles in AP-I that deal with works and installations. In contrast, the literature offers recommendations for natural

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9 Henceforth known as the “ICRC”.


11 Karen Hulme, War Torn Environment, Interpreting the Legal Threshold 13 (2004), henceforth known as “War Torn Environment”.

12 Karen Hulme, Environmental Protection In Armed Conflict, in Research Handbook On International Environmental Law 586, 591 (Malgosia Fitzmaurice et al. eds., 2010), henceforth known as “Hulme Environmental Protection”.

13 Id.

14 Such as Article 56.
environments to be interpreted as broadly as possible. However, one cannot separate a human environment from its natural features and therefore, for the purposes of this dissertation, the broader interpretation of environment is adopted.

B. What is a “Vulnerable” Environment and Why it Needs Special Protection

1. Fragility and Biomagnification

All military activity inevitably results in some degree of environmental destruction. Missiles, gunfire, mines, and the setting up of military camps disrupt the surrounding environment. However, the same military activities will have different environmental consequences depending upon the environment in which it occurs. A mine exploding in the desert will not have the same environmental implications as a mine exploding in the Arctic. While serious damage to the environment, from military activity, generally must be prohibited, it must be recognised that there are certain areas that require additional protection because they are particularly vulnerable. These areas are more sensitive to change, where restoration after disturbance is difficult, and in which damage has a magnified effect in that particular environment and for the world as whole. In short, these are fragile areas in which disturbance carries the potential for serious magnification.

Vulnerable environments such as rainforests, coastal areas, and polar regions are areas where the environment is so fragile that even slight disruptions could have disastrous consequences. Slight changes in marine life can alter ocean currents and cause massive flooding, hurricanes, and tsunamis with impacts far from the local site. The Amazon rainforest produces approximately 20% of the world’s oxygen and houses 2.5 million insect species, tens of thousands of plants, and thousands of birds and mammals. Polar regions, such as the Arctic, are areas of extreme temperatures in which fluctuations in natural processes have implications that reverberate in the rest of the world: “[t]he Arctic basin plays


a unique role in global environmental processes, giving a number of useful feedbacks for the Earth’s climatic system. [A]dverse impacts on Arctic ecosystems may well lead to an increase in regional or even global scale negative consequences.”

Many international organisations and military manuals have begun recognising the need to protect certain environmental areas. The San Remo Manual\(^\text{18}\), recognises that certain areas of the world are particularly vulnerable. It stresses the need to reach agreement on not engaging in hostile activities in areas containing rare or fragile ecosystems. The South Pacific Applied Geoscience Commission (SOPAC), the United Nations Environment Programme (UNEP), and their partners have developed an “Environmental Vulnerability Index” to identify particularly vulnerable environments, measure how vulnerable they are, and develop ways to build resilience.\(^\text{19}\) Interestingly, UNESCO’s World Heritage Center list of cultural and natural sites affords special protection to sites such as the Kvarken Archipelago that is protected on the basis that it is rising from rapid glacio-isostatic uplift, at one of the highest rates in the world. Protection under UNESCO, however, is dependent on individual States ratifying the 1972 Convention for the Protection of the World Cultural and Natural Heritage\(^\text{21}\) and lacks a sufficient enforcement mechanism. Even if the World Heritage Convention became customary law, or if all States ratified the Convention, it does not account for vulnerable environments in the context of fragility and biomagnification.

2. **An Example: the Arctic**

While there has not yet been actual conflict in the Arctic, recent scientific discoveries have made the potential for conflict in, or around the area, a legitimate threat. The extreme

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\(^{18}\) INTERNATIONAL INSTITUTE OF HUMANITARIAN LAW, *SAN REMO MANUAL ON INTERNATIONAL LAW APPLICABLE TO ARMED CONFLICTS AT SEA* (1994), henceforth known as the “San Remo Manual”.

\(^{19}\) Id., at part I section IV(11).

\(^{20}\) For more information on the index see EVI, *Environmental Vulnerability Index*, http://www.vulnerabilityindex.net/EVI_2005.html (last visited Feb 12, 2014) henceforth known as “EVI”.

\(^{21}\) Convention for the Protection of the World Cultural and Natural Heritage, Nov 16, 1972, 1037 U.N.T.S. 15511, henceforth known as the “World Heritage Convention”.

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vulnerability of the Arctic region coupled with the devastating effects any changes to its environment could have, not only to the organisms and resources within the Arctic, but to the entire globe, highlight the need for effective laws to protect the Arctic in times of armed conflict. The Arctic is arguably one of the most vulnerable environments and yet it is one of the few areas in the world not strictly governed by international law. There are no Arctic-specific rules of IHL; it is an area that is grey, and not just in color.

The Arctic is a cold, fairly isolated, and often overlooked region, fostering the belief that no one would engage in war in, let alone over, the North Pole. This misconception has left the area dangerously unprotected. Certainly, there is a lack of sufficient protection for the environment in general, but the Arctic presents special needs. The extreme conditions, including highs of 4°C in the summer and -60°C in the winter, mean slow ecological reactions and processes. Therefore any pollutant introduced into this environment would take much longer to dissipate and such biomagnification would not only accelerate global warming but present a serious threat to polar organisms.

The threat to the Arctic and the disastrous impacts of warfare are real and there is an increasing expansion of military activities present there. Huebert demonstrates that an arms race may be underway among Russia, Canada, Denmark, Norway, and the US, as they prepare their militaries for a potential Arctic conflict. “Conflict in the Arctic isn’t a doomsayer’s dark fantasy. It is something that has already happened. And it could easily happen again.” With increasingly hot temperatures, the ice caps’ melting has uncovered a large amount of methane and other natural gases. Scientists believe that the Arctic holds up to

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22 Ashley Barnes and Christopher Walters, *The Arctic Environment and International Humanitarian Law*, 49


25 *Id*., at 23.

a quarter of the world’s natural gases and countries are rushing to stake their claims. As events precipitate, urgency for action to protect the Arctic increases. Witness, for example, the attempt by Russia to acquire territorial rights by planting a flag under the ice.\textsuperscript{27} Even though Russia’s action was not a legitimate way to acquire sovereignty, it is a sign of the potential for conflict.

Military forces fighting on land or sea near the Arctic regions must to take into account the fragile characteristics of this area. The use of regular military vehicles could erode the Arctic tundra, oil released under the ice could spread further causing widespread melting, and explosions could leave toxins seeping into the ocean floor which would persist longer and pose an ongoing threat to aquatic life as regeneration in this environment is exceptionally difficult. Due to the interconnectedness of the Arctic with the rest of the world, these seemingly innocuous events could have serious repercussions. The Arctic presents a paradigm of vulnerability and illustrates the need for specific protection in IHL.

III. Current State of the International Humanitarian Law Protecting the Environment

The main focus of IHL, as the name suggests, has always been humanitarian concerns: i.e. preserving human life, distinguishing between combatants and civilians, and limiting the methods and means of warfare, in pursuance of those goals. Because IHL aims to protect the civilian population, it must protect the natural environment “without which human life is impossible.”\textsuperscript{28} The concept of “vulnerable environments” and their special needs is not yet recognised by the international community. An understanding of the extent and limitations of the current IHL protecting the environment in general is necessary in order to grasp the special needs for protection of vulnerable environments.


A. Additional Protocol I to the Geneva Conventions and ENMOD

The Vietnam War (from the mid-1950s to 1975) was the first war to be televised, bringing the atrocities of war into the people’s living rooms.\textsuperscript{29} Millions of people around the world witnessed bombing campaigns, troops on patrol, and napalm strikes devastating human life. This was not only the first time the realities and atrocities of war were widely witnessed, but it was also the first time people saw the destruction and disastrous effects wars have on the environment, such as the forest defoliation. The then existing Hague Law\textsuperscript{30} and the four Geneva Conventions, two of the main sources of IHL, make no mention of the environment.\textsuperscript{31} It was not until the mass public exposure of the Vietnam War that the need to protect the environment from hostilities was recognised, culminating in two major legal developments: AP-I and ENMOD.

1. AP-I

The 1977 Additional Protocol I to the Geneva Conventions contains two important articles that directly protect the environment. Article 35(3) states: “it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment.” Article 55 follows:

[C]are 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.

Unfortunately, this “may be expected” formula may be expected to cause problems; in the case of vulnerable environments, effects take time to develop, are difficult to measure, and may be unexpected. Nevertheless, as these AP-I articles protect against \textit{foreseeable} damage,
intentional or not, they do seem to be more flexible than ENMOD’s limit to intentional infliction of damage as discussed below.

An interesting aspect of Article 55 is that it refers to the health of the population. Mere survival is therefore not sufficient; if the health of the population is affected, the action will be prohibited. Further, using the expression “population” (omitting the qualifying word “civilian”), demonstrates the all-encompassing nature of this prohibition. “This was a purposeful omission underscoring that the whole population, ‘without regard to combatant status’, is alluded to.” This is important, as the environment does not have a way to distinguish between combatants and civilians; the air cannot be polluted only for combatants. As big a step as this is in bestowing the environment direct protection in the face of armed conflict, two caveats must be mentioned (which will be discussed in section IV): 1) Article 55 protects the environment in relation to “the health or survival of the population”, or anthropocentrically and 2) the three-fold threshold of “widespread, long-term, and severe” provides for a very high threshold to cross.

2. ENMOD

ENMOD was also formulated in the wake of the Vietnam War. The Convention was adopted to prevent the manipulation of the environment as a weapon during hostilities.

Each State Party to this Convention undertakes not to engage in military or any other hostile uses of environmental modification techniques having widespread, long-lasting, or severe effects as the means of destruction, damage, or injury to any other State Party. 34

32 See Conduct of Hostilities, supra note 10, at 210 citing Jean De Preux and Claude Pilloud, Article 35, in

COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTION OF 12 AUGUST 1949, 389, 419 (Yves Sandoz et al. eds., 1987) henceforth known as “De Preux”.


34 Art 1(1).
Article 2 goes on to define the term “environmental modification techniques”. Once again, the three-fold threshold of widespread, long-term, and severe appears. However, in contrast to AP-I, ENMOD uses “or” rather than the conjunctive “and”, resulting in a significantly lower threshold.

While the lower threshold for damage is a positive sign of ENMOD’s capability to protect the environment from being used as a weapon in armed conflict, it does not protect the environment as a victim destroyed by a weapon. In fact, Article 8 does not protect the environment from any actual damage but from intentionally using the environment as a method of attack. AP-I aims to protect the environment from damage or destruction from warfare while ENMOD aims to protect the environment from being used as a method of warfare.

Using the environment as a method of warfare, however, would occur in very limited circumstances and the uses anticipated by the Convention appear to be futuristic, if not speculative. There are some exceptional instances in which conventional methods of warfare can create destruction induced by environmental modification, such as global climate change from the deforestation of the Amazon rainforests by fire. Yet ENMOD “continues to limit the use of weapons which at times smack of science fiction, but remains helpless in the face of very real threats”, as most of the phenomena described in Article 2 require unconventional weapons.

In order for a manipulation of the environment to be in violation of ENMOD, several conditions must be met, of which Dinstein identifies six. First, the use of the environmental modification techniques must be hostile, thus leaving open the possibility of harming the environment for “peaceful purposes”: “The provisions of this Convention shall not hinder the use of environmental modification techniques for peaceful purposes and shall be without prejudice to the generally recognized principles and applicable rules of international law.

36 See Bouvier, supra note 2, at 564 (emphasis added).
37 See Dinstein Max Planck, supra note 33 at 526-529.
38 Art 1(1).
Second, the prohibited action must be a *manipulation* of natural processes. Third, the action must be *deliberate* thereby excluding unintended collateral damage. Fourth, is the widespread, long-lasting, or severe threshold of damage. Fifth, the conduct must cause destruction, damage, or injury even if the damage is beyond what was foreseen or intended. Sixth, the damage must be to another state that is party to ENMOD. Consequently, damage to a state not party to ENMOD or an attack within the same state is not prohibited. To illustrate these conditions, the hypothetical invasion of Alaska by Russia is considered. If the US thwarted the Russian invasion by sending missiles to the Arctic Circle area of Alaska, with the aim of creating large craters, this *manipulation of the environment* would be excluded from the scope of ENMOD protection.

### 3. Customary Status?

Even if AP-I and ENMOD provided for effective protection of vulnerable environments, many major countries are not party to one or both; e.g. the US is not party to AP-I, and therefore not bound by its obligations. The question then becomes, have these treaty “rules” become customary international law? If customary law, these rules form part of the core of *jus in bello* and become *erga omnes* obligations. In order to become customary law, the norm must exhibit widespread practice and the international community must appear to view the rule as obligatory.\(^{40}\) If AP-I and ENMOD are considered expressive of customary norms, the protection these instruments offer the environment, would be obligatory regardless of a state’s signatory status.

The literature presents extremely differing views about the customary status of these instruments. Cassese believes that Article 55 “already reflects a general consensus and thus is binding on all members of the world community”\(^{41}\), while Dinstein denies any reflection of customary international law in either AP-I\(^{42}\) or ENMOD\(^{43}\). Greenwood takes a moderate

\(^{39}\) Art 3(1).


\(^{41}\) Antonio Cassese, *International Law* 419-420 (2nd ed. 2005).

\(^{42}\) See Conduct of Hostilities, *supra note 10* at 206.

\(^{43}\) Dinstein Max Planck, *supra note 33* at 530.
position claiming, “the core of that principle [contained in Article 35(3)] may well reflect an emerging norm of international law”.\textsuperscript{44} One may argue, in line with the US position,\textsuperscript{45} that since the precise meaning and nature of Art 35(3) and 55 are ambiguous, and not unanimously agreed upon, a customary norm could not be born out of such imprecision. But if customary laws were to be determined on that basis, there would be no customary laws in international law, as the majority of norms contain some degree of imprecision and are the center of much debate.

The International Court of Justice\textsuperscript{46}, in its Advisory Opinion on the \textit{Legality of the Threat or Use of Nuclear Weapons}, found that Articles 35 and 55 “embody a general obligation to protect the natural environment against widespread, long-term, and severe environmental damage.”\textsuperscript{47} Although the ICJ conceded that these obligations are only upon those states subscribed to them. More convincing of the normative status, however, is the fact that the three-fold threshold of widespread, long-term, and severe is included in the ICRC’s authoritative study on the customary principles of IHL conducted ten years after the ICJ’s Advisory Opinion.\textsuperscript{48}

International law, especially international humanitarian law, is rapidly changing; and although the importance of protecting the environment is only a relatively recent development, there appears to be a consensus on the need to protect the environment from armed conflict. Regardless of whether AP-I and ENMOD have entered the realm of customary international law, the terms are too vague and the protection afforded is too

\begin{thebibliography}{99}
\bibitem{46} Henceforth known as the “ICJ”.
\bibitem{47} Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J Rep 226, §31 (July 8), henceforth known as “Nuclear Weapons Advisory Opinion”.
\bibitem{48} ICRC, \textit{CUSTOMARY INTERNATIONAL HUMANITARIAN LAW} 152 (2009), henceforth known as “ICRC CIHL”.
\end{thebibliography}
limited to provide sufficient protection to vulnerable environments from the hazards of warfare.

B. Other Direct Protections

1. International Instruments

Following AP-I and ENMOD, the 1998 Statute of the International Criminal Court\(^{49}\), also known as the Rome Statute, Article 8(2)(b)(iv) declares war crimes to include “intentionally launching an attack in the knowledge that such attack will cause ...widespread, long-term and severe damage to the natural environment which would clearly be excessive in relation to concrete and direct military advantage anticipated.” The explicit involvement of the proportionality test merits critical discussion. In order for the war crime to crystallize, the damage must be *excessive* compared to the military advantage anticipated, thereby adding another hurdle. As opposed to AP-I, which requires intention or expectation, the Rome Statute requires *both* intention and knowledge of the outcome. Using the conjunctive creates a higher threshold, but one that is appropriate in the context. War crimes involve individual criminal responsibility, thus, knowledge and intent are necessary to establish *mens rea*. However, just as with AP-I and ENMOD, many countries, such as the US and China, are not parties to the Rome Statute, so its practical effect is lacking.

Another text that directly protects the environment is 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\(^{50}\) Protocol III. Article 2(4) prohibits the use of incendiary weapons on forests and plant cover unless they are used by the enemy forces as camouflage. Whilst an aspect of the environment is directly protected by this provision, those protected aspects relate only to a small portion of the natural environment and prohibits only the use of incendiary weapons. Further, this prohibition ceases to apply if the vegetation becomes a military objective, which of course is precisely


when the vegetation is most likely to be targeted.\(^{51}\) Therefore, some scholars, such as Frits Kalshoven\(^{52}\), have pointed out that this provision, with its severe limitation, has little or no significance.

Other direct protections may be found in International Environmental Law treaties. Examples include the 1982 UN Convention of the Law of the Sea\(^{53}\), 1959 the Antarctic Treaty\(^{54}\), the 1994 UN Framework Convention on Climate Change\(^{55}\), and the 1979 Convention on the Conservation of European Wildlife and Natural Habitats\(^{56}\). Unfortunately, for purposes of IHL, there is serious debate over whether these treaties are applicable during hostilities. Classically, “war was a state of affairs that existed beyond the realm of international law and relations”\(^{57}\) but the more modern view recognises war as a continuation of interstate relations and should thus remain subject to pre-existing legal limits. Some treaties\(^{58}\) expressly provide for their continuance or discontinuance during war, but most environmental treaties do not directly address this issue.\(^{59}\) One argument is that belligerents are not allowed to terminate multilateral treaties and as most environmental treaties are


\(^{52}\) Such as \textsc{Frits Kalshoven and Liesbeth Zegveld, Constraints on the Waging of War: An Introduction to International Humanitarian Law} 157 (2011).


\(^{57}\) See Green War, \textit{supra note} 40 at 37; further see Justice Cardozo’\textquotesingle s judgment in \textit{Techt v Hughes} 128 N.E. 185 (NY), \textit{cert denied}, 254 US 643 (1920).


multilateral, most would remain in force.\(^60\) Even Bothe, who favours the view that multilateral treaties are suspended between the belligerents, acknowledges that “modern opinion … favors the non-suspension of certain types of obligations even between belligerents. It would appear that some basic rules relating to the environment might be counted among the latter obligations.”\(^61\)

Leibler, on the other hand, has noted that International Environmental Law mostly responded to accidents, such as Chernobyl, and was not intended to govern intentional damage.\(^62\) If one can be liable for negligent actions, should they not also be held accountable for intentional infliction of damage? As Schmitt observed: “To argue \textit{sans plus} that treaties become inoperative upon the start of hostilities is to suggest that war is really all that matters once it breaks out.”\(^63\) While the preclusive effect of hostilities may have been the case in the past, as seen from the emergence of human rights conventions and, more recently, environmental concerns, modern society recognises the need to limit the actions of belligerents to preserve and maintain society.

In support of this, the Canadian Ministry of External Affairs and the International Council of Environmental Law have both concluded that rules of general (peacetime) protection remain applicable during hostilities, unless the treaty involved is directly contradictory to IHL.\(^64\) Roberts has said that whether or not peacetime treaties are formally


\(^61\) Michael Bothe, \textit{The Protection Of The Environment In Time Of Armed Conflict}, 34 \textit{German Yearbook of International Law} 54, 59 (1991).


\(^63\) \textit{Id.}, at 38

applicable, “belligerents are expected to operate with due regard for their provisions.”\textsuperscript{65} Further, these peacetime treaties will continue to govern relations between belligerents and neutrals, and in most cases, the victims of environmental damage cannot be limited to the belligerent parties.

However, the question remains, how much protection does International Environmental Law actually afford? As Voneky contends, many protections afforded under peacetime treaties are easily undermined by aspects of IHL, such as the principle of military necessity. For example, Article 12 of the 1966 International Covenant on Economic, Social, and Cultural Rights\textsuperscript{66} provides for the improvement of “environmental hygiene”, but this right can be infringed by military measures.\textsuperscript{67}

\section*{2. Protected Areas/Demilitarised Zones}

International law provides some mechanisms to protect certain areas during armed conflict. Under AP-I Articles 59 and 60, it is possible to create demilitarised zones, but only by agreement between the parties. The 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict\textsuperscript{68} contains detailed provisions on safeguarding cultural property. Even though “cultural property” can extended to vulnerable environments, such interpretation seems strained as this convention was intended to protect monuments and works of art in time of war.\textsuperscript{69} The 1972 World Heritage Convention developed from the movement to protect “heritage” after World War I.\textsuperscript{70} This convention identifies important

\textsuperscript{65} Adam Roberts, Chapter XIV: Environmental Issues in International Armed Conflict: The Experience of the 1991 Gulf War, in PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT (INTERNATIONAL LAW STUDIES, V 69) 222, 226 (Richard Grunwalt et al. eds., 1996, henceforth known as “Roberts Chap XIV”).

\textsuperscript{66} A/Res 6316, 993 UNTS 3.

\textsuperscript{67} See Voneky, supra note 60 at 24.


cultural and natural sites and obliges States to protect and preserve them.\textsuperscript{71} It stresses “the fundamental need to preserve the balance”\textsuperscript{72} and recognition of the relationship between people and nature. Although this convention would seem to be a vehicle for protection of vulnerable environments, it lacks any mechanism for ensuring implementation.

During the Bosnia-Herzegovina conflict, the UN Security Council acknowledged the necessity of declaring certain areas (“safe areas”) demilitarised for humanitarian purposes.\textsuperscript{73} Unfortunately, the Bosnia-Herzegovina conflict demonstrated serious enforcement issues.\textsuperscript{74} The fact that some States do not seem to respect demilitarisation for humanitarian purposes causes a real concern as to the potential application of such declarations for environmental purposes.

There is a growing recognition within the international community that certain areas need special protection during conflict, but as of now, there is neither an institutionalised nor comprehensive method of protection, let alone an effective inspection and enforcement mechanism. The International Union for Conservation of Nature Commission on Environmental Law and the International Council of Environmental Law initiated the development of a Draft Convention on the Prohibition of Hostile Military Activities in Protected Areas\textsuperscript{75} that would allow the UN Security Council to designate important sites as “safe areas”. These areas are places where “overall interests of humanity should predominate over military ones.”\textsuperscript{76} As Burhenne proposes in connection with Bosnia, “the

\textsuperscript{71} See above section II(B)(1).


\textsuperscript{74} Wolfgang Burhenne, \textit{The Prohibition Of Hostile Military Activities In Protected Areas}, 27 \textit{ENVIRONMENTAL POLICY \& LAW} 373, 376 (1997), henceforth known as “Burhenne”.

\textsuperscript{75} Henceforth known as the “Draft Convention”.

emphasis on ‘safe areas’ could be made two-fold: protecting human lives directly, and humankind – through protection of the environment – indirectly.” Even though the Security Council’s Resolutions on demilitarised zones do protect a specific environment from damage, concentrating on the humanitarian aspect continues to neglect environments that are vulnerable in and of themselves. Therefore, explicit declarations are needed that certain areas demilitarised for environmental purposes. In any event, the Draft Convention has been controversial and in the midst of a long and complicated drafting process. Clarification and enforcement of current law would be more effective, as will be discussed below.

C. Indirect Protections

Various articles in Hague Law and the Geneva Conventions prohibit destroying enemy property and causing unnecessary suffering. These prohibitions could be extended to incorporate environmental concerns. The problem is that reliance on the concept of “property” does not encompass many aspects of the environment, and particularly vulnerable environments. For example, releasing degrading chemicals into the atmosphere would not be prohibited, as no one can own the ozone layer. In addition, various instruments of IHL contain chemical and bacteriological prohibitions. While the principal purpose of these

77 See Burhenne, supra note 74 at 3.
79 See Hague IV, supra note 78 at Art 23 (e).
80 George Walker et al., Chapter XVI: Panel Discussion: Existing Legal Framework, in PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT (INTERNATIONAL LAW STUDIES, v 69), 288, 298 (Richard Grunwalt et al. eds., 1996), henceforth known as “Walker Chap XVI”.
81 Such as the Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, June 17, 1925, 94 L.N.T.S. 65.
instruments is to avoid human suffering, there is clearly the incidental benefit of sparing the environment from toxins.

Regardless, such indirect protections did not deter the mass use of herbicides in the Vietnam War, where an estimated over 100,000 tons of napalm was used in the defoliation strategy devastating tens of thousands of square kilometers of vegetation and crops. Even though the devastation fell short of military expectations, such attempts may lead to irreversible ecological changes having grave long-term consequences out of all proportion to the effects originally sought. This menace, though largely unpredictable in its gravity, is reason for expressing alarm concerning the massive employment of incendiaries against the rural environment. 82 This resulted in a flood of post-Vietnam War creations of chemical and bacteriological conventions such as the 1980 Convention on the Use of Certain Conventional Weapons discussed above 83.

Other indirect protections might be found in other articles of AP-I. Article 51 prohibits indiscriminate attacks, Article 52 protects civilian objects which could include aspects of the environment, and Article 54 prohibits attacks on objects indispensable to the survival of the civilian population, which could take into consideration vulnerable environments’ potential for biomagnification. Many rules of IHL protect cultural property and “other objects of interest” 84 but there is no clear interpretation of what constitutes an object of interest. Diederich argues the scope of “real and personal property” protections could expand to include rape and pillage of the environment. 85 Cultural protection can be

82 Antoine Philippe, *International Humanitarian Law And The Protection Of The Environment In Time Of Armed Conflict*, 32 INTERNATIONAL REVIEW OF THE RED CROSS 517, 529 (1992) citing Napalm And Other Incendiary Weapons And All Aspects Of Their Possible Use: Report Of The Secretary-General, 55§189 (1973) henceforth known as “Philippe”.

83 In section III(B).

84 See Hague Cultural Property, *supra note 68* at Art I

broadened to include environmental sanctuaries “so as to protect these areas as if they comprised a cultural site.” Diedrich even puts forward the possibility for natural monuments to constitute historical monuments.

The Martens Clause under the Hague Conventions offers further indirect protection in its declaration that:

inhabitants and the belligerents remain under the protection and the rule of the principles of the law of nations, as they result from the usages established among civilized peoples, from the laws of humanity, and the dictates of the public conscience.

This broad declaration could provide an important protection mechanism that will induce belligerents to take environmental concerns seriously. Such an interpretation is consistent with the fact that the environment has grown in the public conscience in recent years.

IV. Is IHL Flexible Enough To Protect Vulnerable Environments During Armed Conflict? A Qualified “No”.

The complication with vulnerable environments is that at the time the harm is done, damage can appear local and not serious, and thus beyond the scope of environmental protections in IHL. However, due to the nature of vulnerable environments, this “local harm” can, over time, biomagnify, causing widespread, long-term, and severe damage to the global ecosystem. For example, harm done in the Amazon Rainforest from hostilities can seem contained, but due to the fragility and interconnectedness of the rainforest, over time, such damage could destroy the whole biosphere. This lack of immediacy creates a problem in determining the applicability of existing rules. As vulnerable environments are not in a class of their own, but at one end of a very loose sliding scale, there are no distinct rules for vulnerable environments. A context sensitive approach to the environmental protections, could better account for the special features of these environments. The widespread, long-term, and severe criteria of AP-I and ENMOD would remain the same across the spectrum of environments but would have special meaning with respect to vulnerable environments; the threshold would arguably be more easily reached. The same can be said for the customary

86 Id.,

87 Hague IV, supra note 78 at Preamble.
principles of necessity and proportionality. As argued below, accounting for the fragility and biomagnification inherent in vulnerable environments could weigh more heavily in the precarious balancing test in determining limitations on belligerent parties.

A. Widespread, Long-Term, And Severe Threshold

As stated earlier, one of the biggest distinctions between ENMOD and AP-I is the way this damage threshold is presented. AP-I protects the environment against widespread, long-term and, severe damage. ENMOD protects against widespread, long-lasting, or severe damage. In reality, environmental damage very often fulfills one, perhaps, two of these conditions, but rarely all three. In this context, Schmitt gives as an illustrative example: “the destruction of all members of a species which occupies a limited region.”\textsuperscript{88} This example has resonance in the case of vulnerable environments. The Arctic is a very isolated region with contained and specialised species, such as polar bears\textsuperscript{89}. If armed conflict were to negatively impact the Arctic, it could very well wipe out an entire Arctic species. It is clear that this damage would be long-term and severe but one cannot say that it is widespread within the traditional meaning of the word. Such an attack would not be governed by AP-I since it lacks one of the three elements. However, the attack could be prohibited under ENMOD’s disjunctive, lower threshold, but only if the damage arose from using an environmental modification technique.

Another distinction between AP-I and ENMOD’s use of this threshold is how the three terms have been interpreted. According to the Understandings attached to ENMOD, “widespread” entails “an area on the scale of several hundred square kilometers”, “long-lasting” entails “a period of months or approximately a season”, and “severe” entails “serious or significant disruption or harm to human life, natural and economic resources or other


\textsuperscript{89} \textsc{Ontario Specialized Species Center}, \textit{What are Specialized Species?} \url{http://www.conservationcentre.org/specialized_species.html} (last visited Feb 15, 2014).
assets. 

Despite ENMOD’s lower threshold, the limitation to those attacks manipulating the environment itself leaves too narrow a scope for application. AP-I is not of much help either. Except for the ICRC’s declaration that the “long-term” aspect entails a length of decades, there is no definitive interpretation of the elements required to meet AP-I’s threshold. This interpretive vacuum is one of the reasons behind objections to the Protocol.

Although Wyatt has argued that the ENMOD standard should be incorporated into AP-I by default, the fact that the Understanding to ENMOD explicitly states that the definitions are intended exclusively for ENMOD positions Hulme’s argument for a higher threshold for AP-I as more persuasive. Hulme suggests that “widespread” entails damage exceeding several hundred square kilometers and “severe” entails a shock to “the balance of the ecosystem.” Given the lack of a definitive interpretation, one could argue that destruction in vulnerable environments could meet AP-I’s threshold. In environments such as the Arctic, it is very easy for environmental destruction to be extremely severe and long-lasting. With such severity and duration, added to the fact that vulnerable environments have a propensity to greatly affect the rest of the world, an argument can be made that the widespread threshold could be met. Yet without a definitive interpretation, this is mere conjecture.

Clearly, setting fire to the Kuwaiti oil wells during the 1991 Gulf War was an environmentally devastating act. Iraq set fire to more than 600 Kuwaiti oil wells that spilled

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91 See De Preux, supra note 32 at 416.


94 See ICRC ENMOND Understandings, supra note 90.

95 See War Torn Environment, supra note 11 at 20.
about 2 million tons of oil into the sea, caused smoke plumes that extended into neighbouring states, and even caused black snow 1500 miles to the east. Yet even this extreme environmental disaster, inflicted in the course of war, would not have met either AP-I or ENMOD’s threshold. First, even if either treaty were in force at the time, Iraq was not a contracting party to either instrument. Second, even if AP-I and ENMOD were applicable, scholars have agreed that the damage was widespread and severe, but the long-term test for AP-I was not necessarily satisfied. Third, even if ENMOD’s lower threshold could have encompassed this destruction, ENMOD pertains only to deliberate manipulation of natural processes and this is a case of damage to, not by, the environment. Kuwait itself is not an example of a vulnerable environment but if AP-I and ENMOD could not have protected Kuwait from this serious environmental disaster, how could they sufficiently protect vulnerable environments?

A further complication in applying the threshold is the relationship between the threshold and the customary principles of proportionality and necessity. For AP-I, this threshold displaces a proportionality principle. Even if the environmental damage were proportionate and necessary for the military advantage gained, if the three criteria are satisfied, the action will still be considered a breach of the Protocol. Compare this to individual criminal responsibility under the Rome Statute where the threshold is explicitly maintained to be a consideration in the proportionality test.

This would be beneficial to vulnerable environments but could be problematic in practice. As Schmitt hypothesizes, if enemy forces operating from a surrounding forest move in to occupy a city with a large population, the defending commander may destroy the forest

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96 See Philippe, supra at 82 at 530.

97 See Diederich, supra note 85 at 139 in fn 12.

98 Such as A.P.V. Rodgers and Adam Roberts.


100 See Roberts Chap XIV, supra note 65 at 232-233.

101 Discussed below.
to deny the enemy forces sanctuary.\textsuperscript{102} This could result in widespread, long-term, and severe damage to the environment but prevents massive human suffering from enemy occupation. In this situation, even if the necessity and proportionality requirements are satisfied, the widespread, long-term, and severe threshold would prohibit such life saving action. In reality, the commander might well ignore AP-I’s prohibition even if it were interpreted to encompass the specific needs of a vulnerable environment. At the heart of this conflict is the anthropocentric/ecocentric debate. Just as the fragility and biomagnification distinguish a vulnerable environment, those characteristics also are the principal factors in environmental harm and at the same time, present the greatest difficulty in applying the widespread, long-term, and severe threshold, particularly in the absence of interpretation.

B. Military Necessity and Proportionality

One of the foundational customary principles of IHL is that the means and methods of warfare are not unlimited.\textsuperscript{103} Schmitt divides this foundational principle into subsidiary principles including military necessity and proportionality.\textsuperscript{104}

1. Necessity

The principle of military necessity limits harmful or destructive acts to those acts necessary to obtain a clear military advantage. “Destruction in and of itself is a violation of international law. There must be some reasonable connection between the destruction of property and the overcoming of the enemy forces.”\textsuperscript{105} The ICJ in its \textit{Legality of Nuclear Weapons} Advisory Opinion provided that “[s]tates must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate

\textsuperscript{102} See Green War, supra note 40 at 73.


\textsuperscript{104} See Green War, supra note 40 at 51-61, the other two are humanity and chivalry which are beyond the scope of this dissertation.

\textsuperscript{105} \textit{Hostage (US v List)}, 11 TWC 759 (1950), at 1253-1254.
military objectives.”  

106 In relation to IHL, this means that the environment must be considered a “civilian object” and an attack on a military objective must be weighed against the effect it will have on the environment.  

107 While it is now clear that environmental factors should have a role in the balancing process, what is unclear is the role that unique characteristics of vulnerable environments play in this balance.

The extremely subjective nature of military necessity presents a problem in this context; “from the perspective of a military actor, almost any environmentally harmful initiative can be given a subjectively acceptable legal rationale.”  

108 It is unclear how direct a military advantage must be for the attack to be considered militarily necessary. Further, the concept of military necessity is dependent upon the context, which makes it difficult to assess the wantonness of a particular act in the abstract.  

109 “[W]hen dealing with the environment, one is making calculations based on incredibly intertwined global relationships among the environment’s seemingly infinite components.”  

110 Vulnerable environments are particularly intertwined with global relationships and the scientific uncertainty makes the likelihood of harm difficult to determine, further complicating the already difficult task inherent in military necessity.

2. Proportionality

Similarly, the principle of proportionality is fraught with interpretative problems. Proportionality limits certain acts of warfare, including those militarily necessary, that cause

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106 at 242 para 30.


108 Richard Falk, *The Inadequacy Of The Existing Legal Approach To Environmental Protection In Wartime*, in *THE ENVIRONMENTAL CONSEQUENCES OF WAR: LEGAL, ECONOMIC, AND SCIENTIFIC PERSPECTIVES* 137, 144 (Jay Austin and Carl Bruch eds., 2000), henceforth known as “Falk”.

109 See *Green War*, *supra note* 40 at 53.

110 *Id.*, at 60.
damage or injury disproportionate to the military advantage sought. The very idea of “proportionality” is subjective and value-based. It is very difficult to find a clear point on the continuum in which a proportionate act becomes disproportionate. Absent guidance in treaty law, “[i]s the law, therefore, nothing more than an articulation of that fighter pilot adage to ‘trust your gut’? Or is it imbued with a meaning more distinct and developed, perhaps in the sense of the Martens Clause’s dictates of public conscience?" There will inevitably be disagreement on assigning value but there also will be disagreement over how that value is measured. Is a forest valuable because it produces resources for humans or because it is valuable in and of itself? Consider the complications of a vulnerable environment: is the Amazon Rainforest valuable because it produces lumber (purely anthropocentric), oxygen (a mixture), or because it produces homes to thousands of species (purely ecocentric)?

The ICJ in its Advisory Opinion on *Legality of the Threat or Use of Nuclear Weapons* concluded that:

States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives. Respect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of necessity and proportionality. This principle of customary IHL limits attacks that would cause environmental ramifications outweighing the value of the military objective sought. On the other hand, the balance implicit in this principle could also allow a greater degree of environmental risk if the commander perceives a great military advantage.

As neither AP-I nor ENMOD would have been applicable to the environmental destruction resulting from the Gulf War, the concept of military necessity was instrumental in the condemnation of Iraq’s actions. This environmental destruction could not be justified by

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111 Id., at 55.
112 Id., at 56.
113 at 241 para 30.
Protecting Vulnerable Environments in International Humanitarian Law

military necessity as it occurred in an area being evacuated by a defeated army, thus offering no definite military advantage. The Hague Regulations prohibit destruction of enemy property when it is not “imperatively demanded by the necessities of war” as was clearly the case in the Gulf. Article 53 of the fourth Geneva Convention prohibits destruction of property in an occupied territory “except where such destruction is rendered absolutely necessary.” It could be argued that the limitation to occupied territory is a serious shortfall of this protection. However, the Geneva Convention does not work alone; taken with the Hague Conventions and the principle of military necessity, such a criticism is inconsequential. Article 147 of the fourth Geneva Convention further prohibits wanton and unlawful destruction not justified by military necessity as a grave breach and therefore a war crime under the Rome Statute. These customary principles were upheld in the UN General Assembly Resolution 47/37 following the Gulf Conflict. While a Resolution is not binding, it is considered to provide a reflection of an opinio juris. This prohibition on damage to the natural environment not justified by military necessity is reflected in the San Remo Manual as an accurate reflection of customary international law.

C. Anthropocentric Or Ecocentric?

The human population has a right to a clean and healthy environment. As “the environment is the life-support system for all human systems,” should the environment be

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115 See Hague IV, supra note 78 at Art 23.

116 See Green War, supra note 40 at 66 citing Falk, supra note 108 at 78 and 88.

117 Art 8(2)(a)(iv).

118 Protection of the Environment in Times of Armed Conflict, G.A. Res 47/37, U.N. Doc. A/RES/47/1 (Feb. 9, 1993), stressing that “destruction of the environment, not justified by military necessity and carried out wantonly, is clearly contrary to existing international law”.

119 See Nuclear Weapons Advisory Opinion, supra note 47 at 254-255 para 70.

120 See San Remo Manual, supra note 18 at part III section I(44).

121 See Conduct of Hostilities, supra note 10 at 213 citing ICRC CIHL, supra note 48 at 143-145.


123 See EVI, supra note 20
protected in its own right or only for its value to mankind? There seems to be growing awareness that the environment is special and has its own worth. The 1982 World Charter for Nature proclaims: “Every form of life is unique, warranting respect regardless of its worth to man, and to accord to other organisms such recognition, man must be guided by a moral code of action.” In recognition of the environment’s inherent value, separate from its worth to man, is the ICJ’s confirmation that “even if an attack is planned in an area with little or no civilian population, it may have to be called off if the harm to the environment is expected to be excessive.”

In support of the inherent value of the environment is that it “is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn.” As discussed above, AP-I Article 55 is anthropocentric in that its protection of the environment relates directly to the human population. This human-centered approach implies that there must be a link between environmental harm and an identifiable impact on a human population; a threshold that may be difficult to meet in vulnerable environments such as the Arctic. Dinstein believes the drafters were merely trying to highlight cases where human beings would be injured, not necessarily restricting the protection to those cases. Barnes, too, believes a looser interpretation of this qualification can be viewed as a mere recognition of the relationship between humans and their environment such that “[a]ny damage to the world’s ecosystems could be seen as affecting the quality of human life as a whole.” Ultimately, given the explicit language of Article 55, it seems unlikely that such a broad interpretation is warranted.

The problem environmental protection poses in balancing situations such as necessity and proportionality is that when environmental concerns are in the mix, the two sides of the balancing equation are different. Schmitt persuasively suggests: “The only way to avoid

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125 See Conduct of Hostilities, supra note 10 at 198 citing Doswald-Beck, supra note 107 referring to Nuclear Weapons Advisory Opinion, supra note 47

126 See Nuclear Weapons Advisory Opinion, supra note 47 at 241 para 29.

127 See Conduct of Hostilities, supra note 10 at 203.

128 See Barnes, supra note 22, at 219.
having to balance human and environmental values is to adopt a purely anthropocentric perspective in which protection of the environment is merely a byproduct.”129 While perhaps in the future the environment will be protected as a value in and of itself, this shift will be gradual. It is unrealistic to expect the international community suddenly to accept environmental values distinct from human life. IHL cannot set rules that protect the environment to the detriment of soldiers and citizens. Realistically, there needs to be a balance.

D. Solution: Enact New Law Or Better Define, Implement, And Enforce Existing Law?

In response to the massive and deliberate environmental damage from the Gulf War, there were many calls for a new and distinct, environmentally protective instrument – a fifth Geneva Convention. This approach was favored by those who see it as “desirable for the international community to mark in a new instrument the concern that in the future the need to give protection to the environment as such in time of armed conflict should be explicitly catered for.”130 This would represent a complete reevaluation and departure from the existing Geneva Law as it would infuse IHL protection with an eco-centric quality.

Plant claims that the current norms address indiscriminate and excessive damage to enemy property, rather than the environmental impact of destruction. Plant’s vision for a fifth Geneva Convention would include a wide definition of “environment”, to apply to marine environments as a whole, pollution of the atmosphere, terrestrial fauna and flora, and to impose particularly strict protections for vulnerable environments.131 Plant sets out the following framework: Part 1 of the new Geneva Convention would cover General Principles, including a statement providing for any gaps in the Convention to be filled by principles of custom and public conscience. Part 2 would cover methods and means (although there is debate as to what kind of threshold should be used for the prohibition on methods and

129 See Green War, supra note 40 at 59.
131 Id., at 188.
means\textsuperscript{132}). Part 3 would mimic Hague Law with prohibitions on the use of herbicides, mines and booby traps, and other incendiary weapons. Parts 4, execution, and 5, institutions, would be the most important sections. The fifth Geneva Convention envisages deterrents such as individual criminal responsibility, universal jurisdiction, and the creation of a new organization whose sole responsibility is to ensure compliance and to safeguard the environment.

Professor Paul Szasz\textsuperscript{133} had been very vocal in advocating such a recodification and expansion of the existing law.\textsuperscript{134} However, after the Naval War College Symposium on the Law of Naval Warfare\textsuperscript{135}, he reversed course.

I must confess that I now concede the force of the arguments against such a project … that because of the need to achieve widespread consensus on any new treaty, ‘the resulting agreement might likely resemble a lowest common denominator, decidedly unhelpful in dealing with hard cases’ and that it might ‘be a model of ambiguity.’\textsuperscript{136}

The benefit of a new Geneva Convention is the ability to start fresh and set forth environmental protections in a straightforward, simplistic manner \textit{with} a mechanism to ensure effectiveness and compliance. However, attempting such a drastic undertaking may not be the best way forward. Before we can begin to contemplate a new treaty, it is necessary to clarify controversy and ambiguities in the existing law. Only with clarification can the peculiar issues of the vulnerable environment be adequately understood and conveyed by a new treaty.

\textsuperscript{132} See Plant’s discussion of four options \textit{id} at 46.

\textsuperscript{133} The Principal Legal Officer of the United Nations until 1989.

\textsuperscript{134} Paul Szasz, \textit{Environmental Destruction as a Method of Warfare: International Law Applicable to the Gulf War}, 15\textsc{Disarmament} 128, 151-153 (1992).

\textsuperscript{135} Convened in Newport, Rhode Island, USA in 1996.

Some academics\textsuperscript{137} have argued that Hague rules, if clarified and enforced, would be sufficient to limit environmental damage during hostilities. Had Hague Rules “been observed by Iraq, there would have been no significant violation of the Kuwaiti environment.”\textsuperscript{138} However, as Schmitt points out, while Article 23 of the Hague Convention (IV) could have effectively applied to the Gulf War situation, this was a fact-specific situation and therefore does not make Hague rules comprehensive and applicable in other situations, let alone vulnerable environments.\textsuperscript{139} In any event, as noted above\textsuperscript{140}, the reliance on the concept of “property” in the Hague Rules makes application to vulnerable environments problematic.

As far as current conventional IHL is concerned, a closer look at the widespread, long-term, and severe damage threshold of AP-I is helpful. Damage in vulnerable environments such as the Arctic could, over time, spread across more territory, persist longer, and have devastating impacts. However, Penny describes a realistic, hypothetical situation in which damage to the Arctic would not be encompassed by AP-I’s prohibition. His example is the targeting of an enemy oil storage depot in an Arctic shipyard. Although such an attack would clearly be disastrous to the Arctic environment, in the short term it might not extend the necessary hundreds of square kilometers needed for the “widespread” requirement. Further, “giving up a certain attack for a future possibility is not necessarily a wise military decision, and may in many cases be quite irresponsible, regardless of the potential for resulting environmental benefits.”\textsuperscript{141} AP-I could provide protection to vulnerable environments only if widespread, long-term, and severe are given a definitive interpretation, accounting for the fragility and biomagnification of certain environments, and the relationship with the principles of necessity and proportionality are clarified.

As discussed previously, if general rules of International Environmental Law were deemed applicable during hostilities, these rules could be valuable in protecting vulnerable

\textsuperscript{137} See for example Bouvier, \textit{supra note 2}; Szasz Chap XV, \textit{supra note 136}; Walker Chap XVI, \textit{supra note 80}.


\textsuperscript{139} See Green War, \textit{supra note 40} at 65.

\textsuperscript{140} In section III(C).

\textsuperscript{141} See Penny, \textit{supra note 26}, at 6.
environments from the ravages of war. The precautionary principle involving environmental impact assessments before carrying out activities\textsuperscript{142} could be extended to hostile activities. It is important to deter potentially devastating methods and means of warfare while they are in the development stage whereas in the heat of battle, military officers may not make the necessary assessments.

Elaborating on the precautionary principle, Professor Szasz split his theory on how the existing legal framework should be modified into three aspects: actual conflict, pre-conflict, and post-conflict protections. He focused his attention on pre and post conflict measures as he believes those are the areas in which protection can be most effective. One of the reasons why no satisfactory protection of the environment during hostilities has been agreed upon is because in the heat of battle, military commanders do not want to be limited and forced to choose between protecting the environment and doing what is best for his or her troops and country. Pre and post conflict scenarios are far enough away from the battlefield to avoid such pressure.

With respect to pre-conflict protections, military exercises and production facilities can be just as destructive as armed conflict. For example, AP-I Article 36 refers to an obligation to determine in the study, development, acquisition, or adoption of any new weapon or method of warfare whether the employment of such weapon or method would be prohibited (irrespective of the environment). It is difficult for commanders to make judgments involving necessity, proportionality, and precaution during combat but these considerations can be more easily applied to pre-conflict situations and planning. It is in this pre-conflict planning that the peculiarities of vulnerable environments can be accounted for. With respect to post-conflict aftermath, Szasz proposes a number of deterrent strategies. First, there must be some form of international and impartial fact-finding procedure that requires the cooperation of participating parties and can establish the extent of environmental damage.\textsuperscript{143} Second, there needs to be effective provisions for the removal of remnants of war,


\textsuperscript{143} See Szasz Chap XV, supra note 136 at 282-283.
such as mines, and restoring the environment as close to its original condition as possible. Third, there needs to be clear and efficient procedures for determining and assessing civil and criminal liability for environmental crimes. These post-conflict procedures and sanctions would not only help minimize the aftermath of the environmental destruction and aid clean up, but could act as a deterrent as well.

In the ICRC Conference in Geneva following the Gulf War, experts agreed that the current rules would be sufficient if they were clearly reaffirmed and sufficiently known, implemented, and respected. This is the main issue in accommodating IHL to environmental needs: there is no sufficient enforcement mechanism and the state of the law is not clearly laid out, leaving military commanders to make uninformed decisions in the heat of battle. That is why as Szasz has advocated, there needs to be pre- and post-conflict measures. For example, during the Review Conference of the Parties to ENMOD in Geneva September 1992, participants made several proposals, one of which was to prohibit research on environmental modification techniques.

Knowledge is key, transparency is imperative, and clarity is vital. Widespread awareness of the existing rules of IHL would have a tremendous preventive power. In this connection, the UN General Assembly and the International Committee of the Red Cross have advocated the suggestion to incorporate rules protecting the environment within military manuals to more widely disseminate this and thus play a role in the pre-conflict planning and strategising. For example, even though the US has not ratified AP-I, many of the important measures contained in AP-I have been expressed in military manuals. Regardless, knowledge, transparency, and clarity require that there be a consistency in interpretation. If environmental protection is to be meaningful and to extend to vulnerable environments, clear interpretations must acknowledge and provide for the context in which these rules are to be applied.

144 Id., at 283.

145 See Bouvier, supra note 2, at 557.
V. Conclusion

Incorporating environmental concerns into international legal instruments is a relatively new development in society. The focus of IHL was, and is, to limit loss of human life during hostilities; the drive to protect the environment during armed conflict did not emerge until the 1970s. IHL has not kept pace with modern environmental concerns in general. This lag is exacerbated with respect to vulnerable environments. The current IHL could encompass an effective protection for vulnerable environments during hostilities. But this can be accomplished only if IHL is clarified and implemented through the lens of the expanding public interest in and recognition of the importance of the environment. Without this clarity or recognition, vulnerable environments are at risk of falling through the cracks in IHL’s protection mechanisms.

As much as the environment, as a whole, needs and deserves protection from the effects of hostilities, vulnerable environments require further protection. These are areas in which disturbances of any kind – large or small – could not only devastate the area but reverberate detrimentally to the rest of the world. As harmful as it was to use herbicides in the Vietnam forests, such an act would be disastrous on a global scale, if done in a vulnerable environment such as the Amazon Rainforest.

Environments could be sufficiently protected through general International Environmental Law, although there are still debates as to the applicability of these laws during hostilities. Even if applicable, they are difficult to enforce. While many sources of IHL, such as the Geneva and Hague Conventions, peripherally refer to a need for environmental protection during hostilities, it was not until the Vietnam War that the need to protect the environment in its own right was recognised and AP-I and ENMOD emerged as a solution. These “solutions” have not achieved their full potential. Even though AP-I and ENMOD were significant steps in the right direction, they lack clarity and are therefore vulnerable to misinterpretations. If the widespread, long-term, and severe damage threshold under AP-I were given a context-sensitive interpretation, AP-I could provide protections for vulnerable environments such as the Arctic.

Similarly, military necessity and proportionality could protect the environment from disproportionate and wanton damage if these principles are clarified. Adding concerns about
vulnerable environments into the balancing equation inherent in these principles is difficult inasmuch as it requires comparing two drastically different values: human life and the environment. At this time, the only practicable way to balance this equation is to adopt an anthropocentric view of vulnerable environments. To achieve sufficient and acceptable protection of vulnerable environments through the principles of necessity and proportionality, the law needs to create an objective baseline and clarify how these elements are to be weighed.

The inability of the current IHL to sufficiently protect vulnerable environments in its current state of ambiguity, has prompted calls for new treaties and conventions. There have been recommendations for a Draft Convention or a Fifth Geneva Convention. New treaties that limit the use of vulnerable environments to peaceful purposes could be beneficial. A treaty such as the Antarctic Treaty of 1959, which prohibits hostilities and proclamations of sovereignty over the Antarctic, might be similarly effective in protecting the Arctic. However, the enactment of a new treaty or convention would not solve the existing ambiguities that would inevitably arise.

It is unclear whether International Environmental Law applies in hostilities; it is unclear how AP-I’s threshold is to be interpreted; and it is unclear how environmental factors are to be weighed in the military necessity and proportionality balancing processes. Before we can begin seriously to contemplate a new legal instrument of protection, we need to clarify the existing law. If the existing law is clarified and developed with environmental awareness, a new legal instrument may not be necessary. The international community needs to understand the importance of protecting areas such as the Arctic for the future of the earth. With this perspective in mind, clarifying and enforcing the existing international humanitarian law could protect the planet and the lives of those who live on it.