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NAVAL WAR COLLEGE  
Newport, Rhode Island

**ENVIRONMENTAL CONCERNS OF OPERATIONAL WARPLANNING**

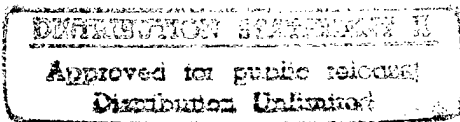
by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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**Abstract of**  
**ENVIRONMENTAL CONCERNS OF OPERATIONAL WARPLANNING**

As a combatant commander plans for an operation, whether by the deliberate or crisis action process, he will be tasked in countless areas. In reviewing history, the minor impact that the environment played in those plans was usually of an exploitative vice protective nature. In today's operations, concern for the environment has grown in scope due to the international spotlight and the need to maintain popular support for military contingencies. The development and evolution of the Laws of Armed Conflict, specifically the Environmental Laws of War (ELOW), have made it at the most illegal and at the least unseemly, to deliberately target the environment irrespective of whether or not it has military value. While most democratic and just societies like the U.S. will abide by the ELOW, nations can choose to ignore them as Saddam Hussein did in the Gulf War. The combatant commander must concern himself with environmental factors primarily in two ways: (1) to ensure that deliberate environmental targeting is not a part of the plan while taking care to minimize collateral damage in order to comply with ELOW and maintain the moral high ground and, (2) to ensure that own and host nation forces are adequately protected if an opponent chooses to ignore the ELOW. A list of environmental concerns is provided for the consideration by the planning staff.

## I. Introduction

"When you besiege a city for a long time, making war against it in order to take it, you shall not destroy its trees by wielding an axe against them"<sup>1</sup>

The environment is more than just a stage for the world's conflicts; it can be a weapon unto itself. Saddam Hussein's well-publicized attempts at ecocide in the Gulf War, though nothing new in the long history of wartime exploitation of the environment, have served to bring a spotlight to this politically sensitive area. Nations, specifically the United States, comply with international law in times of conflict because it is in their best interests to do so. To be seen by the international community to conduct war within all of the existing legal limits helps sustain the ever important resolve required to keep from undermining public and coalition support. The perception of fighting as "just" a war as possible is a factor that only strengthens the legitimacy of a state and the hand of a commander by maintaining the "moral high ground." While the implications of international law with regard to the environment are at times both lucid and vague, one aspect is clear: environmental concerns must be a part of the combatant commander's warfighting calculus.

## II. Thesis

Environmental concerns for the Commander tend to come in three primary flavors: (1) offensive action specifically targeting an opponent's environment, (2) collateral damage caused from attacking a target that possesses legitimate military value, and (3) defending against an opponent's attack against friendly territory.<sup>2</sup>

The U.S. Commander, with the counsel of his staff judge advocate (SJA), should remove those targets that fall into the first category because it is unacceptable within the Laws of War (LOW) to take direct action against the environment for the sake of destroying it alone.<sup>3</sup> Collateral damage needs to be addressed both in the prehostility planning phase beforehand when evaluating what is acceptable (with SJA counsel) and as it occurs during the fog of war. To frame environmental damage within the context of the degree of concern to the military Commander, "...avoiding environmental impact cannot be absolute; clauses like 'military necessity' will be needed to recognize that a military commander realistically cannot be expected to place his force or his mission achievement at grave risk to enemy action in order to protect the environment. Nevertheless, military commanders

can legitimately be expected to show due regard for avoiding unnecessary environmental damage in the conduct of warfare."<sup>4</sup>

The larger concern, and primary focus of this paper, is to emphasize the need for the Commander and his staff to consider the options available to the opponent for environmental destruction and its impact against friendly forces. Defense of the home or host environment falls within security under the operational principles of war for own or allied forces. The principle of security is defined as, "... to never permit the enemy to acquire unexpected advantage."<sup>5</sup> At the operational level of war, the advantage could mean diverting assets required elsewhere to fight and contain the environmental damage. However, environmental destruction could also have a significant impact at the strategic level of war. The magnitude of damage to a host nation could be such that it led to the loss of direct and/or indirect support. This loss of support would be a critical vulnerability and as such a successful indirect attack on a common strategic center of gravity of coalition strength and resolve. Consider a hypothetical but possible Gulf War scenario whereby an environmental attack (i.e., chemical weapons or total destruction of Saudi Arabian desalinization

capability) created such public backlash that it led to a withdrawal of Saudi Arabia and a breakup of the coalition.

### III. Existing Legal Framework of the Environmental Laws of War

Concern for humanity's living conditions notwithstanding, what is the baseline reason for a combatant Commander having to devote time, effort and resources to an area that does not come naturally to one concerned primarily with destroying an opponent? In a nutshell, it's the law.

The overarching category of operational law or LOW is defined as "that body of domestic, foreign, and international law that impacts specifically upon the activities of U.S. Forces in war and operations other than war."<sup>6</sup> The sub-category that impacts on the treatment of the environment is referred to as the Environmental Laws of War (ELOW).<sup>7</sup>

The cornerstones of the ELOW are part and parcel in the makeup of the LOW that experienced their birth at the Hague Conventions of 1899 and 1907. These conventions were the culmination of an international effort to limit the previously unprecedented destruction and loss of life that the world had just witnessed in the Wars of German Unification, Crimean War

and the American Civil War.<sup>8</sup> Specifically, The Regulations Annexed to Hague Convention IV of 1907 provided that the "right to adopt means of injuring the enemy *is not unlimited*" (Article 22).<sup>9</sup>

Additionally following WWI, the 1925 Gas Protocol **banned the use** of "asphyxiating, poisonous, or other gases and all analogous liquids, materials, and devices" during war.<sup>10</sup> This further evolution of environmental law prohibited the use of herbicides and their long-term destruction and persistence in the food chain as a weapon.<sup>11</sup>

Building on the Hague treaties, the Fourth Geneva Convention (GC) of 1949 produced language **prohibiting destruction or damage of property in the absence of "absolute military necessity"** (Article 53).<sup>12</sup> The GC however, concerned itself only with the environment of an occupied territory.<sup>13</sup>

In 1977, Protocols I and II Additional to the Geneva Conventions (GP I and GP II) were introduced. GP I marked the first instance that the LOW specifically provided for protection of the environment by name. A **ceiling of permissible destruction** was laid out and described as any "method of warfare which is intended, or may be expected, to

cause widespread, long-term and severe damage to the environment."<sup>14</sup>

The 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD) followed which prohibited practices resulting in "widespread, long-lasting or severe destruction, damage or injury to any other state which is a party."<sup>15</sup> The primary focus was to ban the manipulation or use of the environment itself as a weapon.<sup>16</sup>

Despite widespread international recognition for the need of environmental protection during armed conflict, the lack of enforcement by serious punitive measures during "post-conflict" serves to remove the deterrence of ecocide. Additionally, the ease of putting a "legal spin" on violations should legal retribution be sought (i.e., the environmental destruction is *claimed* to possess a valid military purpose), only sustains a too fragile punitive arm and forebodes that deliberate environmental destruction will continue in warfare.<sup>17</sup>

#### IV. Historical Precedents of the Use of the Environment as a Weapon

The historical examples of deliberate destruction which specifically targeted the environment are as old as warfare itself. The opening passage of biblical law or the tale of the Romans "salting the earth" after their military victory at Carthage in the Third Punic War in 146 B.C., gives a flavor as to how far back the environment has been used as a weapon.<sup>18</sup> Union General William T. Sherman's "scorched earth" policy against the Confederate States in his famous "March to the Sea" in 1864 was an offensive action meant to deprive the South from using agriculturally derived capital to further finance their war efforts.<sup>19</sup> In 1812, the Russians utilized a scorched earth policy as a defensive measure against their own homeland to deny the *Grand Army* of Napoleon the ability to survive off the land.<sup>20</sup> World War I saw the first use of chemical warfare while World War II brought on indiscriminate area bombing (by both the Germans and Allies) and the use of nuclear arms.<sup>21/22</sup>

In 1938, during the Second Sino-Japanese War, the Chinese dynamited the Huayuankow Dike on the Yellow River to stop the advancing Japanese troops but in the process, destroyed eleven

of their own cities, four thousand villages and several hundred thousand of their own people.<sup>23</sup> Vietnam witnessed the U.S. military's widespread use of herbicides as a defoliant (Agent Orange) to remove the jungle topcover and concealment of the Viet Cong's logistic routes (Ho Chi Minh Trail).<sup>24</sup> The long-term affects on the ecology of the Vietnamese land, specifically soil sterilization, are still being felt today and productive agricultural use in many regions is still years away.

The short list of examples shows the range of environmental impact from collateral damage (WW II area bombing) to defensive means (Russia) to deliberate environmental targeting (Union Army, Vietnam). Saddam Hussein was not breaking new ground in his wanton destruction of the environment as he was following the historical lead of countless state and military leaders.

#### **V. The Need to Consider Defensive Measures to Environmental Attacks**

Incumbent upon every commander is the requirement for the protection and security of his own forces. Closely following this is to also provide for the protection of the host

nation's citizens and territory. All countries are susceptible to a wide range of "environmental" attacks including: destruction of dams and nuclear power plants, water supplies (desalinization plants), chemical use including herbicides, destruction of indigenous chemical plants or weapon compounds, and major contamination from oil production facilities.<sup>25</sup> An assessment of the offensive actions against the environment that an opponent could take **must** be considered and subsequent defensive courses of action planned.

Defensive responses can take the form of preemptive strikes or reactive measures. During Desert Storm, the U.S. planned in advance and executed at the onset of hostilities preemptive attacks on the Iraqi chemical weapon compounds (with fuel-air explosives to minimize the propagation of the chemicals). In the reactive mode, the U.S. bombed the on-shore oil manifolds at the refinery pumping stations to stop the intentionally set and massive oil spill into the Arabian Gulf preventing possible oil contamination of Saudi Arabian desalinization plants.<sup>26</sup>

An example of environmental concerns during Military Operations Other Than War (MOOTW) was evidenced during U.S. Navy maritime interception operations in the Adriatic

enforcing United Nations and NATO sanctions in Operation Sharp Guard (1994). The STANAVFORLANT Commander, Rear Admiral James R. Stark, USN, was concerned that if a large oil tanker decided not to comply with instructions to be boarded and stopping force (disabling rounds into the ship) was deemed necessary, the potential for a large environmental disaster was present. RADM Stark's prime concern was that the theater lacked the oil containment equipment and professional technical support to control a significant oil spill.<sup>27</sup>

#### **VI. Consideration of the Environment in Campaign Planning**

The need exists to consider environmental factors into the Joint Operation Planning and Execution System (JOPES). Both the deliberate and crisis action planning processes should look at the potential for environmental destruction from the two points of view---offensive action and defensive measures.

Environmental factors exist in any kind of contemplated operations with the factor of time as the major constraint. Joint Pub 5-0, Doctrine for Planning Joint Operations, describes the deliberate planning process as one conducted primarily in peacetime to develop joint operations plans

(OPLAN, CONPLAN, or Functional plan) for contingencies identified in strategic planning documents. Plan development is completed up to the execution phase and then continually reviewed and updated until a crisis triggers its activation. This process does not usually have the constraint of time (nominally eighteen to twenty four months) and allows for the luxury of detailed evaluation of the environmental consequences of a planned offensive action against an opponent. The plan is revised over time for changing friendly and enemy factors such as new political guidance, more modern technology, updated intelligence, and greater weapons capability. During the revision process, the environmental protection equation should also be continually reassessed.

Conversely, crisis action planning is based on current events and executed in time sensitive situations. Planners base their campaign plan or OPORD on the actual circumstances that exists at the time crisis occurs. The luxury of time does not exist as execution of a response can begin in as little as days or even hours.<sup>28</sup>

During both the planning and execution phases, the need for technical environmental expertise is paramount. Planning staffs and their targeting cells must be able to accurately

assess the environmental implications of own force and enemy strike and collateral damage. Scientific experts need to work hand in hand with the SJA to accurately assess whether an action would lead to widespread, long-term and/or severe damage. More importantly for the U.S., plans must be thoroughly scrubbed as to the courses of action an opponent might take that exploits the environment in order that adequate preventative or defensive techniques and technologies can be put in place.

In order to "shape the *political* environment," two actions could be used to deter the illegal use of environmental destruction by the enemy. First, use clearly defined and publicized Rules of Engagement (ROE) that compliment and clarify the existing ELOW and state the clear intention that friendly forces will refrain from any type of deliberate environmental destruction. This ROE would hopefully send a signal for mutual environmental protection during warfighting. During Desert Storm, the U.S. exhibited obvious restraint in selecting targets to avoid civilian population centers, cultural and religious structures and environmentally sensitive areas even when the Iraqis were conducting military operations from these sites.<sup>27</sup> Saddam

chose to ignore this not so subtle signal and proceeded with his acts of ecoterrorism.

Secondly, the political leadership can also set the stage from behind the scenes with "threats" of severe reprisals if the environment is specifically targeted by the opponent. Prior to the commencement of hostilities, President Bush in a personal letter to Saddam concerning possible Iraqi use of chemical weapons stated, "The American people would demand the strongest possible response. You and your country will pay a terrible price if you order unconscionable acts of this sort."<sup>30</sup> This warning carried the unstated but implied threat that the use of (tactical) nuclear weapons by the U.S. would not be ruled out as a reprisal. President Bush's aim was to use the threat as a deterrent. The goal of deterrence is compliance. The risk of deterrence is having to follow through with action if the desired behavior of the opponent is not compelled. The gains of any action and subsequent compliance must be weighed against possible worldwide condemnation of our reprisal and loss of the moral high ground. In the case of Saddam, even though he had employed them in past against Iran and his own Kurdish population, he chose not to use chemical weapons.

## VII. Conclusion/Recommendations

The environmental concerns of the Commander are far more than just the physical space in which the battle takes place. The inclusion of the environment as a factor of friendly offensive targeting or defensive measures required needs to be factored into the planning process whether the conflict is a result of a deliberate plan or response to a crisis. The view of the environment as a vulnerability, perhaps a critical one, needs to be considered as a possible course of action for the enemy when conducting the Commander's Estimate of the Situation during the planning process.<sup>31</sup>

Some recommendations for the Commander's planning staff to consider are:

- The operational planning staff should be augmented with technically trained environmental specialists/engineers knowledgeable in weapon destructiveness, soil/air/water pollution, and various industrial processes common in the environmental makeup of a landscape. These experts, not normally part of the uniformed services, would be selected based on the particular theater either as permanent staff members for the deliberate planning process or contractors brought in on short notice for a crisis action.

- A standard ROE designed for an opponents consumption should be developed based on concern for the environment.

This would serve to reinforce that deliberate environmental targeting will not take place on the U.S. side and send a signal that it will not be tolerated on the opponent's end.

- "Environmentally friendly" target neutralization techniques (such as Special Operations Forces or PGMs) need to be considered if collateral environmental damage on a particular target is a concern.<sup>32</sup> By ensuring that collateral damage is kept to an absolute minimum, the enemy is then prevented from attacking friendly environment *as a reprisal*.

- Finally, the process of the Commander's Estimate of the Situation should always give consideration to the use of the environment as a weapon by our future opponents despite international recognition and acceptance of ELOW.

The pragmatic culture of the U.S. military is evidenced in this quote concerning environmental considerations in Desert Storm, "Our attitude at the time was that you know, we've got a deployment going on. To the extent that we can respect the environment, that's fine, but it's not our job and it's not your job to go out there and look under rocks to see if we're doing a bad job on the environment. We've got other

things to do essentially, I don't know if you call it what we did as 'stonewalling,' but essentially, the environmental issues, as far as we saw, went away for a long time."<sup>33</sup> If this sentiment is considered the "realist" view of warfare concerning environmental security then all the planning and political shaping of the battlefield will not prevent the loss of valuable political capital even when the military battle is won.

The environment is but a small part of the much larger operational art picture for the commander but it is important nonetheless. The United States goes to great lengths to ensure that its forays into armed conflict comport with the LOW. The mandate to come to defend oneself or come to the aid of another in their defense against an aggressor ensures that an opponent will always be working from a lower moral plane and world support will be in our favor. Environmental security needs to be considered in preventing our offensive actions from being perceived as a deliberate targeting of the environment and degrading our higher moral plane. Equally as important is to keep our guard up and not allow an opponent the opportunity to utilize the environment as a weapon against our forces or allies.

## ENDNOTES

1. Dueteronomy 20:19-20.
2. The possibility of targeting an opponent's environment in reprisal for his destroying ours will not be addressed as that would be a departure from the normal wartime Rules of Engagement and a decision for the National Command Authority.
3. The Judge Advocate General's School, Operational Law Handbook (Charlottesville: 1995), p. 5-4. The OLH states that "Although the environment was never discussed during the evolution of customary international law or during the negotiation of all of the pre-1970s LOW treaties, the basic LOW principles apply to limit the destruction of the environment during warfare. For example, the customary LOW balancing of military necessity, proportionality, and superfluous injury and destruction apply to provide a threshold level of protection for the environment."
4. U.S. Naval War College, International Law Studies Series: Protection of the Environment During Armed Conflict, (Newport: September 1995), v. 69, p. 36. Presentation by Rear Admiral William H. Wright, IV, U.S. Navy.
5. U.S. Joint Staff, Joint Pub 3-0: Doctrine for Joint Operations, (Washington: 1995) p. A-2.
6. Operational Law Handbook, p. 1-1.
7. Ibid., p. 5-3.
8. James P. Terry, "The Environment and the Laws of War: The Impact of Desert Storm," Naval War College Review, Winter 1991, p. 62.
9. Operational Law Handbook, p. 5-4.
10. Ibid., p. 5-4.
11. Ibid., The U.S. reserved the use of herbicides and riot control agents. The soon to be Presidential ratified 1993 Chemical Weapons Convention Treaty complements the 1925 Gas Protocol and creates a more rigorous rule.

12. Ibid., p. 5.6.
13. Ibid.
14. Operational Law Handbook, p. 5-6.
15. Ibid.
16. Ibid. Note the difference between GP I and ENMOD with regard to the use of widespread, long-term **and** severe damage versus widespread, long-lasting **or** severe destruction. There is a strong move afoot to mandate the more restrictive "**or**" when citing ELOW violations.
17. This concern is obviously beyond the scope of the operational commander other than a directed reprisal action. The International Court of Justice at The Hague is the internationally recognized body at which violations can be adjudicated. Current debate argues for the need of stricter/additional guidelines (i.e., a Fifth Geneva Convention), while the opposition suggests the current legal framework is adequate but stricter enforcement is needed.
18. "The Third Punic War (149-146 B.C.), The International Military and Defense Encyclopedia (New York: Rinehart & Co., 1993), v. 5., p. 2233; Stewart C. Easton, The Heritage of the Ancient World, (New York: Brassey, 1960), p. 324. The I.M.D. Encyclopedia states, "The story that Carthage was plowed under and the ruins covered with salt is based on exaggerated accounts by later writers. Easton states, "...Carthage was razed and the site cursed." Whether the curse is the equivalent of salt is unknown but nonetheless, total destruction of the Carthage's living environment occurred at the hands of the Roman military.
19. James M. McPherson, Battle Cry of Freedom: The Civil War Era (New York: Oxford University Press, 1988), p. 809.
20. William C. Fuller, Jr., Strategy and Power in Russia: 1600-1914 (New York: The Free Press, 1992), p. 193.
21. Bernadotte E. Schmitt and Harold C. Vedeler, The Ride of Modern Europe: The World in a Crucible (1914-1919) (New York: Harper and Row, 1984), p. 78.

22. R. A. C. Parker, Struggle for Survival: The History of the Second World War (New York: Oxford University Press, 1989), p. 162-172/233-242.

23. Edward L. Dreyer, China at War: 1901-1949 (Essex: Longman Group Ltd., 1995), p. 229.

24. George C. Herring, America's Longest War: The U.S. and Vietnam 1950-1975 (New York: McGraw Hill, 1986), p. 151.

25. Operational Law Handbook, p. 5-7. The OLH states "Specific GP I protections include article 55's absolute ban on reprisals against the environment; article 54's absolute prohibition on the destruction of agricultural areas and other areas that are indispensable to the survival of the civilian population; and article 56's absolute ban on works or installations containing dangerous forces (dam, dikes, and nuclear plants)."

26. James Blackwell, et al, The Gulf War: Military Lessons Learned, CSIS Study Group, July 1991, p. 13-1.

27. International Law Studies Series: Protection of the Environment During Armed Conflict. Rear Admiral James R. Stark, U.S. Navy, Opening remarks, p. 6.

28. U.S. Joint Staff, Joint Pub 5-0: Doctrine for Planning Joint Operations, (Washington: 1995) p. III-3 to III-11. Description of deliberate action and crisis action planning under the operational planning process. For the purposes of this paper, Military Operations Other Than War (MOOTW) were considered to be in the crisis action category though the time factor can range from days to months.

29. U.S. Dept. of Defense, Final Report to Congress: Conduct of the Persian Gulf War. (Washington: April 1992), p. 131-133. This was not an original idea as the North Vietnamese set up anti-aircraft gun on top of dikes knowing that American forces would not attack.

30. Michael R. Gordon and Bernard E. Trainor, The Generals' War, (New York: Little, Brown and Co., 1995), p. 197.

31. U.S. Naval War College, The Commander's Estimate of the Situation (NWC 4111A) (Newport: 1997).

32. The question of: "since the U.S. possesses precision guided munitions, is there then an inherent **requirement/obligation** for their use to prevent environmental destruction despite the greater cost and opponents lack of like weaponry?" came to mind but is outside the scope of this paper.

33. U.S. Army Dept., The Desert Storm Assessment Team's Report to the Judge Advocate General (Washington: April 1992), p. 3.

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