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MARINE POLLUTION AND SPOLIATION OF NATURAL RESOURCES AS WAR MEASURES: A NOTE ON SOME INTERNATIONAL LAW PROBLEMS IN THE GULF WAR*

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INTRODUCTION

The recent Persian Gulf war[1] between the coalition forces led by the United States against Iraq generated significant problems in international law. These problems were spawned by certain behavior of the Iraqi armed forces which prima facie appeared inconsistent with international law principles and norms.[2] This article focuses on two particular measures of warfare attributed to the Iraqi forces that occupied Kuwait: dumping of oil in the Gulf and burning of Kuwait's oil wells. Coalition representatives

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* This Article was previously published in 14 HOUS. J. INT'L. LAW 483-519 (Spring 1992) and is being republished with the consent of the HOUSTON JOURNAL OF INTERNATIONAL LAW.

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Prof. William T. Burke, University of Washington Law School, read a draft of this article, made very useful comments, pointed to documentary sources and provided some material, all of which are gratefully acknowledged. He must, however, be absolved from responsibility for submissions made in, and for the shortcomings of, this article.

My debt to Dr. Glen Plant, who very kindly provided me with a copy of his book, is recorded with appreciation.

The ATENEO LAW JOURNAL acknowledges the assistance of Atty. Jose M. Roy III in soliciting this article.

[1] The conflict in the Persian Gulf directly resulted from the armed invasion of Kuwait on August 2, 1990, by Iraqi forces. S.C. Res. 660, U.N. SCOR, (UN document number unavailable) Aug. 2, 1990, *reprinted* in 29 I.L.M. 1325 (1990). As a result of Iraq's non-compliance with United Nation's resolutions, the UN authorized all Member States, acting in concert as "Operation Desert Storm," to use all necessary means to uphold and implement resolution 660, which required the unconditional withdrawal of Iraqi forces from Kuwait. *See* S.C. Res. 678 U.N. SCOR, (UN document number unavailable) Nov. 29, 1990, *reprinted* in 29 I.L.M. 1565 (1990).

[2] See *infra* note 108, 112, and accompanying text.

the West strongly asserted that the oil dumping offered no significant military advantage to the Iraqi forces. The Western media insisted that Iraq acted to inflict "gratuitous ravage" out of the desire to impose onerous burdens and costs upon coalition governments.[15] At the same time, the press noted considerable anxiety among the coalition governments that the water desalination plants and installations on the Gulf coast of Saudi Arabia and of the United Arab Emirates could be seriously affected if the advancing oil slick reached further south.[16]

There is no dispute that the oil dumping fouled beaches along the Kuwaiti and part of the Saudi coastline,[17] severely affecting avian life along the shoreline.[18] Fishing grounds, shrimp spawning areas, and sea turtle

[15] *E.g.* Isa, *supra* note 6. Those press reports echoed, consciously or not, statements of principle by early twentieth-century publicists. Spaight wrote that devastation "pure and simple, as an end in itself, as a self-contained measure of war" is illegitimate under the laws of war. SPAIGHT, WAR RIGHTS ON LAND 112 (1911). "[T]o destroy for the mere purpose of inflicting pecuniary loss is unlawful; gratuitous ravage is not warranted by military necessity." Wheaton, 2 INT'L LAW 213 (7th ed., 1944).

[16] *See International News: Gulf-Britain*, UPI, Jan. 28, 1991, *available in* WESTLAW, Dialog Library, UPI File; *International News: Gulf — Oil Spill*, UPI, Jan. 30, 1991, *available in* WESTLAW, Dialog Library, UPI File; *International News: Gulf — Scrub*, UPI, Feb. 1, 1991, *Available in* WESTLAW, Dialog Library, UPI File; *International News: Gulf — Wrap Up*, UPI, Feb. 8, 1991, *available in* WESTLAW, Dialog Library, UPI File; *International News: Gulf — Oil Spill*, UPI, Feb. 9, 1991, *available in* WESTLAW, Dialog Library, UPI File. *See also* Judy Keen, *U.S. Says Air Strike Cut Down Oil Flow*, USA Today, Jan. 29, 1991 at 4A (noting that clean up efforts were trying to protect the gulf coast desalination plants).

[17] *See* Rae Tyson, *Kuwait: Nightmare of Ecological Terrorism*, USA TODAY, Apr. 22, 1991, at 6E ("Oil from what is believed to be the world's largest intentional dumping — estimates vary widely, but it could be more than 200 million gallons — fouls beaches and wildlife along a stretch of Saudi Arabian coastline.")

[18] Dianne Dumanoski, *Oil Spill: Scientists Say It's Not The End of the Gulf*, THE BOSTON GLOBE, Feb. 4, 1991, at 25 (reporting comments made to the author from Danny Elder of the United Nations Environment Program's regional seas program) (noting that, while the oil spill "is killing birds and perhaps turtles and other wildlife and...[devastating] coral reefs and sea grass beds, ... the massive Persian Gulf oil slick will not mean the end of the region's ecosystems . . . "). *See also* Michael D. Lemonick, *Dead Sea in the Making: A Fragile Ecosystem Brimming with Life is Headed for Destruction*, TIME, Feb. 11, 1991, at 40 (fearing that "[b]irds, including terns, sandpipers, curlews, ducks and cormorants, will be among the most immediate and visible victims of the spill.").

pouring from uncontrolled well heads and the resulting formation of oil lakes, resulted in seepage of the heavier elements of crude oil through the desert sands or ground soil.[44]

Signs of long-term damage to Kuwait's oil resources appeared early. An increasing proportion of the fluid coming up out of the ground was water rather than oil.[45] Underground water was apparently replacing the oil that was flowing to the surface. The very rapid depletion of the oil, which continued for nine months after the military conflict ended, affected the geological structure of the oil bearing strata.[46] The costs of pumping up the remaining oil from strata invaded by ground water are expected to be significantly higher than current costs.[47] It is still too soon to

[44] Mohammed Ali Abbas, a senior executive at Kuwait Petroleum Corporation, is in charge of overseeing the effort to contain and eliminate the lakes of oil. Ibrahim, *supra* note 25. According to Ali Abbas, at points there were as many as 200 lakes of oil with as much as 55 million barrels of oil in them. *Id.* The number of lakes has been reduced to thirty medium to large lakes, some of which are now more than a mile long, a half of a mile wide, and two to three feet deep. *Id.* However, other lakes are much shallower, six inches deep, but spread over areas of several thousand square miles. *Id.* Ibrahim Hadi, President of Kuwait's Environmental Protection Agency, stated that tests established that oil has seeped down to about eight inches beneath the ground, being stopped at that level by harder, less porous formations. *Id.* Hadi reports that the good news is that underground water resources have not been affected because that water lies several hundred feet below the surface. *Id.* The pools, however, pose a long term danger for water used for drinking and other personal purposes in that the desalted sea water which comprises 90% of the Kuwaiti water supply must be mixed with underground water to make it potable or useable for cooking, showering or other personal uses. *Id.*

[45] *See Pace of Kuwait's Progress Continues to Outstrip Even Kuwaiti Expectations*, ENERGY INFO. LTD., May 1, 1992, *available in* LEXIS, Nexis Library, Currnt File. Prior to the Iraqi invasion of Kuwait, virtually no water was produced with the oil production in Kuwait. *Id.* However, as a result of the water now produced with the crude oil in Kuwait, ability to handle water now serves as a limit on the amount of crude oil that Kuwait is able to produce without building water handling facilities. *Id.*

[46] *See Crisis in the Gulf*, THE INDEPENDENT, Jan. 26, 1991, at 3, *available in* LEXIS, World Library, Allwld File (underground oil and water have millions of years to separate; rapid production of oil, resulting from the destruction of well-heads operated by natural pressure, will cause salty water to invade oil deposits and the well can be ruined); Maria Kelmas, *Kuwait Pumps Too Much Oil too Soon*, THE INDEPENDENT, May 22, 1992, at 12, *available in* LEXIS, Nexis Library, Currnt File (damage to the geological structure of the oilfields is resulting from water seeping through porous rock to replace the oil that is being extracted too quickly, causing the water to reach the bore-head of the well and the well therefore to "water-out").

[47] *See Crisis in the Gulf, supra* note 46 at 3. The problem of mixed oil and water could be cured by drilling a new well near the existing well at an approximate cost of 1 million pounds per well according to David Curry of the International Drilling Technology Centre in Aberdeen, Scotland. *Id.* Based on annual averages for 1991, one million pounds at an exchange rate of 1.7674 is 1,767,400 U.S. dollars. INTERNATIONAL MONETARY FUND, 65 INT'L FIN. STATISTICS 533 (1992).

expect reliable information on the long-term effects of the fires upon the natural resource base of Kuwait.[48]

Nor were environmental consequences limited to Kuwait. The dense smoke clouds were traced northeast as far as Iran, Iraq, Afghanistan, and Pakistan.[49] Smoke clouds also reached Turkey, Bulgaria, Romania, and the northern shores of the Black Sea.[50] The United Nations has even written a preliminary appraisal and a plan of action for a multi-disciplinary assessment of the environmental consequences of the war in the Gulf region and for the mitigation of adverse effects, rehabilitation and protection of the environment affected by the Gulf War.[51]

II. APPLICABILITY OF THE 1982 LAW OF THE SEA CONVENTION AND THE ENMOD CONVENTION TO IRAQI WAR MEASURES

We consider next the international legal provisions and formulations of authoritative policy relevant to an appraisal of the Iraqi activities previ-

[48] The Kuwaiti government has estimated that it lost approximately three percent of its 100 billion barrel oil reserves during the Gulf War. *Kuwait: Diminishing Returns for Kuwait Oil as Rush to Meet Production Targets Causes Serious Problems*, MIDDLE EAST ECO. DIG., Reuters, May 1, 1992, *available in* LEXIS, World Library, Allwld File. Western oil industry specialists bidding on Kuwait's reservoir management projects have been estimating remaining reserves as low as 58 billion barrels, however. *Id.* Approximately 1.5 billion barrels of oil were burned during the Gulf War, and approximately 14.5 billion barrels were spoiled by water. Kelmas, *supra* note 46, at 12. These estimates are complicated by the fact that, because Kuwait began pumping oil immediately after getting the oil fires under control, Kuwait has further permanently damaged the oil reserves by as much as twenty percent by allowing water to enter the reserve. *Id.*

[49] *See Environmental Damage Caused by the Persian Gulf War*, Fed. News Serv., Mar. 1, 1991, *available in* LEXIS, World Library, Allwld File (stating that clouds of smoke produced by the burning oil wells are causing respiratory problems and acid rain from Turkey to the straits of Hormuz); *Gulf States Want UN to Help Combat Environmental Disaster*, Reuters, Oct. 18, 1991, *available in* LEXIS, World Library, Allwld File [hereinafter *Gulf States Want Help*] (reporting that fires have sent clouds of black smoke across the northern Gulf into Iran); *see also Major Post-War Effort Needed to Avoid Long-Term Gulf Damage*, (BNA) Mar. 13, 1991, *available in* LEXIS, World Library, Allwld File (clouds of black smoke span from Turkey to the Straits of Hormuz); *Crisis in the Gulf*, *supra* note 46 (noting the cloud of smoke is reported 170 miles east of Kuwait and is so wide that one cannot identity its beginning or end).

[50] *See European Oil Industry Called on for Help in Extinguishing Kuwaiti Oil Field Fires*, (BNA) Mar. 27, 1991, *available in* LEXIS, World Library, Allwld File (reports indicate the areas affected include a belt from Bulgaria to Pakistan, with Iraq and Iran the worst-hit countries). *See also Gulf States Want Help*, *supra* note 49 (stating that clouds of black smoke have even blackened the snow on the Himalayan peaks). Kuwaiti oil fires have had "marked effects" on air quality and some aspects of the weather in the Persian Gulf, but the fires have not caused significant amounts of smoke to be reported beyond the Gulf region. Hobbs & Radke, *supra* note 42, at 990.

[51] *UNEP Report*, *supra* note 10.

ously discussed. General principles and norms both of international environmental law and of international law relating to armed conflict should be taken into account in any attempt legally to characterize those activities.

A. The 1982 Law of the Sea Convention

First, the 1982 Law of the Sea Convention[52] imposes upon all States the obligation "to protect and preserve the marine environment."[53] Article 194 of the 1982 Convention requires States to take all measures necessary to "prevent, reduce and control pollution of the marine environment from any source."[54] Of course, this obligation is not absolute since these measures are specifically limited to "the best practicable means at the disposal of the states involved and in accordance with their capabilities."[55] Article 194 also obligates States to ensure that activities within the States' jurisdiction or control do not cause pollution damage to other States or their environments, and to ensure that pollution originating in territory within their jurisdiction or control does not spread beyond those areas.[56] Specifically, Article 194 requires States to take measures designed to minimize, to the fullest extent possible "the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere or by dumping . . . ."[57]

"Pollution of the marine environment" is explained in Article 1(4) of the 1982 Convention in the following terms:

> [T]he introduction by man, directly or indirectly of substances into the marine environment . . . likely to result in such deleterious effects as harm to the living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of

[52] U.N. Conference on Law of the Sea, U.N. Convention on Law of the Sea, U.N. Doc. A/CONF.62/122 (1982), *reprinted in* 21 I.L.M. 1261 (1982) [hereinafter 1982 Law of the Sea Convention].

[53] *Id.* art. 192, *reprinted in* 21 I.L.M. at 1308. Article 193 also gives states the sovereign right to exploit their natural resources in accordance with the duty to protect and preserve the marine environment. *Id.* art. 193, *reprinted in* 21 I.L.M. at 1308.

[54] *Id.* art. 194, *reprinted in* 21 I.L.M. at 1308.

[55] *Id.* art. 194, para. 1, *reprinted in* 21 I.L.M. at 1308.

[56] *Id.* art. 194, para. 2, *reprinted in* 21 I.L.M. at 1308.

[57] *Id.* art. 194, para. 3, *reprinted in* 21 I.L.M. at 1308.

the ocean, impairment of the quality of use of sea water and reduction of amenities.[58]

"Dumping," as a polluting activity, is defined in Article 1(5) to cover only "*deliberate* disposal" of substances and goods at sea.[59] Undoubtedly, the deliberate dumping of large quantities of crude oil on the seas constitutes "pollution of the marine environment" within the meaning of Article 1(4) of the 1982 Convention.[60]

However, the 1982 Convention is not yet in effect due to the lack of the minimum number of ratifications or accessions.[61] Iraq has ratified this Convention;[62] but the United States and several other members of the Gulf War coalition have not.[63] The precise technical status of particular norms of the 1982 Convention has been the subject of continuing debate among professors and practitioners of international law.[64] The extensive literature regarding this debate is beyond the confines of this article. For present purposes it is only necessary to state that some of the norms set out in the 1982 Convention are clearly new ones, while others reflect customary law norms. Still others may be regarded as expressive of principles of general international law.

Articles 192 and 194 of the 1982 Convention embody a fundamental interest shared by all members of the international community, the protection of which must be deemed a basic community policy. The policy that all States are under a basic duty to refrain from deliberately polluting, with toxic materials, marine areas outside their own national territory and

[58] *Id.* art. 1, para. 4, *reprinted in* 21 I.L.M. at 1271.

[59] *Id.* art. 1, para. 5, *reprinted in* 21 I.L.M. at 1271 (emphasis added).

[60] *See, e.g.*, Okorudu-Fubara, *supra* note 37, at n.156 (noting that the Iraqis themselves intended to damage and pollute the environment).

[61] On October 14, 1991, the UN Office for Ocean Affairs and the Law of the Sea announced that a total of fifty ratifications of the 1982 Law of the Sea Convention had been received. Council on Oceans Law, *Oceans Policy News*, September - October 1991, at 7. The required minimum number is sixty ratifications. 1982 Law of the Sea Convention, *supra* note 52, art. 308(1), *reprinted in* 21 I.L.M. at 1327.

[62] *Recent Actions Regarding Treaties to which the United States is not a Party*, 28 I.L.M. 792 (1989).

[63] *Belgium — Canada — Italy — Netherlands — Union of Soviet Socialist Republics: Agreement on the Resolution of Practical Problems with Respect to Deep Seabed Mining Areas, and Exchange of Notes between the United States and the Parties to the Agreement*, 26 I.L.M. 1502 (1987).

[64] *See generally* American Society of International Law Panel, *The Law of the Sea: Customary Norms and Conventional Rules*, 81 PROCEEDINGS, AM. SOC. INT'L L. 75 (1987) (collection of comments and discussion at ASIL Panel).

nesting areas in the Gulf were badly polluted.[19] Furthermore, as more volatile elements of the spilled oil evaporated, the heavier components sank to the bottom of the sea, injuring coral formations and associated schools of fish.[20]

B. *Setting Fire to Kuwaiti Oil Wells*

A second and more devastating war measure utilized by the Iraqi forces was to dynamite and set on fire substantially all the oil wells found in Kuwaiti territory. The number of Kuwaiti oil wells set on fire was initially estimated to be approximately 600.[21] On July 11, 1991, a more specific figure — 732 wells —was reported by the Kuwaiti Ambassador at a United States Senate Subcommittee hearing.[22] As the Iraqi forces prepared to with-

[19] Lemonik, *supra* note 18 at 40. In reference to the likely damage to the sea-grass beds and coral reefs integral to the health of the fragile Gulf ecosystem occasioned by the oil spill, Roger McManus, president of the Center for Marine Conservation, opined "It could be tens of years[,] if not centuries[,] before some of the reefs come back." *Id.* at 41. The author concludes, "Many of the creatures within the reefs — starfish, shrimp, lobsters, urchins, sea snakes and a variety of fish — would also be sacrificed." *Id. See also* Victor Mallet, *The Gulf War: Saudis Short of Booms as Slick Moves South*, THE FIN. TIMES, Feb. 5, 1991, § I, at 2 (reporting that Saudi officials were "desperately short of the kilometers of booms [needed] to protect turtle breeding grounds and other environmentally sensitive areas at the same time as industrial plants [whose desalinization mechanisms were threatened by the advancing oil slick]"); Dumanoski, *supra* note 18, at 25 (noting that the "greatest concern [among marine ecologists] is for the sea grass beds that cover large areas of shallow coastal waters and `form the base of the food web.' These `tremendously productive' areas are the nursery for the region's shrimp fishery . . . and provide food for many marine creatures, including green turtles and dugongs [a vegetarian sea mammal resembling the Florida manatee].") (quoting, in part, marine ecologist John Hardy).

[20] Dumanoski, *supra* note 18, at 25 (reporting that the Gulf's unique combination of "sun, high temperatures, and other factors will promote rapid evaporation and formation of tarballs [resulting in] . . . `more sinking.'" (quoting California marine biologist Jack Anderson)); *see also Speaking Of: Saddam's War on the Gulf's Environment*, L.A. TIMES, Mar. 5, 1991, at 6 (explaining how the sinking, heavier globules of oil adversely affect bottom-dwelling marine organisms); Lemonick, *supra* note 18, at 40 (discussing the decomposition process an oil spill undergoes and its consequential effects on coral reef development); Ray Marano, *Environmental Concern Touts Pollution Product*, PITTSBURGH BUS. TIMES & J., Feb 4, 1991, § 1 at 4 (explaining in detail the decomposition process of an oil spill based on the explanations of Dr. Edgar Berkey, president of the Center for Hazardous Materials). *See generally* EDGAR GOLD, HANDBOOK ON MARINE POLLUTION (1985), at ch. 8 (useful for the author's introduction to pollutants and their effects, particularly his discussion of the behavior of oil in water).

[21] *See, e.g.*, Tyson, *supra* note 17, at 6E (estimating that there were approximately 600 burning wells inside Kuwait).

[22] *200 Kuwaiti Well Fires Killed: 532 Left To Go*, OIL & GAS J., July 22, 1991, at 112 (reporting that Saud Nassir Al-Sabah, Kuwait's Ambassador to the United States, told the Senate committee that "retreating Iraqi troops set 732 Kuwaiti oil wells afire, a larger number than estimated earlier"). *See also* David Lightman, *Kuwaiti Oil Official Defends Pace of Oil-Fire Efforts*, THE HARTFORD COURANT, July 12, 1991, at A6 (noting that the ambassador's testimony was corroborated at the hearing by E.L. Shannon, Jr., chairman of the board of Santa Fe International Corp., a Kuwaiti-owned oil exploration company).

draw from Kuwait in the later phases of the conflict, they detonated explosives which they had placed at well heads when they first invaded and occupied Kuwait in August 1990.[23] In addition, they had mined areas around the oil wells.[24] Therefore, as the Iraqi forces withdrew in February 1991, they left substantial parts of Kuwaiti territory literally in flames. Oil wells not set ablaze were gushing uncontrollably and actually flooding the desert with oil.[25] At least some of these lakes of oil eventually caught fire.[26] These fires were even more difficult to extinguish than the burning oil wells.[27] As of August 1991, 345 burning or gushing oil wells were capped and the flames extinguished.[28] The rest of the oil wells continued to burn until November 6, 1991, when the efforts of private oil well fire-control specialist firms retained by the Kuwaiti Government were successful and the last

[23] *See, e.g.*, Peter Bale, *Iraq Leaves Kuwait's Oil Fields Ablaze In Nightmare Inferno*, Reuters, Mar. 2, 1991, *available in* LEXIS, Nexis Library, Reuter File (reporting that "even as Iraq tried to negotiate a withdrawal from Kuwait in the face of unrelenting air attacks, its soldiers were priming and detonating explosives set months ago around wellheads"). While Iraqi Republican Guards and engineers may have mined the wellheads immediately after Iraq's invasion of Kuwait in 1990, representatives of the Kuwaiti Oil Co. (KOC) have argued that "detonators and fuses were not fully connected to the oil wells until [late February]," contending that the ensuing conflagration "could have been avoided" had the allied forces not delayed in initiating their ground invasion to liberate Kuwait. *Id.* (quoting KOC oil reserves expert Musab al-Yaseen).

[24] *Id.*

[25] *See* Youssef M. Ibrahim, *Kuwaitis Battling Huge Pools of Oil*, N.Y. TIMES, Apr. 21, 1992, at A1 (explaining that "these oil lakes were created when retreating Iraqi forces sabotaged wells that did not catch fire but spewed their contents into the desert [creating] . . . huge pools that . . . [are a] half a mile wide, more than a mile long, and 2 to 3 feet deep," and noting that the effects of these standing bodies of oil had become more environmentally worrisome than the smoke from the many wells actually set on fire). *See also* Mariam Isa, *Kuwaiti Oilfield Damage Huge, Fires Intense Minister Says*, Reuters, Mar. 12, 1991, *available in* LEXIS, Nexis Library, Reuter File (quoting Kuwait's oil minister, Rashid Salem Ameeri, as stating: "There are some wells which are blown out and no longer on fire but [which] . . . are gushing oil all over the place, making huge lakes, which are still spreading").

[26] Whether some of these lakes were accidently set on fire or were intentionally set on fire during the capping of the wells is unclear. *Compare* James George & Brent Blackwelder, *Oil Fires: A Mideast Chernobyl?*, THE TORONTO STAR, July 10, 1991, at A21 (stating that fire had spread from the burning oil wells to the lakes of oil), *with* Ibrahim, *supra* note 25 (referring to Mohammed Ali Abbas, a senior executive of the Kuwait Petroleum Corp., the author states: "Mr. Abbas and his team think that one way to end the problem would be to incinerate the lakes, but he says that would cost hundreds of millions of dollars in logistics and equipment and that it could have consequences like restarting smoke pollution."). *See also* Isa, *supra* note 25 (noting that, according to Kuwaiti oil minister Rashid Salem Ameeri, the fire fighting experts considered igniting the oil lakes themselves rather than wait for them to catch fire accidentally, which could have hindered other fire fighting efforts).

[27] Tom Wicker, *In the Nation: Kuwait Still Burns*, N.Y. TIMES, Jul. 28, 1991, § 4, at 15.

[28] Diana Abdallah, *Kuwait to Export More Crude, Expects Production Increase*, Reuters, Aug. 31, 1991, *available in* LEXIS, Nexis Library, Reuter File.

burning oil well was capped and the flames put out, nine months after the withdrawal of the Iraqi occupation forces.[29]

There is no dispute that the firing of the Kuwaiti oil wells was a deliberate action by the occupation forces.[30] At the same time, according to press reports, about 34 wells were incidentally set ablaze by coalition air attacks[31] on occupied Kuwait, rather than deliberately fired by Iraqi forces.

The initial estimate of the volume of oil burned off or gushing away was six million barrels per day.[32] As more careful observation became possible after active military combat operations subsided, these high estimates were reduced to 1.5 million barrels per day.[33] April 1991 estimates of the time needed to extinguish and cap the oil well fires ranged from six to eighteen months.[34] In fact, the fire control and extinguishment operations lasted nine months.[35] News reports estimated the cost of controlling and capping the oil wells at $12.5 billion; earlier estimates were much higher.[36] The actual costs have yet to be made public.

[29] *See* Laurel Brubaker Calkins, *Oilwell Fire Fighters Bring Sun Back to Kuwait*, HOUS. BUS. J., Mar. 23, 1992, § 1, at 19. The final oil well fire was actually extinguished on October 31, 1991. A ceremonial well was re-ignited on November 6, 1991 in order to allow the emir of Kuwait, Sheik Al Ahmad Al Sabah, to ceremonially end the conflagration by shutting off a single valve on that date. *Id. See also* Robert Fox, *Firefighters Are Feted at Desert Damp-down Party*, THE DAILY TELEGRAPH, Nov. 7, 1991, at 12 (describing the special ceremony at which the emir extinguished "a giant candle of flame gushing from oilwell BG 118 in the Burgan oilfield").

[30] *See* Isa, *supra* note 6 (reporting that allied spokespersons had accused "Baghdad of deliberately leak[ing] the oil from occupied Kuwait as an act of `environmental terrorism'"). *See also* Bale, *supra* note 23 (confirming the allied accusation of Iraq's deliberate mining of Kuwaiti oil wells, while acknowledging Iraq's official position that "the damage [to Kuwaiti oil fields] was caused by Allied air raids").

[31] Bale, *supra* note 23 (reporting that "[a]llied bombing had damaged at least 34 oil wells during the month long air campaign [against Iraq]").

[32] *UNEP Report*, *supra* note 10, at 4.

[33] The UNEP Report cites the figure of 2 million barrels of crude oil burning daily, as an average figure until capping of the burning wells over an assumed period of 300-400 days. *UNEP Report*, *supra* note 10, at 4. *See also* Jurgen Hahn, *Environmental Effects of the Kuwaiti Oil Field Fires*, 25 ENVTL. SCI. TECH. 1530 (1991). Based on pre-invasion oil production and reservoir pressures, rates of burning were estimated as 1.5 million to 3 million barrels of oil per day. *Id.* at 1531.

[34] Hahn, *supra* note 33, at 1530 (estimating as long as two years to extinguish all the fires).

[35] Jennifer Parmelee, *Kuwaiti Emir Snuffs Out Last Iraqi-lit Oil Fire*, WASH. POST, Nov. 7, 1991, at A1.

[36] *Id.* (predicting $22 billion). *See also Kuwait Pays $2 bil to Put Out Oil Fires*, KHALEEJ TIMES, Nov. 3, 1991, at 3, *available in* LEXIS, World Library, Allwld File (costs were reduced as firefighting took eight months, instead of the projected twenty-four months).

Toxic chemicals released into the atmosphere by hundreds of oil wells furiously burning day and night significantly affected land, vegetation, buildings and water.[37] The immediate effects on the human population were substantial. Increased respiratory problems are expected in Kuwait, especially among young children and elderly persons.[38] One short-term environmental effect was the reduction of the average temperature by at least ten degrees Celsius when heavy clouds of smoke blocked the sun.[39] While the oil wells were still aflame, thousands of tons per day of sulfur dioxide[40] and soot[41] were released into the air.[42] Smoke clouds with high sulfur content resulted in acid rain or black rain, which adversely affects agricultural crops and more importantly, water supplies.[43] The flood of oil

[37] Margaret T. Okordudu-Fubara, *Oil in the Persian War: Legal Appraisal of an Environmental Warfare*, 23 ST. MARY'S L.J. 123, 137 (1991). Under similar conditions, people have complained of heartburn, eye lesions, neurological problems affecting musculature, and paralysis. *Id.* at 151. *See also* K. Lulla & M. Helfert, *Smoke Palls Induced by Kuwaiti Oilfield Fires Mapped from Space Shuttle Imagery*, 6 GEOCARTO INT'L 71 (1991). Long term effects are unclear. The oil fires and attendant smoke palls were mapped using space shuttle imagery for further scientific analysis, and assessment of environmental effects. *Id.* Hundreds of different hydrocarbons — including possible carcinogens such as benzene and polycyclic aromatic hydrocarbons — were released into the atmosphere and were present in the oil lakes in high concentrations. Parmalee, *supra* note 35, at A47; Robert Cooke, *Discover: Hell on Earth*, NEWSDAY, Jul. 30, 1991, at 55. *See also* Frank Barnaby, *The Environmental Impact of the Gulf War*, 21 ECOLOGIST 166 (1991) (calling for an international convention to protect the environment in time of war); Okordudu-Fubara, *supra*, at 138.

[38] Cooke, *supra* note 37 at 55.

[39] Okordudu-Fubara, *supra* note 37, at 138 (the soot cloud could decrease solar energy by as much as twenty percent). *See also* K. A. Browning et al., *Environmental Effects from Burning Oil Wells in Kuwait*, 351 NATURE 363 (1991); *Kuwait Amir Caps Last Gulf War Oil Fire*, ARAB TIMES, Nov. 7, 1991, at 1 (smoke clouds blotted out the sun, and record low temperatures resulted). S.S. Limaye et al., *Satellite Observations of Smoke from Oil Fires in Kuwait*, 252 SCIENCE 1536 (1991) (extensive dark smoke clouds, dispersed over a wide area, were studied by weather satellites).

[40] Okordudu-Fubara, *supra* note 37, at 138. Sulphur dioxide, emitted into the atmosphere when sulphur-containing fossil fuels are burned, can increase acid rain. *Id.* at 148. Hundreds of thousands of tons of sulfuric and nitric acids could have been produced by over six hundred oil fires. *Id.* at 137.

[41] One concern was that rising soot, by altering solar energy absorption, could cancel springtime in the Northern Hemisphere, and affect needed rainfall from monsoons in Asia. *Id.* at 137.

[42] Peter V. Hobbs & Lawrence F. Radke, *Airborne Studies of the Smoke from the Kuwait Oil Fires*, 256 SCIENCE 987 (1992). Estimated release of 20,000 metric tons of sulfur dioxide (SO_2), and 3400 metric tons of soot (elemental carbon) per day is based on results of airborne measurements taken during the period of May 16 to June 12, 1991, when 4.6 million barrels of oil were burning per day. *Id.* The Hobbs & Radke figures are significantly less than the early per day estimates reported in the international press (50,000 tons of sulfur dioxide and 100,000 tons of soot). *See* Tyson, *supra* note 17 at 6E.

[43] Browning, *supra* note 39, at 363 (episodes of acid rain and photochemical smog may occur within 1000 to 2000 km of Kuwait); Okordudu-Fubara, *supra* note 37, at 137. The effect could be likened to that of a volcanic eruption, in which the very high temperatures result in poisonous gases (e.g. carbon dioxide, carbon monoxide, hydrogen sulfide, and cyanide gas), drastically affect human and animal life, and destroy crops. *Id.* at 150.

outside zones where they exercise rights of jurisdiction, it is submitted, is a principle of general international law.[65] Arguably, the 1982 Law of the Sea Convention was not expressly designed to regulate the maritime relations of states in times of armed conflict. The relevant question becomes whether the duty not to pollute outside a nation's territory or jurisdictional zones may reasonably be considered to exist in times of war as well as in peace. Between two belligerent nations, the central technical question is to what extent and in what circumstances, that basic duty is suspended during armed conflict and is overridden by belligerent privileges recognized by the law of war. It seems clear that the duty is not suspended as between a belligerent nation and a neutral or non-participating state.[66] The belligerent acquires no license under the law of war to deliberately or negligently

[65] *See generally* Moria L. McConnell & Edgar Gold, *The Modern Law of the Sea: Framework for the Protection and Preservation of the Marine Environment*, 23 CASE W. RES. J. INT'L L. 83 (1991) (discussing the U.N. Convention on the Law of the Sea and its effect on international environmental law).

The Stockholm Declaration of June 16, 1972, adopted by the UN Conference on the Human Environment, expresses basic policy objectives of the international community. *Report of the United Nations Conference on the Human Environment*, Part I, U.N. Doc. A/CONF.48/14/Corr. 1 (1972), *reprinted in* 11 I.L.M. 1416 (1972) [hereinafter 1972 Stockholm Declaration]. The Stockholm Declaration was also adopted by the U.N. General Assembly. G.A. Res. 2996, 27th Sess., Supp. No. 30 (1972). For purposes of this article, the relevant principles are: 1) Principle 6 (discharging excessive toxic substances or heat that harms ecosystems must be halted); 2) Principle 7 (prevention of pollution of the seas with hazardous substances); 3) Principle 21 (states may exploit their own resources but must not cause damage beyond their national jurisdiction); 4) Principle 22 ("States shall co-operate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction."). 1972 Stockholm Declaration, *supra*, *reprinted in* 11 I.L.M. at 1418-20.

W.L. Schacte, Jr., Rear Admiral, U.S. Navy, in a paper read at the 25th Annual Conference of the Law of the Sea Institute, held in Malmö, Sweden, in August of 1991 took the view that "the direct applicability of [Art. 192] to armed conflict [was] not clear," although "[i]n peacetime, customary international law (reflected in the LOS Convention) imposes a duty on nations to 'protect and preserve the environment'." William L. Schacte, Jr., *The Value of the 1982 UN Convention on the Law of the Sea — Preserving Our Freedoms and Protecting the Environment*, Council on Ocean Law, *Special Report*, Aug. 1991, at 7. Adm. Schacte submitted that "what is clear, however, are the myriad of other rules that are part of the law of armed conflict and which serve the same basic goal [of] avoiding needless harm to the environment." *Id.*

For a much broader view, *see* Jan Schneider, *State Responsibility for Environmental Protection and Preservation*, *in* INTERNATIONAL LAW: A CONTEMPORARY PERSPECTIVE 602 (Richard Falk et al. eds., 1985). *See also* Günther Handl, *State Liability for Accidental Transnational Environmental Damage by Private Persons*, 74 AM. J. INT'L L. 525, 565 (1980) (concluding that a state's direct liability for private activities within that state's own territory, that result in transnational environmental damage is "a clear principle of general international law in the sense of strict international accountability, i.e., liability vis-a-vis the victim state(s)"). *A fortiori*, it is submitted, state liability for acts of its public agents, such as its military commanders, committed in foreign occupied territory and causing environmental pollution on international waters and in the territory of other states, may well be regarded as a principle of general international law.

[66] *See supra* note 65.

dump toxic materials in the exclusive economic zones, waters and coasts of neutral states.

The issues, when formulated in the foregoing terms, show that invocation of the general principles reflected in Articles 192 and 194 of the 1982 Convention need to be complemented by reference to applicable principles and norms of the law of war. However, the fundamental nature of those general principles creates a strong presumption of continuing applicability even in inter-belligerent relations in time of armed conflict. This presumption may be overturned only upon a clear showing of a countervailing belligerent privilege under a specific norm or general principle of the law of war.

B. Protocol I of 1977 and the ENMOD Convention

The next provisions that deserve consideration are found in Article 35, paragraphs 1 and 3, and Article 55 of Protocol I,[67] which supplement the 1949 Geneva Conventions. Article 35, paragraphs 1 and 3 relates to the protection of victims of international armed conflicts.[68] These provisions stress the fundamental principle that "in any armed conflict, the right of the parties to the conflict to choose methods or means of warfare is not unlimited."[69] Article 55 of Protocol I imposes affirmative obligations upon belligerents to protect the natural environment from long-term, widespread, and severe damage during war.[70] This obligation includes a prohibi-

[67] Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), Diplomatic Conference on Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflict, 4th Sess., Annex I, U.N. Doc. A/32/144 and Add. 1 (1977), *reprinted in* 16 I.L.M. 1391 (1977) [hereinafter Protocol I].

[68] *Id.*

[69] *Id.* art. 35, para. 1, *reprinted in* 16 I.L.M. at 1408. The relevant limitation is set out in Article 35(3): "It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." *Id.* art. 35, para. 3, *reprinted in* 16 I.L.M. at 1409.

[70] *Id.* art. 55, *reprinted in* 16 I.L.M. at 1415.
1. Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods and means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.
2. Attacks against the natural environment by way of reprisals are prohibited. *Id.* art. 55, paras. 1 & 2, *reprinted in* 16 I.L.M. at 1415.

tion against the use of methods of warfare which prejudice the health or survival of the population.[71]

Another relevant Convention is the United Nations Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques (ENMOD).[72] ENMOD prohibits States from engaging "in military or any other hostile use of environmental modification techniques having widespread, long lasting or severe effects as the means of destruction, damage or injury to any other party."[73]

Protocol I and ENMOD are conveniently examined together. There are similar threshold considerations and difficulties in clarifying the substantive scope of their respective reach and in attempting to apply their provisions in characterizing, in legal terms, the dumping of oil and burning of oil wells in Kuwait.

Both Protocol I and ENMOD pose a preliminary problem: the applicability of each convention as such, and as a whole, to the relations between the contending belligerents in the Gulf War. While Protocol I and ENMOD would clearly have been applicable *ratione materiae* in view of the undisputed existence of an "armed conflict" of an "international character," it arguably was not applicable as a whole across the line of war in the Gulf conflict, considering that some of the belligerents had not ratified Protocol I[74]. The ENMOD Convention had also not been ratified by the

[71] *Id.* It is unclear from the text of the Protocol whether this protects populations of non-belligerents also, or whether this protection extends only to the populations of the belligerent nations themselves. *Id.*

[72] *Opened for signature* May 18, 1977, 31 U.S.T. 333, 1108 U.N.T.S. 151, *reprinted in* 16 I.L.M. 88 (1977) [hereinafter ENMOD].

[73] *Id.* art. I, para. 1, *reprinted in* 16 I.L.M. at 91. The Convention defines the term "environmental modification techniques" in an exceedingly broad manner as referring to:
any technique for changing — through the deliberate *manipulation of natural processes* — the dynamics, composition or structure of the earth, including its biota (plant and animal life), lithosphere, hydrosphere and atmosphere, or of outer space. *Id.* art. II, para. 1, *reprinted in* 16 I.L.M. at 91 (emphasis added).

[74] Protocol I has been ratified or acceded to by 107 states as of November 15, 1991. The United States signed Protocols I and II in Geneva when the two additional Protocols adopted by the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts were first opened for signature on December 12, 1977. The United States has yet to ratify Protocol I and Protocol II. Similarly, the United Kingdom, France, Egypt, Turkey and Japan are not parties to Protocol I of 1977. In contrast, Saudi Arabia, Kuwait, Syria, the United Arab Emirates, Oman and Qatar are parties to Protocol I. Iraq is not a party to Protocol I, though Jordan is a party. Newly unified Germany, though not an active military participant, ratified Protocol I as the Gulf war was raging. Comite International de la Croix-Rouge, *Geneva Conventions of 12 August 1949 and Additional Protocols of 8 June 1977, Signatures, Ratifications, Accessions and Successions, as at 15 November 1991.*

principle belligerents,[75] and therefore could not be said to have applied during the Gulf War. However, considering the substantial number of State signatories to Protocol I and ENMOD, the question which arises is whether, or to what extent, the norms of these conventions have passed into the realm of customary international law.[76] More specifically, have the principles embodied in Articles 35 and 55 of Protocol I become part of customary international law? This question awaits the detailed attentions of academicians and historians of international law.[77] It does not appear that anyone has suggested that Article 1 of ENMOD has crystallized into customary law.

Two general comments may be offered in respect to these particular questions. Protocol I, articles 35(3) and 55, and ENMOD embody community interests so basic that they must reflect principles of general international law. First, Protocol I and ENMOD constitute particular expressions of the fundamental duty of States to refrain from deliberately polluting with toxic materials, or otherwise harming areas outside their own territory.[78] Second, ENMOD and Protocol I represent new applications of generally accepted principles of the law of armed conflict, made necessary by the emerging technology and modes of warfare that enable a belligerent to attack whole populations and the very physical resource bases of bodies politic as we know them.[79] To deny that uses of means of warfare which can liquidate all or part of the population and drastically degrade the physical or territorial base of an enemy state are prohibited by general international law, is to deny that there are any legal limitations upon the use of force in war.

Protocol I and ENMOD are distinguishable from each other in their substantive scope. ENMOD prohibits the "deliberate manipulation of natural processes" in order to change "the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space," with the object of damaging the armed forces of a State party to the Convention, its civilian population, towns, industries, agriculture, transportation and communication networks, or its natural resources.[80] Examples include the artificial creation of earthquakes and tidal waves (*tsunamis*); artificial modification of weather patterns (clouds, precipitation, cyclones and tornadoes); artificial changes in climate patterns (changes in ocean currents, depletion of the ozone layer) and in the condition of the ionosphere.[81] In contrast, Protocol I seeks to reach and proscribe uses of

[75] United Nations, *Multilateral Treaties Deposited with the Secretary-General: Status as at 31 December 1990* at 827 (1991). The ENMOD Convention has been ratified by 71 states as of December 31, 1990. Iraq signed this Convention but has not ratified it. *Id.* The United States ratified ENMOD on January 17, 1990. *Id.*

[76] The International Committee of the Red Cross has taken the view that many provisions of Protocol I express customary international law: "the law of Protocol I has a solid basis in long-established law . . . it is deeply rooted in customary law." ASIL Panel Discussion, *Customary Law and Additional Protocol I to the Geneva Conventions for Protection of War Victims: Future Directions in Light of the U.S. Decision Not to Ratify*, 81 PROCEEDINGS, AM. SOC. INT'L L. 26, 31 (1987) [hereinafter ASIL Panel Discussion] (comments of Dr. Hans-Peter Gasser, Legal Adviser, ICRC; speaking in his personal capacity). *See, e.g.*, L.R. Penna, *Customary International Law and Protocol I: An Analysis of Some Provisions, in* ETUDES ET ESSAIS SUR LE DROIT INTERNATIONAL HUMANITAIRE ET SUR LES PRINCIPLES DE LA CROIX-ROUGE EN L'HONNEUR DE JEAN PICTET 201 (Christophe Swinarski ed., 1984) [hereinafter ETUDES ET ESSAIS]; THEODORE MERON, HUMAN RIGHTS AND HUMANITARIAN NORMS AS CUSTOMARY LAW (1989); George H. Aldrich, *Prospects for United States Ratification of Additional Protocol I to the 1949 Geneva Conventions*, 85 AM. J. INT'L L. 1 (1991) [hereinafter Aldrich, *Prospects*].

The intellectual problems involved in the exercise of ascertaining the status of norms of the conventional law of armed conflict as customary law are canvassed in Theodore Meron, *The Geneva Conventions as Customary Law*, 81 AM. J. INT'L L. 348 (1987).

[77] In an earlier piece, Ambassador Aldrich described articles 35(3) and 55 of Protocol I as among the "significant advances made by the Protocol." George H. Aldrich, *New Life for the Laws of War*, 75 AM. J. INT'L L. 764, 778 (1981). Aldrich states that much of Protocol I "clearly is a codification of customary law." Aldrich, *Prospects*, *supra* note 76, at 19. Aldrich also refers approvingly to Dr. Waldemar A. Solf in relation to the provisions on environmental damage that "[a]lthough the formulation is new, and the protections granted by Protocol I are greater, this prohibition is so basic that it must be construed as being inherent to a general principle of law and thus general international law." *Id.*; *see also* Waldemar A. Solf, *Protection of Civilians Against the Effects of Hostilities Under Customary International Law and Under Protocol I*, 1 AM. U.J. INT'L L. & POL'Y 117, 134 (1986).

[78] The World Charter for Nature adopted by the U.N. General Assembly on October 28, 1982 in the form of a Resolution by a vote of 111 in favor, 1 (the USA) against and 18 abstentions, is worth noting in this connection. The Charter sets out as general principles the following, among others: "Nature shall be secured against degradation caused by warfare or other hostile activities" (Para. 5); "Activities which might have an impact on nature shall be controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used" (Para. 11); "Special precautions shall be taken to prevent discharge of radioactive or toxic wastes" (Para. 12b). United Nations, *General Assembly Resolution on a World Charter for Nature*, G.A. Res. 37/7, U.N. GAOR, 37th Sess., Item 21, U.N. Doc. A/RES/37/7 (1982), *reprinted in* 22 I.L.M. 455, 457-59 (1983) [hereinafter *World Charter for Nature*].

[79] ASIL Panel Discussion, *supra* note 76, at 33 (comments of Dr. Hans-Peter Gasser, Legal Adviser, ICRC).

[80] ENMOD, *supra* note 72, art. 2, *reprinted in* 16 I.L.M. at 91. *See Report of the Conference of the Committee on Disarmament*, Vol. 1, U.N. GAOR, 31st Sess., Supp. No. 27, at 73, U.N. Doc. A/31/27 (1976) [hereinafter, *Committee on Disarmament*].

[81] *Committee on Disarmament*, *supra* note 80, at 92. An "Understanding relating to Article I" of the ENMOD Convention was prepared by the Conference of the U.N. Committee on Disarmament (CCD) which had drafted the Convention. Text of the "U.S. Understanding" can be found in John A. Boyd, *Contemporary Practice of the United States Relating to International Law*, 72 AM. J. INT'L L. 375, 405 (1978). A useful survey of scientific and national regulatory issues is found in CONTROLLING THE WEATHER: A STUDY OF LAW AND REGULATORY PROCESSES (Howard J. Taubenfeld ed., 1970).

weapons and any modes of warfare which inflict damage upon the "natural environment" as distinguished from the human population.[82] The term "natural environment" as used in Protocol I refers to "this system of inextricable interrelations between living organisms and their inanimate environment,"[83] which embodies an equilibrium — sometimes permanent, sometimes transient but "always relatively fragile" — of forces which balance each other and condition the life of biological species.[84] During the Diplomatic Conference which led to the adoption of Protocol I, there was mention of massive uses of herbicides and defoliants and other chemical and biological agents which produce "direct toxic effects on man, animals and plants" by way of illustrating what could fall within the scope of Articles 35(3) and 55.[85]

Protocol I and ENMOD have a notable common textual feature. Both use the same set of modifiers in designating the prohibited damage upon the "natural environment": "widespread," "long term" and "severe."[86] However, under Protocol I, all three terms must be applicable at the same time to a particular instance of environmental damage if that instance is to fall within the ambit of the proscription; in other words, the designations are intended to be cumulative rather than alternative.[87] In contrast, under ENMOD, the widely held view is that the three adjectives were used as alternative designations — it is sufficient that the environmental damage is wide-spread *or* severe *or* long-term — for that damage to fall within

[82] "External conditions and influences which affect the life, development and the survival of the civilian population and living organisms." Report of the Group "Biotope," *in* COMMENTARY ON THE ADDITIONAL PROTOCOLS OF 8 JUNE 1977 TO THE GENEVA CONVENTIONS OF 12 AUGUST 1949 415 (Yves Sandoz et al. eds., International Committee of the Red Cross, 1987) [hereinafter ICRC COMMENTARY].

[83] *Id.*

[84] *Id.*

[85] *See, e.g.*, 14 OFFICIAL RECORDS OF THE DIPLOMATIC CONFERENCE ON THE REAFFIRMATION AND DEVELOPMENT OF INTERNATIONAL HUMANITARIAN LAW APPLICABLE IN ARMED CONFLICTS: GENEVA, 1974-1977 172, 237 [hereinafter OFFICIAL RECORDS DIPLOMATIC CONFERENCE]. MICHAEL BOTHE ET AL., NEW RULES FOR VICTIMS OF ARMED CONFLICTS 348 (1982) submitted that Articles 35(3) and 55 "would affect such unconventional means of warfare as the massive use of herbicides or chemical agents which would produce widespread, long-term and severe damage to the natural environment."

The delegates at the conference were drawing upon the experience during the war in Vietnam. *See* Richard Falk, *The Environmental Law of War: An Introduction*, *in* PLANT, *supra* note 4, at 78-95.

[86] *étendus, durables et graves. See supra* notes 69-70 and accompanying text.

[87] Alexandre Kiss, *Les Protocoles Additionels aux Conventions de Geneva de 1977 et la Protection de biens de l'Environment*, *in* ETUDES ET ESSAIS, *supra* note 76, at 181, 189.

ENMOD's prohibition.[88] By itself, the cumulative or alternative character of particular modifiers can offer only limited clarification of the prohibited level of environmental harm under either Protocol I or ENMOD.

Some delegations to the Diplomatic Conference which adopted the 1977 Protocol indicated that ten years was the appropriate time dimension for prohibited long-term environmental damage; other delegations thought that twenty or more years was appropriate.[89] At the same time, there was some recognition that to specify quantitative criteria for widespread, long-term, and severe, without regard to climatic and ecological conditions in the particular areas or regions affected in a given armed conflict, could create more difficulties than would be resolved by such specificities.[90] Once more, ENMOD offers marked contrast. Because of its textual use of the disjunctive "or" in connection with the three adjectives, and because of the interpretive "Understanding,"[91] commentators have taken the view that ENMOD requires a much lower threshold of environmental damage to activate its prohibitory rule than Protocol I.[92] No intellectually satisfying

[88] *See* ICRC COMMENTARY, *supra* note 82, at 418; PLANT, *supra* note 4, at 193. Antoine Bouvier, *Protection of the Natural Environment in Time of Armed Conflict*, INT'L REV. OF THE RED CROSS, No. 285, Nov.-Dec. 1991, at 567, 576.

[89] *See Report of Committee III*, 15 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 269.

[90] Géza Herczegh, *La Protection de l'Environment Naturel et le Droit Humanitaire*, *in* ETUDES ET ESSAIS, *supra* note 76, at 725, 732.

[91] In the "Understanding relating to Article I" of ENMOD, the Committee on Disarmament stated that:
[F]or the purposes of [the ENMOD] Convention, the terms 'widespread,' 'long-term' and 'severe' shall be interpreted as follows:
(a) 'widespread:' encompassing an area on the scale of several hundred square kilometers;
(b) 'long-lasting:' lasting for a period of months, or approximately a season;
(c) 'severe:' involving a serious or significant disruption or harm to human life, natural economic resources or other assets.
See Committee on Disarmament, *supra* note 80, at 91.

[92] The ICRC Commentary on the Additional Protocols combined the terms of Protocol I and ENMOD: In times of armed conflict, which is only what concerns us here, the Protocol and the Convention, taken together, prohibit:
a) any direct action on natural phenomena of which the effects would last more than three months or a season for one or other of the Parties to the Convention, even if this Party is not a Party to the conflict;
b) any direct action on natural phenomena of which the effects would be widespread or severe . . . regardless of the duration, affecting one or other of the Parties to the Convention, even if it is not a Party to the conflict;
c) any method of conventional or unconventional warfare which, by collateral effects, would cause widespread and severe damage to the natural environment as such, whenever this may occur over a period of decades.
ICRC COMMENTARY, supra note 82, at 416. *See also* PLANT, *supra* note 4, at 192-94.

explanation as to why the critical level of damage under Protocol I should be perceived as higher than that established in ENMOD has been put forth. The relationship between that threshold level and the "character, context, object and purpose" of Protocol I and ENMOD, respectively, awaits careful clarification.[93] Meantime, the higher threshold level perceived under Protocol I has led directly to the opinion that neither the large scale dumping of crude oil in the Persian Gulf nor the firing of the Kuwaiti oil wells would fall within the scope of Articles 35(3) and 55 of Protocol I.[94] And since the dumping of oil and the burning of well-heads did not involve the creation of earthquakes or tidal waves, or permanent climate or weather modification, the ENMOD prohibition, even if in effect between the coalition and Iraq, was not breached.[95]

The terms "wide-spread," "long-term," and "severe" almost naturally call to mind the radiological effects of so-called "high-yield" and "dirty" nuclear weapons. However, when the United States signed Protocol I, it made explicit its "understanding" that "the rules established by this Protocol were not intended to have any effect on and do not regulate or prohibit the use of nuclear weapons."[96] In interpreting the "Understanding," then Ambassador George H. Aldrich, who headed the United States delegation to the Diplomatic Conference, wrote that environmental damage due to detonation of nuclear weapons explosives "would, of course, be

[93] In the course of the Diplomatic Conference, some delegations suggested that the meaning of the words "wide-spread," "long-term" and "severe" damage as used in Articles 35(3) and 55 of Protocol I would not necessarily be the same meaning properly given to those words in the May 18, 1977 Convention, since the latter had "different aims and a different scope of application." *See, e.g.*, 6 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 208 (remarks of Mr. di Bernardo of Italy). It appears that no more specific clarification was offered on this point. *See also* ICRC COMMENTARY, *supra* note 82, at 419-20 (stating that many delegates did not approve of the inclusion of the words because of potential friction over insignificant questions and consistency with the use in other environmental protection documents).

[94] *See* PLANT, *supra* note 4, at 193-94.

[95] *Id.* at 194.

[96] Boyd, *supra* note 81, at 407.

excluded" from the scope of Articles 35(3) and 55.[97]

Whatever the precise intention of the United States and the other nuclear powers may have been,[98] the correctness of Ambassador Aldrich's interpretation cannot casually be taken for granted. It is very difficult to suppose that the use of nuclear weapons is exempt from the application of the law of armed conflict, which requires belligerents to distinguish the civilian population from combatants and to refrain from inflicting disproportionate destruction. These principles have been reaffirmed and reinforced in Protocol I.

The views expressed by Dr. Hans-Peter Gasser, Legal Adviser to the ICRC, appear more moderate and consistent with fundamental principles of the law of armed conflict:

> [A]ccording to prevailing opinion, Protocol I has not created new law on the use of nuclear weapons. The rules of existing customary law, however, do apply to the use of such weapons, at least according to prevailing opinion. Declarations made by nuclear powers on signature of Protocol I confirm the view. Our analysis will therefore help to determine those

[97] *See* Aldrich, *Prospects*, *supra* note 76, at 14.

Before the signing of Protocol I, at one of the final sessions of the Conference, Ambassador Aldrich made a statement, abstracted in the Summary Record:

> From the outset of the Conference it had been his understanding that the rules to be developed had been designed with a view to conventional weapons. During the course of the Conference, there had been no discussion of the use of nuclear weapons in warfare. He recognized that nuclear weapons were the subject of separate negotiations and agreements and, further, that their use in warfare was governed by the present principles of international law. It was his Government's understanding that the rules established by the Protocol were not intended to have any effect on, and did not regulate or prohibit the use of, nuclear weapons. It further believed that the problem of the regulation of nuclear weapons remained an urgent challenge to all nations which would have to be dealt with in other forums [sic] and by other agreements. 7 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 295.

[98] The UK representative, Mr. Freeland, made a declaration similar to that made by Ambassador Aldrich. *Summary Record of the Fifty-eighth Plenary Meeting*, 7 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 303. At the final meetings of the Conference, the French representative, Mr. Paolini, stated that "the rules of [Protocol I] do not apply to the use of nuclear weapons." *Summary Record of the Fifty-sixth Plenary Meeting*, 7 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 193. On the other hand, the Indian delegation, at the time of adoption of what is now Article 35 of Protocol I by consensus, stated that it joined the consensus because, in its view, the rules set out in Article 35 applied to all categories of weapons — nuclear, bacteriological, chemical or conventional, or any other categories of arms. *Annex to the Summary Record of the Thirty-ninth Plenary Meeting — Explanations of Vote*, 6 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 115.

rules of positive international law which limit the use of nuclear weapons in war.[99]

At the other end of the spectrum, lies damage caused by bombardment by artillery, aircraft and missiles with conventional high explosives. It appears reasonably clear from the *travaux*[100] of the Diplomatic Conference that such damage was *not* intended to be covered by Articles 35(3) and 55 of Protocol I, although such damage may be very extensive indeed in physical terms, as in the case of Verdun in World War I, and Dresden, Frankfurt and Tokyo in World War II.[101] Destruction wrought by conventional high explosives is not usually permanent or long-term in nature.

[99] *See* ASIL Panel Discussion, *supra* note 76, at 32.

Dr. Gasser's comments on the Additional Protocols reflect, in some respects, the thinking of the ICRC; however, Dr. Gasser was speaking in his personal capacity, and his views do not necessarily represent those of ICRC. *Id.* at 31. According to the ICRC Commentary:

[T]here is no doubt that during the four sessions of the Conference agreement was reached not to discuss nuclear weapons. Furthermore, there is no doubt that Protocol I of 1977 has not in any way nullified the general rules which apply to all methods and means of combat .... [T]hese rules are in any case incorporated in the Protocol. These are, first of all, the provisions of the Hague Regulations of 1907, which are a reminder that belligerents do not have an unlimited right to choose the means of injuring the enemy, that it is prohibited to use weapons, projectiles or other devices of a nature to cause superfluous injury and unnecessary suffering. The protocol also repeats the customary rule which is at the very basis of the laws and customs of war, i.e., the rule that a distinction shall always be made between combatants and military objectives, on the one hand, and the civilian population and civilian objects, on the other hand. Whatever opinion one may have of the scope of application of Protocol I, these rules remain completely valid and continue to apply to nuclear weapons, as they do to all other weapons. Thus it cannot be argued that by repeating such rules the Protocol excludes nuclear weapons from its scope of application.

The foregoing is in no way contradicted by the declarations made by the United Kingdom and the United States on signing the Protocol on 12 December 1977. The British declaration refers explicitly to new rules and therefore implicitly confirms that the rules reaffirmed in the Protocol apply to all arms; and it is in accordance with the British Military Manual. The American declaration is less clear on this point, though it should certainly be interpreted in the same way, as confirmed by the United States Military Manual. ICRC COMMENTARY, *supra* note 82, at 593.

[100] *Editor's Note: Travaux* is the French plural of the French word *travail*, meaning "labor, hard work, industry, workmanship, trouble, or pains." CASSELL'S FRENCH DICTIONARY 731 (1978).

[101] *See, e.g.*, Report to Committee III on the Work of the Working Group:

It was recognized in the Working Group that environmental change or disturbances of the ecosystem might be on a very low scale. Trees may be cut down or destroyed as the result of normal artillery fire. Artillery fire also causes cratering. As the Group Biotope put it, "Acts of warfare which cause short-term damage to the natural environment, such as artillery bombardment, are not intended to be prohibited by the Article." That thought lies behind both proposed texts. *Summary Record of the Thirty-fifth Meeting*, 15 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 359. *See also infra* note 102.

Buildings and other installations leveled by high explosives can be rebuilt and used again as soon as active combat ceases; farms can be plowed again and cultivated, and forests replanted. All can be made productive again within a relatively short period of time.

More useful perhaps is the articulation of the basic policies sought to be secured by Articles 35(3) and 55: protection of the health and survival of the population, particularly the civilian population, and of the means upon which such survival depends in time of armed conflict.[102] The fundamental policy objective of securing the *survival* of the civilian population relates to the long-term *future* of the state itself, both with respect to the biological basis or human component of the state, and the physical or natural base in which the human component must live. That fundamental objective also relates to the resumption and development of normal community life after termination of a conflict.

Weapon uses or modes of warfare which substantially threaten biological and physical bases of the opposing belligerent must be covered by the prohibitions in Protocol I. The nature and level of the prejudicial impact upon the population caused by attacks upon the natural environment, rather than an abstract typology of weapons,[103] or the simple phys-

[102] The Report of Committee III to the Diplomatic Conference stated, in relevant part:

The Biotope report [i.e., report of an informal Working Group] states that "Acts of warfare which cause short-term damage to the natural environment, such as artillery bombardment, are not intended to be prohibited by the article," and continues by stating that the period might be perhaps for ten years or more. However, it is impossible to say with certainty what period of time might be involved. It appeared to be a widely shared assumption that battlefield damage incidental to conventional warfare would not normally be proscribed by this provision. What the article is primarily directed to is thus such damage as would be likely to prejudice, over a long term, the continued survival of the civilian population or would risk causing it major health problems. *Summary Record of the Twenty-eighth Meeting*, 15 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 269.

The term "health" was used in a comprehensive sense to designate the welfare of the population beyond its mere physical survival:

Because article 48 *bis* was inserted in the context of protection of the civilian population, the particular prohibition is linked to the survival of that population. The word "population" was used without the usual adjective "civilian" because it was thought that the future survival is that of the population in general, without regard to combatant status. The term "health" was used in a broad sense in connection with survival to indicate actions which could be expected to cause such severe effects that, even if the population survived, it would have serious health problems, such as congenital defects which produced deformed or degenerate persons. Temporary or short-term effects were not contemplated within the prohibitions of article 48 *bis*. *Id.* at 281.

[103] E.g., nuclear, biological, chemical, conventional, ecological, or geophysical.

ical dimensions of chemical and ecological change, is of critical importance for legal policy. Thus, it has been suggested by a distinguished commentator that where a particular means of warfare generating damage upon the natural environment has in fact seriously prejudiced "the health or survival of the population," such means is properly regarded as violative of Protocol I; the precise scope of the damage to the environment becomes almost secondary.[104]

C. *Summary*

As previously noted, reliable scientific information on the nature, extent and expected duration of the consequences on the health and welfare

[104] Kiss, *supra* note 87, at 189-90. *Cf.* The Report to Committee III on the Work of the Working Group stated, *inter alia*, that:

> In Article 48 *bis*, the first sentence enjoining the taking of care lays down a general norm, which is then particularized in the second sentence. Care must be taken to protect the natural environment against the sort of harm specified even if the health or survival of the population is not prejudiced. An instance would be environmental harm which is widespread, long-term and severe but in an unpopulated area. 15 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 360.

The Gulf War generated considerable interest in the field of environmental protection in times of armed conflict. Among the noteworthy suggestions which have recently been put forward by legal scholars is that new prohibitory norms should be developed which would be designed "to protect the environment *per se*, and not merely (like Art. 55 of Protocol I) the environment because of the ultimate impact of the damage upon humans." PLANT, *supra* note 4, at 192. A basic principle is said to be that "[d]amage, whether *deliberately* or *incidentally* inflicted on the environment or on ecosystems during [armed conflict] should be avoided not just in cases in which it could cause harm to human health, *but without any further requirements*." *Id.* at 98 (comments of Dr. Helmut Turk) (emphasis added). Thus, a proposed new instrument would include, e.g., a provision reproducing Articles 48 and 49 of Protocol I, but substituting "environment" for "civilians" as a new protected category of things and a provision prohibiting attacks upon the environment by way of reprisal, reproducing Article 55(2) of Protocol I. *Id.* at 195. It is also urged that a new definition of "environment" is essential, one that is "nature-centric" rather than "human-centric." David Tolbert, *Defining the 'Environment,' in* PLANT, *supra* note 4, at 257-58.

Commonly, damage to the environment impacts upon earth's human population, whether in physical or in less tangible (e.g. psychological, spiritual, or aesthetic) terms, whether in the short run or in the long term or possibly in the very long term. It may, however, be possible to conceive of environmental harm that has *absolutely* no consequences of any kind for human beings, though it would be difficult to imagine why a rational belligerent would expend resources in attacking the environment and inflicting damage which would *ex hypothesi* not prejudice the enemy population. Historically, the law of war has been "humanitarian" in orientation and has sought the protection — by reducing to a minimum the destruction — of human and anthropocentric values. Should normative formulations which are wholly or primarily "nature-centric" actually be achieved, such de-humanized provisions are likely to be very difficult to implement and enforce. A new and more exacting morality which would recognize duties not only to men in society but also to non-human life-forms and even non-sentient beings, may be essential. *See World Charter for Nature, supra* note 78, at 456. New incentives for compliance would probably have to be constructed since "self-interest" may be substantially unavailing. *Id.*

of the population of Kuwait and other countries caused by the dumping of oil in the Persian Gulf and the spoliation by fire and spillage of the oil resources of Kuwait remains unavailable. Until such information becomes generally available, legal appraisal of those means of war in terms of the 1982 Convention on the Law of the Sea,[105] and of Protocol I,[106] and ENMOD,[107] is likely to be problematical and speculative.

III. THE LAW OF ARMED CONFLICT

This section briefly considers some of the general principles of the law of armed conflict — what used to be called the law of war — which are relevant to legal assessment of the environmental warfare used in the Gulf war. Because the general principles discussed in this section are indisputably integral parts of general or customary international law, they are more amenable to analysis and application to the particular measures of warfare under review.

The first of these principles, which is very basic, requires belligerents to distinguish between the civilian population and military objectives.[108]

[105] *See supra* notes 53-57 and accompanying text.

[106] *See supra* notes 77-104 and accompanying text.

[107] *See supra* note 75 and accompanying text.

[108] The principle of establishing a distinction between combatants and non-combatants took a long time to gain acceptance. For many centuries it was considered that war brought into conflict not only states and their armies, but also their peoples. Accordingly, civilians were left at the mercy of the victors who too often subjected them to forced labor, stole civilian possessions and treated with contempt their most basic rights.

The idea that the public should be kept apart from war first made its appearance in the 16th century but only became established in the 18th. Unfortunately, the enormous development in the 20th century of the means for making war, while it did not change this principle, put the practice in great peril. JEAN PICTET, DEVELOPMENT AND PRINCIPLES OF INTERNATIONAL HUMANITARIAN LAW 51 (Martinus Nijhoff et. al. trans., 1985) [hereinafter PICTET, PRINCIPLES].

This principle has been reinforced by Articles 48,[109] 51,[110] and 54[111] of Protocol I. Basically, belligerents are prohibited from attacking objects or areas which provide sustenance to the civilian population, the destruction of which would force them to leave the area.

The general principles of the international law of armed conflict also prohibit the infliction of unnecessary, irrelevant, or disproportionate da-

[109] Article 48 of Protocol I formulates the basic principle in the following terms:

> In order to ensure respect for and protection of the civilian population and civilian objects, the parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives. Protocol I, *supra* note 67, art. 48, *reprinted in* 16 I.L.M. at 1412.

[110] Article 51 of Protocol I states that the civilian population does not constitute a permissible object of attack, and prohibits "acts or threats of violence, the primary purpose of which is to spread terror among the civilian population." Protocol I, *supra* note 65, art. 51(2). For an insightful treatment of the basic principle referred to, in shorthand terms, as "the principle ot distinction," see FRITS KALSHOVEN, THE LAW OF WARFARE: A SUMMARY OF ITS RECENT HISTORY AND TRENDS IN DEVELOPMENT 31 (1973).

> Indiscriminate attacks which are prohibited:
> (a) those *which are not directed* at a specific military objective;
> (b) those which employ a method or means of combat *which cannot be directed* at a specific military objective; or
> (c) those which employ a method or means of combat the effects of *which cannot be limited* as required by [Protocol I].
> Protocol I, *supra* note 67, art. 51(4), *reprinted in* 16 I.L.M. at 1413 (emphasis added). Indiscriminate attacks are of such a nature and conducted in such a manner as to "strike military objectives and civilians or civilian objects without distinction." *Id.*

[111] Protocol I, *supra* note 67, art. 51(4), *reprinted in* 16 I.L.M. at 1413. *See also* Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons to the United Nations Convention on Prohibitions or Restrictions of Use of Certain Conventional Weapons which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 35th Sess., Annex I, art. 2(4), U.N. Doc. A/CONF.95/15 (1980), *reprinted in* 19 I.L.M. 1523, 1534 (1980). This Protocol prohibits the making of "forests or other kinds of plant cover" the object of attack by incendiary weapons "except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives." *Id. See generally* Yves Sandoz, *A New Step Forward in International Law: Prohibitions on Restrictions on the Use of Certain Conventional Weapons*, INT'L REV. OF THE RED CROSS, Jan.-Feb. 1981, at 3.

> Protocol I seeks to protect objects indispensable to the survival of the civilian population, by prohibiting attack upon such objects, including "food stuffs, agricultural areas for the production of food stuffs, crops, livestock, drinking water installations and supplies and irrigations works." Protocol I, *supra* note 67, art. 54, *reprinted in* 16 I.L.M. at 1414.

mage upon the enemy.[112] The infliction of long-term damage upon the natural resources of a belligerent, if not already prohibited by conventional norms, would in any case fall within the concept of militarily irrelevant or disproportionate damage. Long-term damage upon the natural resources or territorial base of a state is in effect inflicted upon *future* generations, people who obviously could not have any influence or impact upon the military objectives sought by the destroyer.

[112] The author, in an earlier work, opined that:

> In a slightly lower order of abstraction, the conception of necessary violence is said to embrace two related but perhaps distinguishable requirements: the one of relevancy and the other of proportionality. Destruction is characterized as irrelevant when it is not directed toward the achievement of the legitimate objective specified. Clearly, such destruction is unnecessary in respect of such objective .... Proportionality is commonly taken to refer to the relation between the amount of destruction effected and the military value of the objective sought .... Disproportionate destruction is ... unnecessary destruction. Just as disproportion includes in its reference a whole continuum of degrees, so relevancy is a relative thing. MYRES S. MCDOUGAL & FLORENTINO P. FELICIANO, LAW AND MINIMUM WORLD PUBLIC ORDER: THE LEGAL REGULATIONS OF INTERNATIONAL COERCION 524 (1961) (citations omitted).

> The problem thus formulated from the perspective of an authoritative decision-maker reviewing a military commander's acts, is ... one of determining proportionality between the military advantage derived from the destruction imposed upon the target, ... and the concomitant deprivations of civilian values .... [T]he question of proportionality may perhaps be conveniently conceived in terms of the reasonableness of the degree, or extent, of disparity between the area actually destroyed in the particular bombing operation ... and the area physically occupied by the installations asserted to have been the target of such operation. The disparity may, in other words, be taken as a crude indicator of the extent of civilian damage. *Id.* at 650 (citation omitted).

> The notion of balancing or discounting the military advantage expected from a particular use or type of use of a specific method of warfare against the incidental loss of civilian values, has been given conventional expression in Protocol I. Protocol I, *supra* note 67, art. 51(5)(b), *reprinted in* 16 I.L.M. at 1413. *See also* Protocol on the Use of Mines, Booby Traps and Other Devices to the United Nations Convention on Prohibitions or Restrictions of Use of Certain Conventional Weapons Which May Be Deemed to be Excessively Injurious to or Have Indiscriminate Effects, 35th Sess., Annex I, art. 3(3), U.N. Doc. A/CONF.95/15 (1980), *reprinted in* 19 I.L.M. 1523, 1529 (1980). (Both protocols refer to indiscriminate attacks or uses of weapons "which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.").

> *Cf.* JEAN PICTET, HUMANITARIAN LAW AND THE PROTECTION OF WAR VICTIMS (1975) [hereinafter PICTET, PROTECTION OF WAR VICTIMS]. According to Pictet, "The principle of humanitarian law ... is a relationship of proportionality .... [M]an must be spared, but he can be spared only to a reasonable extent .... [B]elligerents shall not inflict on their adversaries harm out of proportion to the object of warfare, which is to destroy or weaken the military strength of the enemy. *Id.* at 31.

> Additionally, environmental damages must be weighed in determining whether the incidental civilian damage was not disproportionate in relation to the expected military advantage. Environmental damage is a particular form or species of civilian damage. Michael Bothe, *Round Table Session II: Targetry, in* PLANT, *supra* note 4, at 117-18, 126.

In support of this proposition, one may cite Jean Pictet, who sets out three principles of limitation as constituting *"principes propres au droit de la guerre:"*[113] (1) the principle of limitation *"ratione personae,"*[114] (2) the principle of limitation *"ratione loci,"*[115] and (3) the principle of limitation *"ratione conditionis."*[116] With respect to this third principle of limitation, Pictet designated as a principle of application (*"principe d'application"*) that the natural environment must be protected and respected by belligerents even as they proceed in their mutual use of military force.[117]

Legal appraisal of the short-term damage inflicted by the firing of the oil wells depends upon the existence of a reasonably clear relationship between this measure and a specific military objective of the occupational forces. It is difficult to determine what specific military objective or advantage[118] was actually sought by the occupation forces in systematically setting hundreds of oil wells on fire as they withdrew from Kuwait. In the earlier phases of the conflict, occupation forces held the oil resources of Kuwait (along with many non-Kuwaiti nationals) hostage in an effort to deter the coalition forces from responding militarily to the seizure and occupation of Kuwait. This was obviously ineffective.

Petroleum stocks are valuable as property or assets which may be used for operations of war,[119] much like means of transport and communications and all kinds of ammunition of war,[120] which under the terms of

[113] PICTET, PRINCIPLES, *supra* note 108, at 71.

[114] "The civilian population and individual civilians shall enjoy general protection against dangers arising from military operations." *Id.* at 72.

[115] "Attacks must be limited strictly to military objectives." *Id.* at 73.

[116] "It is prohibited to employ against anyone weapons and methods of warfare of a nature to cause superfluous injury or unnecessary suffering." *Id.* at 75.

[117] *Id.* at 77.

[118] "[M]ilitary objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization in the circumstances ruling at the time, offer a definite military advantage." Protocol I, *supra* note 67, art. 52(2), *reprinted in* 16 I.L.M. at 1414.

[119] KALSHOVEN, *supra* note 110, at 53-57.

[120] *See Id.* at 34 (citing Hague Convention of 1907 Concerning Bombardment of Naval Forces in Time of War).

Article 53 of the 1907 Hague Regulations[121] may be taken by a belligerent from its enemy as "war booty."[122] What the occupant's forces destroyed, however, was not petroleum inventories or gasoline depots, the military use of which they might have sought to deny to the coalition forces. What was set on fire were oil resources underground, *in situ*, unextracted and unprocessed, and accordingly not at that stage susceptible to immediate military use.[123]

A closer analogy might be so-called the "scorched earth" policy used by Soviet forces in Russia as they withdrew from advancing German armies in 1941, and in turn, by the German forces withdrawing from occupied Allied and Soviet territory in 1944.[124] Generally, devastation of enemy property which is a concomitant of ordinary military action has been regarded as militarily necessary and permissible.[125] After World War II, the Allied Powers' war crimes tribunals considered and passed upon the destruction of food supplies, housing and shelter, fuel, means of transport, and communications carried out by retreating German forces in anticipation of imminent advances of Soviet troops through the devastated zones.

The war crimes tribunals, in the celebrated cases of *United States v. List*[126] and *United States v. Von Leeb*[127] acquitted all the accused German generals. The tribunal in the *Von Leeb* case held that:

[121] 1907 Hague Convention No. IV, Respecting the Laws and Customs of War on Land, Oct. 18, 1907, art. 23(g), 36 Stat. 2277, T.S. No. 539 [hereinafter 1907 Hague Convention], *reprinted in* THE HAGUE CONVENTIONS AND DECLARATIONS OF 1899 AND 1907 at 116 (James Brown Scott ed., 2nd ed. 1915) (in English), *and reprinted in Manuel de la Croix-Rouge Internationale-Conventions-Statuts et Reglements-etc.* at 20 (11e ed., 1971) (in French).

[122] *Id.* art. 23(g).

[123] *Cf.* KALSHOVEN, *supra* note 110, at 53 (naming oil refineries as an arguably legitimate military target).

[124] The Soviet army, with the help of the civilian population, burned anything they thought the advancing German forces might find of use, thus denying the Nazis potentially valuable resources.

[125] *See generally* KALSHOVEN, *supra* note 110, at 38. The 1907 Hague Regulations declared it "specially forbidden . . . to destroy or seize the enemy's property unless such destruction or seizure be imperatively demanded by the necessities of war." 1907 Hague Convention, *supra* note 121, art. 23(g).

[126] 8 LAW REPORTS OF TRIALS OF WAR CRIMINALS 34 (1948).

[127] 12 LAW REPORTS OF TRIALS OF WAR CRIMINALS 1 (1948).

> Defendants in this case were in many instances in retreat under arduous conditions wherein their commands were in serious danger of being cut off. Under such circumstances, a commander must necessarily make quick decisions to meet the particular situation of his command. A great deal of latitude must be accorded to him .... What constitutes devastation beyond military necessity in these situations requires detailed proof of an operational and tactical nature.[128]

The doctrine embodied in *List* and *Von Leeb* was seen as an exception to the general prohibition of destruction of public and private property by a belligerent occupant found in Article 53 of the 1949 Geneva Convention for the Protection of Civilian Persons in Time of War.[129] Article 147 of the same Convention includes among "grave breaches" of the Convention, the "extensive destruction and appropriation of property, *not justified by military necessity* and carried out unlawfully and wantonly."[130]

Could *List* and *Von Leeb* constitute precedents which might support the firing of the oil wells in Kuwait, i.e. could that destructive measure fall within the exception clause of Article 53 of the Geneva Civilians Convention?[131] To answer that question, several factors must be considered. First,

[128] 11 TRIALS OF WAR CRIMINALS BEFORE THE NUERMBERG MILITARY TRIBUNALS UNDER CONTROL COUNCIL LAW NO. 10 541 (1948).

[129] 1949 Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, art. 53, 75 U.N.T.S. 287, 322 (1950) [hereinafter 1949 Geneva Convention]. Article 53 provides thus:

> Any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, *except where such destruction is rendered absolutely necessary by military operations.*

Id. (emphasis added). *See also* PICTET, PROTECTION OF WAR VICTIMS, *supra* note 112, at 131; 4 COMMENTARY ON THE GENEVA CONVENTIONS OF 12 AUGUST 1949 302 (Jean Pictet ed., 1958).

[130] 1949 Geneva Convention, *supra* note 129, art. 147, 75 U.N.T.S. at 388 (emphasis added).

[131] *Apropos* "scorched earth" tactics, Article 54 (Protection of objects indispensable to the survival of the civilian population) of Protocol I, includes the following express permission to undertake such tactics to the *belligerent territorial sovereign*:

> In recognition of the vital requirements of any Party to the conflict in the defence of its national territory against invasion, derogation from the prohibitions contained in paragraph 2 may be made by a Party to the conflict within such territory under its own control where required by imperative military necessity. Protocol I, *supra* note 67, art. 54, para. 5, *reprinted in* 16 I.L.M. at 1414.

A contrario, Protocol I denies the same authority or permission to a *belligerent occupant* in respect to the territory occupied. ICRC COMMENTARY, *supra* note 82, at 659. Thus, Protocol I apparently rejected the *List* and *Von Leeb* doctrine. The realism of denying to an enemy occupying power the authority or permission conceded to the territorial sovereign, which presumably has some feelings for its own people, to destroy installations indispensable for survival of the civilian population in case of imperative military necessity, however, appears open to doubt.

the scope and nature of the damage inflicted by the spoliation of Kuwaiti petroleum resources in their natural state appear qualitatively different from the destruction of food supplies, fuel, shelter, and transport and communications facilities ordered by the retreating German generals. All of these items were man-made items offering clear and immediate military utility to whoever employed them. Second, the firing of the oil wells was a deliberate measure, planned and prepared long before the occupying forces in Kuwait were actually confronted with the tactical necessity of withdrawal. This was not an unplanned response to a tactical emergency. Third, the damage created by the firing of oil wells reaches far into the future, imposing *permanent* deprivation of depleting, non-renewable resources. The destruction of those resources thus appears wanton in character and designed to produce political and psychological effects upon the leadership and the general population of the opposing belligerent and its allies, rather than identifiable and concrete military advantages.

Since Kuwait was subjected to belligerent occupation by Iraq, one additional provision, Article 55 of the Hague Regulations to Hague Convention IV of 1907,[132] which concerns war on land should be briefly discussed. Article 55 permits the occupying power to use and enjoy real or immovable public property owned by the opposing belligerent who is temporarily ousted from its own territory.[133] The belligerent occupant, however, does not acquire sovereignty over the occupied territory nor ownership over immovable state property.[134] Article 55 therefore limits the belligerent's authority to that of an "administrator" and "usufructuary."[135] Specifically, "the occupant may not wantonly dissipate or destroy the public resources and may not permanently ... alienate them."[136] The petroleum resources of Kuwait in the ground or *in situ* formed part of the immovable property owned by the Kuwaiti state. In dissipating and destroying this

[132] 1907 Hague Convention, *supra* note 121, art. 55.

[133] *Id.*

[134] *Id.*

[135] *Id.*

[136] MCDOUGAL & FELICIANO, *supra* note 112, at 812-13.

resource *in situ*, Iraq disregarded the legal limitations imposed upon its authority as a belligerent occupant by the law of armed conflict.[137]

IV. LIABILITY FOR ENVIRONMENTAL SPOLIATION

The United Nations Security Council has explicitly referred to Iraq's liability under international law in its Resolution No. 687:[138]

> Reaffirm[ed], that Iraq, without prejudice to the debts and obligations of Iraq arising prior to 2 August 1990, which will be addressed through the normal mechanisms, is liable under international law for any direct loss, damage, including environmental damage and the depletion of natural resources, or injury to foreign Governments, nationals and corporations, as a result of Iraq's unlawful invasion and occupation of Kuwait.[139]

The literal wording of Resolution No. 687 links Iraq's liability for environmental damage and the depletion of natural resources, to "Iraq's unlawful invasion and occupation of Kuwait," rather than to the unlawfulness under international law of the Iraqi war measures themselves. In the view of the Security Council, this liability appears to be based upon breach of the international law relating to the *resort to force* rather than upon the breach of the law relating to the *conduct of hostilities* in armed conflict. The policy implications of such a view, assuming it is not an inadvertent result of draftsmanship, need careful exploration.[140]

[137] During the period of Israel's occupation of the Sinai Peninsula after the 1967 six-day war, Israel claimed rights to explore and exploit petroleum resources off Sinai in the Gulf of Suez. On Feb. 17, 1977 a spokesman for the Department of State stated that: "Israel, as an occupying power in that particular area, does not have a right to exploit natural resources in occupied territory that were not already being exploited when the occupation began." Allan Gerson, *Offshore Oil Exploration by a Belligerent Occupant: The Gulf of Suez Dispute*, 71 AM. J. INT'L L. 725, 725 (1977). Furthermore, the Department of State issued a memorandum concluding that Israel did not have a right under international law to develop any previously undeveloped oil fields occupied in Egyptian territory. Brice M. Clagett & O. Thomas Johnson, Jr., *May Israel as a Belligerent Occupant Lawfully Exploit Previously Unexploited Oil Resources of the Gulf of Suez?*, 72 AM. J. INT'L L. 558, 559 (1978). Israel issued its own memorandum stating that the applicable law only prohibited waste or excessive extradition and not reasonable exploration. Government of Israel, *Memorandum of Law*, 17 I.L.M. 432, 443 (1978).

[138] Security Council Resolution 687, U.N. Doc. S/RES/687 (8 April 1991), Part E, *reprinted in* 30 I.L.M. 847 (1991) [hereinafter RES 687].

[139] *Id.* para. 16, *reprinted in* 30 I.L.M. at 852.

[140] *See generally* Schacter, *supra* note 4, at 452.

Resolution 687 also created a Fund which would pay compensation for claims falling within paragraph 16, and established a Commission which would administer the Fund.[141] The Fund is to be endowed by Iraqi contributions drawn from the proceeds of Iraqi petroleum and petroleum products exports.[142] The mechanisms for collecting the Iraqi contributions to the Fund have been provided for in Security Council Resolution No. 692 dated May 20, 1991.[143]

CONCLUSION

The above brief survey suggests three conclusions. First, under both emerging general principles of international environmental law and generally accepted principles of the law of armed conflict, the use of weapons or methods of warfare which inflict long-term, wide-spread and severe damage on the natural environment of an enemy state is unlawful. Under this view, the use in war of marine pollution and the deliberate dissemination of pollutants or toxic elements which result in such damage upon the environment and upon the health and well-being of the enemy population, would be prohibited.

Second, the devastation or the wanton spoliation of natural resources, unrelated to any specific military objective, constitutes an indiscriminate, unlawful attack upon civilian objects. Such destruction imposes deprivations not only upon the present generation, but also upon future ones. Almost by definition, such destruction is disproportionately severe when measured against any identifiable military advantage resulting from it. Because petroleum is utilized by all countries, and because petroleum resources are both finite and non-renewable, the dissipation of such resources is a gross disregard of the interests of the general community of states.[144]

[141] RES 687, *supra* note 138, para. 16, *reprinted in* 30 I.L.M. at 852.

[142] *Id.*

[143] Security Council Resolution 692, U.N. Doc. S/RES/692 (20 May 1991), *reprinted in* 30 I.L.M. 864 (1991).

[144] *Cf.* E. ROSENBLAD, INTERNATIONAL HUMANITARIAN LAW OF ARMED CONFLICT: SOME ASPECTS OF THE PRINCIPLE OF DISTINCTION AND RELATED PROBLEMS 154 (Institut Henri Dunant, Geneva, 1979) ("[T]he preservation of the limited natural resources of the globe is indispensable for the survival of all human beings and generally for all living things, . . . it should be the imperative responsibility of human beings to observe the ecological laws."). *See also* 1972 Stockholm Declaration, *supra* note 65, principle 5, *reprinted in* 11 I.L.M. at 1418 ("The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind.")

Finally, a belligerent who inflicts unlawful damage upon the population and territory of the opposing belligerent could be responsible or liable for such damage, perhaps through indemnification. The imposition of such damage constitutes a violation of international law and such responsibility and indemnity may, as a matter of law, be appropriately enforced and extracted from the offending belligerent.[145] The long-term viability of the United Nation's plan, which assumes continued sanctions against Iraq, has yet to be proven, though expectations presently remain high, given the new and emerging configuration of international political relationships.

[145] 1949 Geneva Convention, *supra* note 129; Protocol I, *supra* note 67, art. 51, *reprinted in* 16 I.L.M. at 1413; 1 OFFICIAL RECORDS DIPLOMATIC CONFERENCE, *supra* note 85, at 149. Any country guilty of "grave breaches" is liable for compensation, nd the individual is responsible for acts committed by persons in its armed forces. *Id.*

CLIENT IDENTITY: IS IT PROTECTED INFORMATION UNDER THE ATTORNEY-CLIENT PRIVILEGE?

FRANCISCO ED. LIM*

INTRODUCTION

The attorney-client privilege prohibits a lawyer from disclosing, without the consent of his client, information learned in confidence from the latter.[1] The "privilege is so ingrained in our law, that for centuries it has been steadily upheld."[2]

The nature and extent of this privilege has, to some extent, been examined by our courts of law.[3] There are, however, other issues that remain unanswered in this jurisdiction. One unsettled question is whether or not the identity of a client can qualify as confidential information under the attorney-client privilege.

This paper will discuss the issue. To put the question in its proper perspective, this paper shall discuss the history of, and policy behind, the attorney-client privilege; thereafter, it will analyze the various cases that have examined the question.

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[1] Section 24(b), Rule 130, Revised Rules of Court.

[2] *People v. Warden of County Jail*, 270 N.Y.S. 362, 367 (1934).

[3] For example, communication made by a client to his attorney for the express purpose of being communicated to a third person is not covered by the privilege [*Uy Chico v. Union Life Assurance Society*, 29 Phil. 163 (1915)]. Equally settled is the question that the privilege may be waived. [e.g., *Jones v. Harding*, 9 Phil. 279 (1907); *Orient Insurance Co. v. Revilla & Teal Motor Co.*, 54 Phil. 919 (1930); *Barton v. Leyte Asphalt & Mineral Oil Co.*, 46 Phil. 938 (1924)].