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The International Legal Implications of "Non-Lethal" Weapons

David P. Fidler

Indiana University School of Law, Bloomington

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THE INTERNATIONAL LEGAL IMPLICATIONS OF “NON-LETHAL” WEAPONS

*David P. Fidler**

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* Associate Professor of Law, Indiana University School of Law–Bloomington; M.Phil., University of Oxford (1988); J.D., Harvard Law School (1991); B.C.L., University of Oxford (1991). An earlier version of this Article was presented during the poster session of the First Annual Non-Lethal Technology and Academic Research Symposium held in Quantico, Virginia on May 3–5, 1999. I would like to thank Robin Coupland and Barbara Hatch Rosenberg for their comments on earlier drafts of this article and Jennifer Bryan and Laura Winninghoff for tracking down many of the sources used in this article.

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INTRODUCTION

The history of humanity amply supports the belief that war is hell. Indeed, war in many respects continues to get more hellish, as illustrated by recent armed conflicts in the former Yugoslavia and Rwanda. To date, the search for more humane methods of war have been largely ethical (e.g., the Christian just war theory)¹ or legal (e.g., the international law on armed conflict).² Ethics and international law have since the late nineteenth century been losing a running battle with technological developments that have vastly increased the killing power of military forces. In addition, ethnic hatred and ineffective or non-existent governments have fueled the ferocious fires of civil war in many parts of the developing world, deepening the crisis for ethical and legal restraints on war. Military forces from various nations ordered into war-torn societies to keep the peace or distribute humanitarian aid often find themselves confronted with non-military functions, such as crowd control, that seem difficult to fulfill with traditional military weapons.

1. On the Christian just war theory, see STANLEY HOFFMANN, *DUTIES BEYOND BORDERS* 47-55 (1981).

2. On the international law on armed conflict, see for example L. C. GREEN, *THE CONTEMPORARY LAW OF ARMED CONFLICT* (1993).

This bleak landscape explains much of the government,³ defense industry,⁴ scholarly,⁵ and popular media⁶ interest that has developed, and is

3. Interest in "non-lethal" weapons has been manifest in a number of national police and military forces. In the United States, for example, the National Institute of Justice operates the Less-Than-Lethal Technology Program. See NATIONAL INSTITUTE OF JUSTICE, NIJ'S LESS-THAN-LETHAL TECHNOLOGY PROGRAM (1999); The Department of Defense coordinates the Joint Non-Lethal Weapons Program. See DEPARTMENT OF DEFENSE JOINT NON-LETHAL WEAPONS DIRECTORATE, JOINT NON-LETHAL WEAPONS PROGRAM: 1998 A YEAR OF PROGRESS (1999) [hereinafter JNLWD 1998 REPORT]. "Non-lethal" weapons have also attracted the attention of leading U.S. foreign policy think tanks. See, e.g. Council on Foreign Relations, *Non-Lethal Technologies: Progress and Prospects*, Report of 1999 Independent Task Force on Nonlethal Weapons, (visited Nov. 20, 1999) <<http://www.foreignrelations.org/public/pubs/Non-ViolentTaskForce.html>>. Prior to its collapse, the Soviet Union apparently conducted significant scientific research on technologies relevant to "non-lethal" weapons, such as microwaves and electromagnetic energy. See *The Technology Bazaar US Reaps Harvest of Soviet Science*, INT'L DEF. REV., Sept. 1, 1993, at 697, available in LEXIS, News Library, ALLNWS File. After opposing "non-lethal" weapons, France changed course and began to consider their integration into French armed forces. See J.A.C. Lewis, *France Reverses Policy on Non-Lethal Weapons*, JANE'S DEFENCE WEEKLY, Feb. 3, 1999, available in LEXIS, News Library, ALLNWS File. Britain has also conducted research and development on "non-lethal" weapons. See Andrew Gilligan & Rob Evans, *Sticky End for Foes as MoD Tests New Breed of Weapons*, SUNDAY TELEGRAPH (London), Dec. 6, 1998, at 17, available in LEXIS, News Library, ALLNWS File. Swedish defense scientists are also at work on "non-lethal" weapons. See Ron Laytner, *New-Age Guns Which Don't Shoot to Kill*, SCOTLAND ON SUNDAY, Jan. 4, 1998, at 15, available in LEXIS, News Library, ALLNWS File. NATO, too, has become involved with "non-lethal" weapons. See *NATO Debates Non-Lethal Weapons*, INT'L DEFENSE REV., Dec. 1, 1996, at 12, available at LEXIS, News Library, ALLNWS File; Brooks Tigner, *NATO Panel to Consider Nonlethal Weapon Guidelines*, DEFENSE NEWS, Sept. 29, 1997, at 14, available in LEXIS, News Library, ALLNWS File. Even the Prime Minister of Malaysia has spoken out in favor of "non-lethal" weapons. See *Switch Production to Non-Lethal Weapons: PM*, NEW STRAIT TIMES, Dec. 3, 1997, at 1, available in LEXIS, News Library, ALLNWS File.

4. Frequent reporting on "non-lethal" weapons in defense industry publications seems to have begun in the early 1990's. See, e.g., Barbara Amouyal, *Use of Nonlethal Weapons May Alter Military Strategy*, DEFENSE NEWS, Nov. 19, 1990, at 7, available in LEXIS, News Library, ALLNWS File; Neil Munro, *Task Force Urges Study of Non-Lethal Weapons*, DEFENSE NEWS, Aug. 5, 1991, at 38, available in LEXIS, News Library, ALLNWS File; Barbara Opall, *Pentagon Forges Strategy on Non-Lethal Warfare*, DEFENSE NEWS, Feb. 17, 1992, at 1, available in LEXIS, News Library, ALLNWS File.

5. Scholarly interest is reflected in numerous publications, including JOHN B. ALEXANDER, *FUTURE WAR: NON-LETHAL WEAPONS IN MODERN WARFARE* (1999); NICK LEWER & STEVEN SCHOFIELD, *NON-LETHAL WEAPONS: A FATAL ATTRACTION?* (1997)[hereinafter LEWER & SCHOFIELD, *NON-LETHAL WEAPONS*]; MALCOM DANDO, *A NEW FORM OF WARFARE: THE RISE OF NON-LETHAL WEAPONS* (1996) [hereinafter DANDO, *A NEW FORM*]; Malcom Dando, *Non-Lethal Weapons*, in *THE CENTRE FOR DEFENSE STUDIES, BRASSEY'S DEFENSE YEARBOOK 1996*, at 393 (King's College London eds., 1996)[hereinafter Dando, *Non-Lethal Weapons*]. At least two universities have established specific "non-lethal" weapons research efforts. See University of Bradford's Non-Lethal Weapons Research Project (visited Aug. 11, 1999) <<http://www.brad.ac.uk/acad/nlw>> and Penn State University's Institute for Non-Lethal Defense Technologies (visited Aug. 11, 1999) <<http://www.arl.psu.edu/core/nonlethal>>.

6. The popular media has also picked up on the growing interest in "non-lethal" weapons. See, e.g., Douglas Pasternak, *Wonder Weapons: The Pentagon's Quest for Nonlethal*

growing, in new military technologies variously called “less-than-lethal,” “sub-lethal,” or “non-lethal” weapons.⁷ After more than a century of the development of ever more devastating weapons, can science and technology finally be harnessed to make warfare more humane? Can we finally escape the seeming futility of relying only on ethics and international law to restrain the dogs of war? Are “non-lethal” weapons early beacons of the possible development of warfare without mortality?⁸

The depth of the crisis with ethical and international legal controls on armed conflict helps make the development of “non-lethal” weapon technology appealing because the concept of “non-lethal” weapons restores some hope to the fundamental value of regulating armed conflict. The tantalizing vision of “non-lethal” warfare should not, however, render military and civilian leadership insensitive to the problems lurking within the “non-lethal” weapons concept and its potential application. Realism in military circles may keep enthusiasm for “non-lethal” weapons in check, but the concept and its technological possibilities have captured the imagination of military and civilian leaders enough for a global push for “non-lethal” weapons development to emerge.

The development of “non-lethal” weapons contains many important issues that must be resolved, ranging from the scientific to the tactical. One very important issue that has not been fully explored in connection with “non-lethal” weapons is the international legal implications of the development and potential use of these weapons. While analysis of “non-lethal” weapons frequently mentions the importance of international law, the analysis of the international legal issues is usually either not sustained or comprehensive.⁹

In this Article, I attempt a comprehensive international legal analysis of “non-lethal” weapons to raise awareness about how many international legal issues they create and about the complexity of analyzing the international legality of the development and use of these weapons. In short, the emergence of “non-lethal” weapons does not rescue international law from its crisis in connection with controlling war. Indeed, in some respects, the coming of “non-lethal” weapons threatens to deepen that crisis in new and disturbing ways.

Arms is Amazing. But Is It Smart?, U.S. NEWS & WORLD REP., July 7, 1997, available in LEXIS, News Library, ALLNWS File; John Barry & Tom Morgenthau, *Soon, 'Phasers on Stun'*, NEWSWEEK, Feb. 7, 1994, at 24.

7. This article follows the custom that has developed of calling these weapons “non-lethal”.

8. This prospect was captured in the headline of a magazine article. See Corey S. Powell, *War Without Death—Nonlethal Weapons*, DISCOVER, Apr. 1, 1999, at 29.

9. See, e.g., ALEXANDER, *supra* note 5, at 189–99 (analyzing legal considerations in connection with “non-lethal” weapons); LEWER & SCHOFIELD, *NON-LETHAL WEAPONS*, *supra* note 5, at 81–100 (analyzing legal and ethical dilemmas posed by “non-lethal” weapons).

My analysis begins with an examination of the concept of "non-lethal" weapons, the purposes behind their development, the types of "non-lethal" weapons technologies that exist, and the controversies surrounding these weapons (Part I). Then I engage in a sustained international legal analysis of the concept, development, and potential use of "non-lethal" weapons (Part II). Given the embryonic nature of "non-lethal" weapons development and integration into military forces and strategies, much of the international legal analysis unfolds in a vacuum of precedent, which gives the analysis an abstract and, at times, speculative quality. Thus, my international legal analysis can be only preliminary in nature.

From the sustained international legal analysis, I attempt to identify a general international legal approach that is necessary to evaluate the development and potential use of "non-lethal" weapons as a matter of international law. The message behind this international legal approach is that international legal scrutiny and vigilance will be necessary to help prevent "non-lethal" weapons from deepening the crisis of international law on armed conflict. The tension between "non-lethal" weapons and international law brings to mind the old saying that the path to hell is often paved with good intentions.

I. "NON-LETHAL" WEAPONS: CONCEPT, PURPOSES, TYPES, AND CONTROVERSIES

A. *The Difficult Concept of "Non-Lethal" Weapons*

Any analysis of "non-lethal" weapons has to confront difficulties that arise with their definition. To some, the term "'non-lethal' weapons" is an oxymoron.¹⁰ Others find the use of "non-lethal" to describe these emerging weapons systems as misleading because "non-lethal" weapons can cause fatalities and thus have lethality.¹¹ But others believe the term is appropriate because it arguably captures the essence of these new weapons: unlike conventional weapons, "non-lethal" weapons are designed not to destroy or kill but to incapacitate personnel, equipment,

10. Non-Lethal Weapons Research Project, *Non-Lethal Weapons* (visited Apr. 20, 1999) <<http://www.brad.ac.uk/acad/nlw>> (noting that term "non-lethal" has been criticized as an oxymoron); *Non-Lethal Technology*, 163 AEROSPACE DAILY, Aug. 24, 1992, at 312, available in LEXIS, News Library, ALLNWS File (citing Pentagon officials as saying "non-lethal weapon" was an oxymoron).

11. See Dominique Loye, "Non-Lethal" Weapons and International Humanitarian Law, paper presented at Jane's Non-Lethal Weapons Conference, London (Dec. 1-2, 1998), at 5 (on file with author)(arguing that "the term 'non-lethal' is misleading"); Eric Rosenberg, *Pentagon Memo Seeks to Better Explain 'Non-Lethal' Weaponry*, DEFENSE WEEK, Mar. 6, 1995, available in LEXIS, News Library, ALLNWS File (reporting Pentagon memorandum warning that the term "non-lethal" is a misnomer because "non-lethal" weapons can kill).

and electronic systems,¹² giving military commanders facing new operational tasks more flexibility in strategy and tactics.¹³

Another conceptual difficulty arises in connection with the wide variety of weapons to which the term "non-lethal" is applied.¹⁴ The term "non-lethal" suggests that the weapons in question are anti-personnel weapons only.¹⁵ The *Oxford English Dictionary* defines "lethal" as "causing or capable of causing death."¹⁶ The area of "non-lethal" weapons covers, however, more than anti-personnel weapons. It includes weapons designed for use against vehicles, equipment, matériel, and computer systems (collectively "anti-matériel" weapons).¹⁷ Describing these anti-matériel weapons as "non-lethal" does not accurately reflect their purpose or nature. In addition, use of some of these anti-matériel "non-lethal" weapons can be lethal as vehicle, equipment, or matériel failure places the human operators in mortal danger.

Further clouding the meaning of the concept of "non-lethal" weapons is the fact that many lethal weapons, such as rifle bullets and other fragmentation weapons, do not have a 100% lethality rate. Doctors with the International Committee of the Red Cross (ICRC) estimate that the lethality rate for wounds from rifles and fragmentation weapons is approximately 20-25%.¹⁸ Most wounds caused, thus, by "lethal" weapons do not result in lethality. More sinister practices used in times of war,

12. See Loye, *supra* note 11, at 1 (noting that a widely used definition of "non-lethal" weapons is weapons that are "explicitly designed and primarily employed so as to incapacitate personnel and materiel, while minimising fatalities, permanent injury, and undesired damage to property and the environment."); ALEXANDER, *supra* note 5, at 5 ("Non-lethal, while far from being a perfect word, does provide an adequate context from which to address the issues related to diminishing the number of collateral fatalities . . .").

13. General Dennis Reimer, U.S. Army Chief of Staff, argued that "[w]e need to provide our soldiers an alternative to deadly force. . . . Non-lethal weapons provide this alternative while retaining the capability to protect our soldiers and non-combatants in complex and potentially volatile situations." JNLWD 1998 REPORT, *supra* note 3, at inside cover (quoting General Dennis Reimer); ALEXANDER, *supra* note 5, at 6-7 ("In conjunction with lethal weapons, they ["non-lethal" weapons] provide military commanders with additional options . . .").

14. See Table 1 *infra* for list of different "non-lethal" weapons technologies.

15. See Robin M. Coupland, "Non-Lethal" Weapons: Precipitating a New Arms Race, 315 BRIT. MED. J. 72, 72 (1997)(arguing that a "weapon" is something designed to cause bodily harm; technologies designed specifically to damage inanimate objects should not be considered in the same context.)

16. NEW SHORTER OXFORD ENGLISH DICTIONARY 1570 (1993).

17. See, e.g., JNLWD 1998 REPORT, *supra* note 3, at 6, 8-10 (describing the Portable Vehicle Immobilization System (PVIS), Vessel Stopper System (VVS), and Ground (Electrical) Vehicle Stoppers (GVS)).

18. See Coupland, *supra* note 15, at 72. See also Robin M. Coupland & David R. Meddings, *Mortality Associated with the Use of Weapons in Armed Conflicts, Wartime Atrocities, and Civilian Mass Shootings: Literature Review*, 319 BRIT. MED. J. 407, 408 (1999)(reporting that in armed conflicts since 1940 "[t]otal deaths were never more than 26% of all casualties").

such as rape, are also largely "non-lethal" but are nevertheless universally condemned.¹⁹

Another complicating factor in understanding the concept of "non-lethal" weapons is the supposed newness of these types of weapons. Various types of "non-lethal" weapons technologies have, however, been around for a long time, as has the concept of more humane weapons.²⁰ Many of the "non-lethal" weapons that can actually be deployed today were developed decades ago, such as tear gas, rubber bullets, and bean bag rifles and grenades. It is important to understand why in the 1990's the concept of "non-lethal" weapons has gained such prominence when many of the technologies and their uses are quite old.

B. Reasons Behind the Recent Interest in "Non-Lethal" Weapons

Recent interest in the concept of "non-lethal" weapons arises through the confluence of a number of factors: (1) technological developments; (2) changes in the roles of military forces (e.g., military operations other than war, such as peacekeeping or peace building operations); (3) continued pressure on military forces to retain competitive advantages against potential State and non-State adversaries; (4) continued moral and legal pressure exerted by international law on armed conflict; and (5) military "marketing." Thus, the concept of "non-lethal" weapons is very complex and needs to be examined rigorously so that all its features are understood. Simple definitions will not suffice. "Non-lethal" weapons are a phenomenon, not just new types of weapons. Grasping the phenomenon requires understanding the reasons why "non-lethal" weapons are being pursued today.

As with other types of weapons developments, technology has played a key role in the rise of "non-lethal" weapons. Advances in various scientific fields, such as biology, chemistry, electromagnetism, computers, electronics, and acoustics, are producing new opportunities for weapons development.²¹ The key feature of these technological

19. See Statute of the International Criminal Court, July 17, 1998, UN Doc. A/CONF.183/9, art. 7(1)(g), 27 I.L.M. 999 [hereinafter Statute of the International Criminal Court] (recognizing rape as a crime against humanity).

20. See DANDO, A NEW FORM, *supra* note 5, at 10 (noting that, although "non-lethal" weapons came to prominence in the 1990's, "these ["non-lethal"] technologies and ideas have a much longer history.").

21. See *id.* at 11-12 (listing newer technologies that are frequently mentioned in the literature as "non-lethal" weapons). Some of these technologies, such as acoustics, have cruder applications as "non-lethal" weapons. See *Noise Annoyed Noriega?*, INT'L DEFENSE REV., Apr. 1, 1993, available in LEXIS, News Library, ALLNWS File (noting that "[t]o force General Manuel Noriega out of his sanctuary [after the U.S. invasion of Panama] without destroying it US forces resorted to bombarding the building with loud music—an innovative use of a "non-lethal" weapon.").

developments is that many of them do not escalate the destructive power of weapons but provide a different kind of weapons technology that might serve different tactical and strategic military roles.

Perhaps the most frequently mentioned reason behind the development of the “non-lethal” weapons concept is the changing nature of military operations in the post-Cold War world.²² United Nations forces, NATO forces, and the national military forces of various nations have participated in what are called “military operations other than war.” The most notable of these types of operations are peacekeeping, peace building, or humanitarian missions, such as occurred in Somalia, Haiti, Cambodia, and Bosnia. In such operations, military forces take on roles akin to domestic police for which their traditional military weapons may not always be appropriate. Military forces engaged in such conflicts need more weapons options, and experts argue that “non-lethal” weapons provide those options.²³

A more traditional purpose behind the “non-lethal” weapons movement is the age-old need of military forces to retain a competitive advantage over potential adversaries in weapons, tactics, and strategies. The argument basically comes in one of two forms. First, “non-lethal” weapons can add to a military force’s arsenal and give it advantages in combat and other military operations over potential adversaries. Not only do these new weapons give military forces flexibility in the field, but they may also create tactical and strategic advantages that advance the capabilities of “lethal” weapons to accomplish missions effectively. As the U.S. Joint Non-Lethal Weapons Directorate (JNLWD) put it, “NLWs can critically supplement and augment lethal force in the battlespace of the future.”²⁴ Second, attention to “non-lethal” weapons is necessary as part of the competitive equilibrium with potential State and non-State adversaries as they might be developing these new weapons systems to give themselves a military advantage.²⁵ For defensive pur-

22. See JNLWD 1998 REPORT, *supra* note 3, at 1 (discussing new military challenges of small scale contingencies, operations other than war, and military operations in urban terrain as reasons behind the U.S. military’s interest in “non-lethal” weapons); DANDO, A NEW FORM, *supra* note 5, at 1–8 (discussing role of peacekeeping in chaotic conflicts as fueling interest in “non-lethal” weapons).

23. See JNLWD 1998 REPORT, *supra* note 3, at 1 (“Deployments to Somalia, Haiti and Bosnia, which are probably similar to the environments our armed forces will confront in the future, confirmed the operational need for non-lethal weapons.”).

24. *Id.* at 1.

25. See Loye, *supra* note 11, at 3 (“The naive hope that new weapons technology will stay in the hands of the ‘good guys’ has been dashed time and time again. History shows that once an undesired technology has left Pandora’s box it will sooner rather than later find its way into the ‘wrong hands.’”); Robert J. Bunker, *National Security Implications of Emerging Forms of Warfare*, paper presented at First Annual Non-Lethal Technology and Academic

poses at least, the offensive potential of "non-lethal" weapons needs to be understood, and countermeasures created to avoid losing battlefield advantage.

"Non-lethal" weapons are also attractive to many military and civilian personnel because they seemingly respond to the duties laid out in international humanitarian law, such as the duty not to use weapons that cause superfluous injury or unnecessary suffering.²⁶ It is more humane to incapacitate the enemy than to kill him. "Non-lethal" weapons are, the argument goes, more in tune with international humanitarian law than many conventional weapons now used by military forces. "Non-lethal" weapons may, in certain circumstances, lead to greater compliance with the laws of war.

A final influence in the "non-lethal" weapons movement is the propaganda value of the concept of "non-lethality." The persistence of advocates of "non-lethal" weapons in using "non-lethal" to describe these new weapons technologies is not an accident. As noted before, the term "non-lethal" is not an accurate description of these weapons because they can be lethal and they include anti-matériel weapons. Further, military commanders looking at the battlefields of the future may want to combine "non-lethal" and "lethal" weapons to achieve more effective destruction of the enemy.²⁷ Adding to this notion is the fact that many "non-lethal" weapons programs are operated "behind a veil of considerable secrecy."²⁸ In many

Research Symposium, Quantico, Virginia (May 3–5, 1999), (visited Nov. 29, 1999) <<http://www.unh.edu/orps/nonlethality/pub/proceedings1999.html#posters>> (arguing that with "non-lethal" weapons available to non-state actors such as terrorists, guerillas, or mercenaries, "I think we are going to have to redefine the battlespace dimensionality and homeland defense against the bad guys.").

26. This duty is enshrined in numerous international legal documents including the St. Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight, Dec. 11, 1868, *reprinted in* 1 AM. J. INT'L L. 95 (Supp. 1907); the Second Hague Peace Convention Regarding the Laws and Customs of Land Warfare, Regulations Concerning the Laws and Customs of War on Land, Oct. 18, 1907, art. 23(e), *reprinted in* 2 AM. J. INT'L L. SUPP. 90, 106 (Supp. 1908); Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts, June 8, 1977, art. 35, 1125 U.N.T.S. 3, 21 [hereinafter Geneva Protocol I]; and Final Act of the United Nations Conference on Prohibitions or Restrictions of Use of Certain Conventional Weapons Which May Be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, Apr. 10, 1981, 19 I.L.M. 1523 [hereinafter UN Conventional Weapons Convention].

27. See Loye, *supra* note 11, at 4 (noting that "[i]n certain development programmes, the 'non-lethal' weapons are . . . intended to *augment* the deadly (lethal) forces of conventional weapons."); DANDO, A NEW FORM, *supra* note 5, at 25 ("We are *not* dealing with ideas of better, more benign, peacekeeping but with an expanded view of standard military operations.").

28. See DANDO, A NEW FORM, *supra* note 5, at 26.

respects, “non-lethal” weapons should not be distinguished from other types of weapons considered “lethal.”

But the term “non-lethal” persists not because more accurate terms cannot be found but because it is easier for the military to market “non-lethal” weapons in military and civilian contexts. The concept of “non-lethal” weapons is “politically correct” because it obscures the potential lethality of the weapons themselves, misleads people in how the military is actually thinking about the weapons, and conjures up images of kinder, gentler warfare.²⁹ The concept of “non-lethal” weapons connects with the revulsion ordinary citizens of peaceful, stable democracies feel through the “CNN effect” of horrid pictures of death and destruction in international and civil armed conflict caused by “lethal” weapons.³⁰ The concept of “non-lethal” weapons is a dream come true for the marketing of new military weaponry.

C. Classifying Weapons as “Non-Lethal”

As mentioned earlier, one difficulty with the concept of “non-lethal” weapons is figuring out what exactly is a “non-lethal” weapon. Much confusion exists in the literature on “non-lethal” weapons about what weapons fall under this moniker. Some categorizations rely on the technological differences in “non-lethal” weapons systems: whether they use chemicals, biological agents, electricity, acoustics, or electromagnetism as the operative technology (see Table 1). The technological diversity of “non-lethal” weapons is impressive and is part of what makes them interesting.³¹ But such technology-driven lists are not very helpful in categorizing “non-lethal” weapons because it avoids dealing with the obscurity created by the concept of “non-lethal” weapons.

29. See Coupland, *supra* note 15, at 72 (“The euphemisms and political correctness that surround the moral, legal, media, and tactical aspects of warfare of the future are complex and bizarre.”).

30. ALEXANDER, *supra* note 5, at 165–67 (discussing the importance of the “CNN effect” in connection with the development of “non-lethal” weapons); see Mark Walsh, *Marines Hope Non-Lethal Weapons Cut Civilian Casualties*, DEFENSE WEEK, Jan. 2, 1996, available in LEXIS, News Library, ALLNWS File (reporting U.S. Marine Commandant as indicating that “[i]nstead of dead civilians, television tape of future conflicts could depict innocent bystanders battling heavy lubricants to stay on their feet, holding their noses or being stuck to sidewalks by powerful but harmless glues”).

31. For more detailed analysis of “non-lethal” weapons technology, see ALEXANDER, *supra* note 5, at 57–123 (examining major “non-lethal” weapons technologies) and LEWER & SCHOFIELD, NON-LETHAL WEAPONS, *supra* note 5, at 10–15 (analyzing the main “non-lethal” weapons technologies).

TABLE I. NON-EXHAUSTIVE LIST OF "NON-LETHAL" TECHNOLOGIES

Type of Technology	Examples	Target(s)
Acoustical	<ul style="list-style-type: none"> - High-Frequency Sound - Low-Frequency Sound - Polysound - Shriill Noise 	Personnel Personnel Personnel Personnel
Biological	<ul style="list-style-type: none"> - Biodegrading Microbes - Disease Microbes - Disease-Transmitting Arthropods 	Matériel Personnel Personnel
Chemical	<ul style="list-style-type: none"> - Riot Control Agents - Calmatives - Nausea/Vomit Inducers - Olfactory Agents - Corrosives - Superlubricants - Adhesives - Embrittling Agents 	Personnel Personnel Personnel Personnel Matériel Matériel/Personnel Matériel/Personnel Matériel
Digital	<ul style="list-style-type: none"> - Computer Viruses - Computer Worms 	Matériel Matériel
Electrical	<ul style="list-style-type: none"> - Electric Shock - Electrical System Disruptors - Electronic Jamming 	Personnel Matériel Matériel
Electromagnetic	<ul style="list-style-type: none"> - Electromagnetic Pulses - Microwaves 	Matériel/Personnel Matériel/Personnel
Environmental	<ul style="list-style-type: none"> - Weather Modification - Ionospheric Modification - Herbicides 	Matériel/Personnel Matériel Personnel
Kinetic	<ul style="list-style-type: none"> - Water Cannon - Air Cannon - Blunt Object Mines - Blunt Object Ammunition 	Personnel Personnel Personnel Personnel
Mechanical	<ul style="list-style-type: none"> - Caltrops - Entanglers - Robots 	Matériel Personnel Matériel
Optical	<ul style="list-style-type: none"> - Lasers - Flash Grenades - Obscurants - Holographic Projections 	Matériel/Personnel Personnel Matériel Personnel
Psychological	<ul style="list-style-type: none"> - Propaganda - Misinformation - Psychological Operations 	Personnel Personnel Personnel

In its Policy for Non-Lethal Weapons, the U.S. Department of Defense defines “non-lethal” weapons as those “that are explicitly designed and primarily employed so as to incapacitate personnel or material, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.”³² This definition contains a number of interesting features. First, it supports the conclusion that the term “non-lethal” is misleading because it only refers to “minimizing fatalities.” Second, it is not clear whether the objective of minimizing permanent injury objective applies to all military personnel in a conflict or just members of the U.S. armed forces. Third, the focus in the definition is solely on the intent behind the weapon’s development and use with no mention of actual or foreseeable consequences of its use. Fourth, it is not clear what “undesired damage to property and the environment” means. “Undesired” from whose perspective? A desirable or tolerable level of damage from a military point of view may differ greatly from the property owner’s or environmentalist’s standard of desirability. Finally, the definition as a whole allows for subjective rather than objective analysis of what might be “non-lethal.”

An important attempt to come up with an objective definition of “non-lethal” weapons has been made by the Health Effects Advisory Panel (HEAP) established by the U.S. JNLWD.³³ According to HEAP, a weapon can be classified as “non-lethal” if it meets the following criteria: (1) the weapon incapacitates 98% of the persons it is used against; (2) the weapon has no effect on no more than 1% of persons; (3) no more than ½% of persons suffer permanent physical damage; and (4) no more than ½% of persons are killed.³⁴ Using these criteria, HEAP concluded that *no* current so-called “non-lethal” weapon met this definition.³⁵ Yet, the U.S. military, defense experts, and civilian politicians continue to refer to these weapons systems as “non-lethal.”

Further eroding the legitimacy of classifying weapons as “non-lethal” is the apparent paucity of evidence about the physical and health effects of any of the weapons in question.³⁶ HEAP has, for example,

32. Policy for Non-Lethal Weapons, U.S. Dep’t of Def. Directive No. 3000.3, para. C (July 9, 1996).

33. JNLWD 1998 REPORT, *supra* note 3, at 19 (discussing establishment of HEAP and its task to develop a definition of “non-lethal” weapons).

34. See John Kenny, *Potential Health Effects of Non-Lethal Weapons*, paper presented at First Annual Non-Lethal Technology and Academic Research Symposium, Quantico, Virginia (May 3–5, 1999), (visited Nov. 29, 1999) <<http://www.unh.edu/orps/nonlethality/pub/proceedings1999.html#posters>>.

35. See *id.*

36. See, e.g., Coupland, *supra* note 15, at 73 (“The precise effects of each of these new weapons are unknown . . .”).

criticized the U.S. military's methodology for analyzing the bioeffects of weapons as scientifically inadequate.³⁷ HEAP has noted that, outside pepper spray, the Department of Defense has *no* physical effects data on "non-lethal" weapons and that no valid data on incapacitation or blunt trauma injury exists.³⁸ Yet the U.S. military and others persist in calling these weapons "non-lethal."

HEAP's analyses clearly raise the legitimacy of classifying weapons as "non-lethal." Outside of the "marketing" appeal of the moniker "non-lethal," there seems no compelling military reason to call a weapon "lethal" or "non-lethal." The objective of the military mission, the context in which it is undertaken, and the international legal rules on armed conflict determine weapon choice and use, not general weapons classifications. In fact, the military's penchant for the term "non-lethal" may come back to haunt the entire project. By calling weapons "non-lethal," the military invites close scrutiny of the health effects of such weapons, which has already started to take place. Such scrutiny, as HEAP's efforts suggest, pour cold water on the whole concept of "non-lethal" weapons. The "marketing" appeal of "non-lethal" weapons may be such weapons' Achilles heel because the "non-lethality" cannot be scientifically demonstrated with any rigor. In addition, the international legal analysis later in the Article does not provide any meaningful reason to engage in classifying weapons as "lethal" or "non-lethal."

D. Controversies Surrounding "Non-Lethal" Weapons

The conceptual difficulties presented by the confusing category of "non-lethal" weapons play into the various ethical, legal, medical, political, and military controversies surrounding them. While "non-lethal" weapons are being explored and developed in a number of countries, many questions have been raised about this phenomenon. While the questions raise different issues, common to these critiques is skepticism or concern about calling weapons "non-lethal."

Ethically, weapons evaluation focuses on intent and consequences. As illustrated above in Part I.C above, the labels "lethal" and "non-lethal" do not accurately reflect how weapons ought to be examined from an ethical perspective.³⁹ Legally, concerns have been raised about the development and use of "non-lethal" weapons violating various

37. See Kenny, *supra* note 34.

38. See *id.*

39. See, e.g., Coupland, *supra* note 15.

principles of international law.⁴⁰ Much of the rest of this Article digs more deeply into these legal worries.

Medically, the intended and unintended health consequences of “non-lethal” weapons are not yet well understood,⁴¹ making some in the medical community wary about the attractiveness of “non-lethal” weapons.⁴² Politically, some have expressed opposition to “non-lethal” weapons because the concept deludes the public and politicians about the horrible nature of all armed conflict,⁴³ feeds off the need of the post-Cold War military-industrial complex to create new areas for military spending,⁴⁴ and reinforces the government’s claims for secrecy and classified weapons development.⁴⁵

Militarily, the emergence of “non-lethal” weapons has sent experts back to military theory, as illustrated by one paper framing its analysis of “non-lethal” weapons with conflicting principles from Carl von Clausewitz and Sun Tzu.⁴⁶ More practically, fears have been raised that the concept of “non-lethal” weapons promises kinder, gentler warfare that it cannot deliver.⁴⁷ The military utility of many of the newer “non-lethal” weapon technologies has been questioned by some military

40. See, e.g., Loye, *supra* note 11; Barbara Hatch Rosenberg, “Non-Lethal” Weapons May Violate Treaties, BULL. ATOMIC SCIENTISTS, Sept.-Oct. 1994, at 44; Theresa Hitchins, *DoD Nonlethal Effort Fuels Fear of Treaty Violations*, DEFENSE NEWS, Sept. 26, 1994, at 3, available in LEXIS, News Library, ALLNWS File.

41. See notes 36–38 *supra* and accompanying text.

42. See Coupland, *supra* note 15, at 72 (arguing that the medical profession should not be seduced by the term “non-lethal”).

43. See Eliot A. Cohen, *The Mystique of U.S. Air Power*, FOREIGN AFF., Jan. 1994, at 109, 121 (“All forms of military power seem likely to benefit from the imminent arrival of “non-lethal” or “disabling” technologies, which offer the prospect of war without casualties. But here, perhaps, lies the most dangerous legacy of the Persian Gulf War: the fantasy of near-bloodless uses of force.”).

44. See Powell, *supra* note 8, at 29 (noting that in 1999 the Department of Defense allocated \$99 million for “non-lethal” weapons programs).

45. See DANDO, A NEW FORM, *supra* note 5, at 25–26 (noting controversy about secrecy of U.S. “non-lethal” weapons research); Steven Aftergood, *The Soft-Kill Fallacy*, BULL. ATOMIC SCIENTISTS, Sept.-Oct. 1994, at 40 (noting how “non-lethal” weapons programs in the United States are obscured in secrecy and arguing that the government secrecy system is “a godsend for non-lethal weapons programs.”).

46. See Gregory P. Cook, *Waging Peace: The Non-Lethal Application of Aerospace Power* (visited Apr. 20, 1999) <<http://www.fas.org/spp/eprint/cook.htm>>. Cook contrasts Clausewitz’s argument that “kind-hearted people might of course think there was some ingenious way to disarm or defeat an enemy without too much bloodshed, and might imagine this is the true goal of the art of war” with Sun Tzu’s belief that “those skilled in war subdue the enemy’s army without battle.”

47. See Ian V. Hogg, *A World of Insecurity Remains*, JANE’S DEFENCE WEEKLY, Nov. 12, 1994, at 33, available in LEXIS, News Library, ALLNWS File (arguing that “non-lethal weapon advocates . . . want to reduce warfare to a sanitized, noiseless, smokeless, danger-less activity that will satisfy their competitive urges without hurting anybody or damaging the environment. History is against them.”).

experts, and some of the technologies have been rejected as unviable.⁴⁸ Further, some military experts are concerned that the use of "non-lethal" weapons might place military forces and civilians in greater danger, leading to more bloodshed and an escalation of hostilities.⁴⁹ Finally, some in the military worry that civilian leaders might order military operations more frequently if they believe "non-lethal" weapons provide a way to complete the mission without the dreaded "CNN effect" undermining political resolve at home for military action abroad.⁵⁰

These different controversies all focus critical attention on the concept of "non-lethal" weapons. The various ethical, legal, medical, military, and political concerns reinforce doubts about the wisdom of thinking in terms of "non-lethal" weapons. These worries represent warnings that the concept of "non-lethal" weapons is not only misleading but perhaps dangerous within a wide variety of perspectives on armed conflict.

II. INTERNATIONAL LAW AND "NON-LETHAL" WEAPONS

A. *The Concept of "Non-Lethal" Weapons and International Law*

International law has for a long time contained rules that applied to the development and use of weapons, such as the duty not to use weapons that inflict superfluous injury or unnecessary suffering. Geneva Protocol I specifically contains a provision on new weapons:

In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.⁵¹

48. See Scott Gourley, *Non-Lethal Weapons—Measure for Measure*, JANE'S DEFENCE WEEKLY, June 24, 1998, available in LEXIS, News Library, ALLNWS File; Nick Lewer, *Non-Lethal Weapons Research Project Research Report Number One*, (Nov. 1997) <<http://www.brad.ac.uk/acad/nlw/cenderal.html>> (visited Aug. 11, 1999)(noting that "[m]any military analysts do not envisage their widespread utility in war").

49. See Lewer, *supra* note 48 (noting that among the problems with "non-lethal" weapons raised in military journals is "that their availability may increase the likelihood of early intervention and then escalation; [and] that troops armed with NLWs will be in danger from ruthless opponents").

50. See Non-Lethal Weapons Research Project, *supra* note 10 (noting "concerns regarding dangers of lowering the threshold of intervention" in connection with "non-lethal" weapons).

51. Geneva Protocol I, *supra* note 26, art. 36, 1125 U.N.T.S. at 21.

In no prior case of a new weapon have States and international legal experts classified a weapon according to its lethality. The concept of "non-lethal" weapons contains a perspective on weapons that is alien to traditional international law. This concept raises the question whether the traditional approach to weapons under international law needs revising in light of this new category of weapons.

The analysis in Part I above illustrated that enough problems exist with the concept of "non-lethal" weapons to be skeptical of special treatment for these weapons under international law. The attractiveness of the concept of weapons that are less lethal might seduce us not to take international legal analysis of them as seriously as with more traditional weapons. Part II of this Article is designed to prevent this kind of seduction from occurring by analyzing in detail the significant number of issues and questions the concept of "non-lethal" weapons raises for international law.

Before beginning that analysis, it is also instructive to consider the international legal situation if we truly had weapons that caused zero mortality with genuine temporary incapacitation. The existence of real "non-lethal" weapons might seem to revolutionize how we look at them and their use under international law. The answer to the question whether the use of true "non-lethal" weapons as a method of warfare conformed to international law might seem to be an easy affirmative because we envisage more humane warfare if such weapons actually existed. Closer reflection on this question should give us pause that the answer is not so easy.

The existence of true "non-lethal" weapons would not alter the way military forces approach their objectives. It is unlikely that military commanders would equip their forces only with "non-lethal" weapons.⁵² As noted earlier, use of truly "non-lethal" weapons may actually increase the effectiveness and lethality of traditional weapons during armed conflict.⁵³ While it is impossible to analyze the possible synergies between "lethal" and "non-lethal" weapons in the abstract, it would be reckless to assume that the possession and use of true "non-lethal" weapons would make warfare more humane. The possession and use of true "non-lethal" weapons would do little to cut through the "fog of war". In some respects, "non-lethal" weapons would make the fog

52. See James C. Duncan, *A Primer on the Employment of Non-Lethal Weapons*, 45 NAVAL L. REV. 1, 37 (1998) ("The Department of Defense has consistently viewed the use of non-lethal weapons as a means of enhancing the military effectiveness of lethal weapons systems."); Laura Spinney, *A Fate Worse than Death*, NEW SCIENTIST, Oct. 18, 1997, at 26 (noting position of U.S. Marine Corps that "non-lethal" weapons "will only be used to complement lethal weapons, not as a substitute").

53. See note 27 *supra* and accompanying text.

thicker. Will a soldier under fire hesitate to attack persons incapacitated by "non-lethal" weapons but who he fears may still pose some danger to himself and his fellow troops? True "non-lethal" weapons might create a battlefield category between combatant and combatant *hors de combat* that would present difficult military and legal questions (see also Part II.D.2 below).

B. "Non-Lethal" Weapons and Arms Control Regimes

One of the first international legal questions that arises in connection with "non-lethal" weapons is whether their development violates relevant arms control regimes found in international treaties.⁵⁴ These arms control regimes may prohibit the development of whole categories of "non-lethal" weapons.

1. Conventional Weapons

In 1981, States adopted the UN Conventional Weapons Convention⁵⁵ and three Protocols⁵⁶ that prohibit or restrict the use of specific conventional weapons. In 1995, a fourth Protocol was added to this arms control regime.⁵⁷ The UN Conventional Weapons Convention is based "on the principle of international law that the right of the parties to an armed conflict to choose the methods or means of warfare is not unlimited, and on the principle that prohibits the employment in armed conflicts of weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering."⁵⁸ The four Protocols prohibit or restrict the following conventional weapons technologies: (1) Protocol I prohibits the use of "any weapon the primary effect of which is to injure by fragments which in the human body

54. This issue is frequently raised in the literature on "non-lethal" weapons. See, e.g., Nick Lewer & Steven Schofield, *Non-Lethal Weapons for UN Military Operations*, INT'L PEACEKEEPING, Autumn 1997, at 71, 87-90 (analyzing various "non-lethal" weapons in connection with arms control treaties); Committees of the North Atlantic Assembly, *Non-Lethal Weapons*, Lord Lyell (United Kingdom) General Rapporteur, Apr. 18, 1997, Doc. No. STC (97)3 at paras. 38-44 [hereinafter Lyell Report] (analyzing "non-lethal" weapons and arms control treaties).

55. UN Conventional Weapons Convention, *supra* note 26.

56. Protocol on Non-Detectable Fragments, *opened for signature* Apr. 10, 1981, 19 I.L.M. 1529; Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices, *opened for signature* Apr. 10, 1981, 19 I.L.M. 1529; Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons, *opened for signature* Apr. 10, 1981, 19 I.L.M. 1534.

57. Protocol on Blinding Laser Weapons, *adopted* Oct. 13, 1995, annex, *reprinted in* Louise Doswald-Beck, *New Protocol on Blinding Laser Weapons*, 312 INT'L REV. RED CROSS 272, 299 (1996).

58. UN Conventional Weapons Convention, *supra* note 26, preamble, 19 I.L.M. at 1524.

escape detection by X-rays;⁵⁹ (2) Protocol II restricts the use of mines, booby-traps, and other manually emplaced munitions and devices designed to kill, injure, or damage and that are triggered by remote control or automatically after passage of a period of time;⁶⁰ (3) Protocol III prohibits making civilian populations the object of attack by incendiary weapons;⁶¹ and (4) Protocol IV prohibits the use of blinding laser weapons designed to cause permanent blindness.⁶² Another conventional arms control treaty is the 1997 Land Mine Convention,⁶³ which prohibits the use, development, production, and transfer of anti-personnel mines.⁶⁴

These international legal regulations on the development and use of conventional weapons affect “non-lethal” weapons in various ways. Specifically, the Protocols under the UN Conventional Weapons Convention on mines and laser weapons relate to the possible use of “non-lethal” mines⁶⁵ and “dazzler” laser weapons and optical munitions.⁶⁶ The Land Mine Convention is also relevant to the development of “non-lethal” anti-personnel mines. The definitions in the Protocol (II) on Prohibitions of Restrictions on the Use of Mines, Booby-Traps and Other Devices and the Land Mine Convention catch anti-personnel mines intended only to incapacitate or injure. Protocol (II) makes no distinction between lethal and “non-lethal” mines, booby-traps, and other devices; and the Protocol applies to mines, booby-traps, and other devices designed to kill, injure, or incapacitate.⁶⁷ The prohibitions in the Land Mine Convention apply to mines and similar devices “designed to be exploded by the presence, proximity or contact of a person and that will incapacitate, injure or kill one or more persons.”⁶⁸ The impact of these broad treaty definitions on “non-lethal” weapons is revealed by the United

59. Protocol on Non-Detectable Fragments, *supra* note 56, 19 I.L.M. at 529.

60. Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices, *supra* note 56, art. 2, 19 I.L.M. at 1530.

61. Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons, *supra* note 56, art. 2, 19 I.L.M. at 1535.

62. Protocol on Blinding Laser Weapons, *supra* note 57, art. 1, 312 INT'L REV. RED CROSS at 299.

63. Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, Sept. 18, 1997, *reprinted in* 320 INT'L REV. RED CROSS 563 (1997)[hereinafter Land Mine Convention].

64. *Id.* art. 1, 320 INT'L REV. RED CROSS at 565.

65. The U.S. JNLWD is developing, for example, “a non-lethal variant of the Claymore mine.” JNLWD 1998 REPORT, *supra* note 3, at 5.

66. See Duncan, *supra* note 52, at 19, 19-20 (noting that both dazzling lasers designed to cause temporary blindness from 12-24 hours and optical munitions designed to blind temporarily or disorient are “non-lethal” technologies).

67. Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, *supra* note 56, art. 2, 19 I.L.M. at 1530.

68. Land Mine Convention, *supra* note 63, art. 2, 320 INT'L REV. RED CROSS at 565.

States' position that the term "to incapacitate" in Protocol (II) does not apply to "non-lethal" technology that temporarily disables but that does not cause permanent injury.⁶⁹ This American position raises important issues of treaty interpretation that will have to be faced in connection with "non-lethal" anti-personnel mines.

Protocol (IV) on Blinding Laser Weapons has relevance for the development and use of "dazzler" laser weapons and optical munitions. Dazzler laser weapons and optical munitions use laser or other optical technology to disorient and temporarily blind opposing military forces. Protocol (IV) on Blinding Laser Weapons prohibits the use of "laser weapons specifically designed, as their sole combat function or as one of their combat functions, to cause permanent blindness to unenhanced vision, that is to the naked eye or to the eye with corrective eyesight devices."⁷⁰ This prohibition does not cover what the Protocol calls "legitimate military employment of laser systems,"⁷¹ such as discriminate targeting and range-finding. Accidental or incidental eye injuries may occur through the use of legitimate laser systems, but they are not banned by Protocol (IV) on Blinding Laser Weapons.

Dazzler laser weapons and optical munitions pose, however, more problems than legitimate laser systems because these weapons are designed to operate directly against the human eye for military purposes. While dazzler laser weapons and optical munitions are not specifically designed to cause permanent blindness, they could be designed to cause such blindness as one of their combat functions. If a dazzler laser weapon or optical munition is adjustable, for example, then on higher settings they could cause permanent injury to the human eye. Such an adjustable weapon would be designed to cause serious eye injuries or even permanent blindness as one of its combat functions, which would bring it within the scope of the Protocol (IV) on Blinding Laser Weapons.

More generally, the international legal principles on which the UN Conventional Weapons Convention is based affect the development and use of other "non-lethal" technologies. Concern has been raised about

69. See Marian Nash Leigh, *Contemporary Practice of the United States Relating to International Law*, 91 AM. J. INT'L L. 325, 332 (1997)(noting that, in connection with the Senate's advice and consent to ratification of the Protocol on Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices, the Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons, and the Protocol on Blinding Laser Weapons of the UN Conventional Weapons Convention, the United States believes that "the term 'incapacitating' does not restrict non-lethal weapon technology that may temporarily disable, stun or signal the presence of [a] person but not cause permanent incapacity.").

70. Protocol on Blinding Laser Weapons, *supra* note 57, art. 1, 312 INT'L REV. RED CROSS at 299.

71. *Id.* art. 3.

the potential effects on human health of anti-personnel weapons that rely on acoustics, sticky foam, or electromagnetism⁷² and whether these “non-lethal” weapons should be specifically regulated under international law. Rosenberg noted interest in 1994 in “the development of specific new protocols covering electromagnetic weapons.”⁷³ The concern with these types of potentially harmful “non-lethal” weapons rests on the fundamental prohibition on the use of weapons that cause superfluous injury or unnecessary suffering (see analysis in Part II.D.3 below), but there may be need to elevate the prohibition from one on use to include the development and transfer of the weapons as has been done with anti-personnel land mines.⁷⁴

2. Biological Weapons

Literature on “non-lethal” weapons frequently mentions the potential use of biological agents as “non-lethal” weapons.⁷⁵ Under international law, the development and use of biological weapons is prohibited. The 1925 Geneva Protocol prohibits the use of bacteriological methods of warfare,⁷⁶ and the 1972 Biological Weapons Convention (BWC) prohibits the development, production, stockpiling, acquisition, or retention of biological weapons.⁷⁷ Neither the Geneva Protocol nor the BWC recognize any distinction concerning the lethality of a potential biological weapon. The ban is absolute. Nor does it appear that any “non-lethal” intent behind the use of biological agents that degrade matériel changes the analysis. The United States’ implementing legislation for the BWC clearly places use of biological agents for deterioration of food, water, equipment, supplies, or any kind of material within the prohibition con-

72. See Loye, *supra* note 11, at 3 (arguing that “there is an urgent need to study carefully the potential physical and psychological effects of new technologies such as infrasound, electromagnetic waves or even sticky foam on humans.”).

73. Rosenberg, *supra* note 40, at 45.

74. See Land Mine Convention, *supra* note 63, art. 1(b), 320 INT’L REV. RED CROSS at 565 (prohibiting development and transfer of anti-personnel landmines).

75. See, e.g., DANDO, A NEW FORM, *supra* note 5, at 11 (listing biological agents that degrade materials); Duncan, *supra* note 52, at 20 (listing biomedical agents designed to incapacitate); Margaret-Anne Coppemoll, *The Nonlethal Weapons Debate*, 52 NAVAL WAR COLL. REV. 112, 116 (1999)(listing biological agents in taxonomy of “non-lethal” weapons).

76. Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, June 17, 1925, 26 U.S.T. 571, 94 L.N.T.S. 65 [hereinafter 1925 Geneva Protocol].

77. Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Feb. 25, 1972, 11 I.L.M. 309.

tained in the BWC.⁷⁸ Similarly, the Lyell Report from a NATO Parliamentary Committee stated that "the use of biological agents to render fuels inert or destroy materials used in material equipment would not be permissible under the BWC even if the intent was non-lethal."⁷⁹ Thus, international law bars the development of "non-lethal" biological weapons.

3. Chemical Weapons

The prohibitions on the development and use of chemical weapons is also relevant in connection with "non-lethal" weapons. Some of the "non-lethal" weapons technologies rely on chemical agents to either incapacitate people (e.g., calmativive weapons) or control space (e.g., sticky foam). The 1925 Geneva Protocol prohibits the use of chemical weapons,⁸⁰ and the 1993 Chemical Weapons Convention (CWC) prohibits the use, development, production, stockpiling, acquisition, or retention of chemical weapons.⁸¹ The CWC also regulates the use of riot control agents (RCAs), such as tear gas.⁸²

The analysis of "non-lethal" weapons under the chemical weapons regime is more complicated than under the bioweapons regime. Chemical weapons are defined as "toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention."⁸³ peaceful purposes, protective purposes, military purposes not relying on the toxic properties of the chemicals, and law enforcement purposes.⁸⁴ A "toxic chemical" is defined as "[a]ny chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals."⁸⁵ A "non-lethal" chemical weapon designed to incapacitate enemy troops is, thus, prohibited by the CWC.

The CWC does not, however, seem at first glance to cover anti-matériel chemical weapons because the toxic effects of the chemicals are not being used against humans or animals. This is, however, a misreading

78. Biological Weapons Anti-Terrorism Act of 1989, 18 U.S.C. §§ 175 (prohibitions), 178 (definition of biological agent)(1994). *See also* Coppemoll, *supra* note 75, at 122 (noting that "[b]iological weapons, both antipersonnel and antimaterial, violate U.S. domestic law.").

79. Lyell Report, *supra* note 54, para. 39.

80. 1925 Geneva Protocol, *supra* note 76.

81. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, Jan. 13, 1993, Sen. Treaty Doc. 103-21, 32 I.L.M. 800 [hereinafter CWC].

82. *Id.* art. I(5), 32 I.L.M. at 804 ("Each State Party undertakes not to use riot control agents as a method of warfare.").

83. *Id.* art. II(1), 32 I.L.M. at 804-05.

84. *Id.* art. II(9), 32 I.L.M. at 805-06.

85. *Id.* art. II(2), 32 I.L.M. at 805.

of the CWC. An anti-matériel chemical weapon is covered if the toxic chemicals used to erode or degrade matériel “can cause death, temporary incapacitation or permanent harm to humans or animals.”⁸⁶ The effect of the chemical weapon, not the intent behind its use, is the critical analytical element. This interpretation of the CWC is important to the entire arms control regime because without it a military force could excuse human casualties from the use of anti-matériel chemical weapons through the intent argument. In other words, the argument would be that collateral human injury from an anti-matériel chemical weapon is acceptable under international law. Such an interpretation of the CWC would undermine its object and purpose. This proper interpretation of the CWC does not entirely prohibit the use of anti-matériel chemical weapons, as they could perhaps be used in very specific contexts (e.g., covert actions by special forces) where the toxic chemicals do not affect humans or animals in degrading matériel. The important point is that the CWC drastically narrows the potential tactical and strategic scope for anti-matériel “non-lethal” chemical weapons.

The CWC also regulates the use of RCAs. A RCA is “[a]ny chemical not listed in a Schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure.”⁸⁷ This definition makes non-lethality a pre-condition of a chemical agent being considered a RCA. Interestingly, the CWC prohibits using this “non-lethal” technology as a “method of warfare.”⁸⁸ “Non-lethal” chemical weapons in the form of RCAs are, thus, banned from the battlefield.

Problems arise, however, in defining “method of warfare.” The CWC contains no definition of this term; and its applicability to military operations other than war, such as peacekeeping, raises issues about the legitimate use of RCAs in these operations. The position of the United States is that RCAs may be used in numerous types of military-related activities (e.g., peacekeeping, humanitarian and disaster relief operations, counter-terrorist operations, hostage rescue missions, and civilian rescue missions) conducted outside international or non-international armed conflicts.⁸⁹ This position, of course, ties into one of the powerful

86. *Id.*

87. *Id.* art. II(7), 32 I.L.M. at 805.

88. *Id.* art. I(5), 32 I.L.M. at 804.

89. See Message to the Senate on the Impact of the Chemical Weapons Convention on the Use of Riot Control Agents, 11 WEEKLY COMP. PRES. DOC. 1337, June 23, 1994, (stating that “[o]ther peacetime uses of RCAs, such as normal peacekeeping operations, law enforcement operations, humanitarian and disaster relief operations, counter-terrorist and hostage rescue operations, and noncombatant rescue operations conducted outside such [international and non-international armed] conflicts are unaffected by the Convention”).

motivating forces behind the development of "non-lethal" weapons: the changing role of military forces. The United States also maintains that it may use RCAs in international and non-international armed conflicts defensively to save lives (e.g., in search and rescue missions and in cases where civilians are being used as human shields against military attack).⁹⁰ This position clearly attempts to preserve for American military forces the ability to use RCAs as a method of warfare.

In essence, the United States is keeping open the option to use "non-lethal" chemical weapons in the form of RCAs on the battlefield and in military operations other than war. Other States have taken a different view and have expressed their concerns that RCAs would present a dangerous risk "if they were allowed to develop into a new generation of non-lethal but effective chemical agents of warfare, causing insurmountable problems in trying to distinguish between 'real' and 'non-lethal' chemical weapons on the battlefield, as well as between 'real' and 'non-lethal' chemical warfare units."⁹¹ This tension over RCAs was resolved in the CWC negotiations by not defining RCAs as chemical weapons but by subjecting them to the prohibition on their use as a weapon of warfare.

A toxic chemical that does not satisfy the criteria in the definition of RCA is a chemical weapon under the CWC and is prohibited from development unless it is developed for a purpose not prohibited under the CWC. The two most relevant purposes not prohibited are (1) for military purposes that do not depend on the toxicity of the chemical as the method of warfare to cause the intended effect;⁹² and (2) law enforcement purposes, including domestic riot control.⁹³ Sticky foam would be an example of a "non-lethal" weapon that contains toxic chemicals but that does not depend on the toxicity of the chemicals to achieve its military purpose.

Chemical weapons that do rely on their toxic effects on humans may be used for law enforcement purposes. This exception clearly brings RCAs to mind, but the term "law enforcement" is not defined in the

90. In 1975, the President issued Executive Order 11850 that allowed the use of RCAs in defensive operations during armed conflict. Exec. Order No. 11850, 40 FED. REG. 16187 (1975), reprinted in 11 WEEKLY COMP. PRES. DOC. 350 (Apr. 8, 1975). In giving its advice and consent to the ratification of the CWC, the Senate insisted that Executive Order 11850 remain effective. 143 Cong. Rec. S3378 (Apr. 17, 1997)(stating that the "President shall take no measure, and prescribe no rule or regulation, which would alter or eliminate Executive Order 11850 of April 8, 1975.").

91. *Chemical Weapons Convention (Treaty Doc. 103-21): Hearings Before the Committee on Foreign Relations of the U.S. Senate*, 103d Cong. 36 (1994).

92. CWC, *supra* note 81, art. II(9)(c), Sen. Treaty Doc. 103 at 284.

93. *Id.* art. II(9)(d).

CWC and may encompass more activities than riot control. While interpretive controversy exists whether RCAs are chemical weapons within the meaning of the CWC, one way to look at RCAs is that they can be used for law enforcement purposes but not as a method of warfare. The problem with this approach is that it raises the question whether "law enforcement purposes" includes activities undertaken during military operations other than war. The CWC does not expressly prohibit the use of RCAs for extraterritorial peacekeeping activities as the phrase "including domestic riot control" is not exhaustive of "law enforcement purposes."⁹⁴

The United States' position that use of RCAs in military operations other than war is permissible under the CWC also means that the United States believes that RCAs can be used for extraterritorial "law enforcement purposes" in activities such as peacekeeping.⁹⁵ These positions essentially mean that the United States believes that "non-lethal" chemical weapons/RCAs can be used legitimately in military operations other than war. Not everyone agrees that this position conforms with international law. The Lyell Report concluded that the use of incapacitating chemical weapons "by military forces, even operating in peacekeeping missions abroad, would be a violation of the CWC."⁹⁶ This interpretive controversy will be influenced by the subsequent practice of States.⁹⁷

Another concern is the potential development of chemical weapons that are not RCAs for "law enforcement purposes." Such weapons would not be able to satisfy the RCA criteria because their "non-lethal" effects on humans might be longer-lasting than the temporary incapacitation required for RCAs. While more potent than RCAs, the exemption for "law enforcement purposes" creates the possibility that these more powerful "non-lethal" chemical weapons could be developed and used. The appropriateness of allowing chemical weapons more powerful than RCAs to be used for "law enforcement purposes" is questionable both under domestic law and international law. Domestically, it creates the anomaly that more powerful chemical weapons may be used against one's own citizens than against enemy forces because weaker RCAs may not be used as a method of warfare and the stronger "law enforcement" chemical weapons could not be used in armed conflict either. Internationally, could these stronger chemical weapons be deployed in military

94. *Id.*

95. See note 89 *supra*.

96. Lyell Report, *supra* note 54, para. 40.

97. See Vienna Convention on the Law of Treaties, May 23, 1969, art. 31(3)(b), 1155 U.N.T.S. 331, 340 (noting that in interpreting a treaty States shall take into account "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation").

operations other than war under the "law enforcement" exception in situations that involve activities other than riot control?

The overall impact of the CWC on "non-lethal" chemical weapons is significant. The least controversial "non-lethal" weapons in the chemical category are those weapons that contain toxic chemicals but do not rely on their toxicity to achieve the military purpose, such as sticky foam. But even sticky foam can be lethal in certain situations because it can asphyxiate people if it covers their mouth and nose. Use of "non-lethal" anti-matériel chemical weapons is prohibited unless (1) the toxic chemicals in question have no effect on human or animal health, or (2) the toxic chemicals are used in specific situations where human or animal health is not in danger. The treatment of RCAs remains controversial. While State practice may clarify the meaning of important CWC provisions, the fact that something as old and widely used as tear gas has been embroiled in interpretive disputes is instructive about the perceived dangers of "non-lethal" chemical weapons. Problems remain too with interpretations of key terms such as "method of warfare" in connection with RCAs and "law enforcement purposes" for chemical weapons.

4. Summary on Arms Control Regimes

The conventional, biological, and chemical arms control regimes severely limit the potential use of "non-lethal" weapons. This limitation further reinforces the problems noted with the concept of "non-lethal" weapons earlier in the Article. Calling weapons "non-lethal" does not render them susceptible to a lower standard of international legal scrutiny in connection with arms control regimes.

However, some important potential "non-lethal" weapons technologies, such as acoustic and electromagnetic weapons, are not affected by the existing arms control disciplines because they do not fall into any of the current treaties on conventional, biological, and chemical weapons. While relevant principles can be extracted from the conventional weapons regime that can be applied to acoustic and electromagnetic weapons, such application is not required under any existing treaty. At present, international legal analysis of the use of these weapons will primarily fall under principles of customary international law, such as the duty not to cause superfluous injury or unnecessary suffering.

C. *"Non-Lethal" Weapons and International Law on the Use of Force*

An important international legal question to ask in connection with the potential development and use of "non-lethal" weapons is whether the availability of such weapons would affect international law on the

use of force. The question may at first glance seem highly speculative given the infancy of the “non-lethal” weapons movement. The question is speculative, but it nevertheless deserves exploration because technological developments can influence how States perceive the use of force as an instrument of national policy. The effectiveness of cruise missiles and smart weapons, along with other technological advances in war-fighting capabilities, may play a role in the recent willingness of the United States and other countries to use force not in self-defense and without authorization from the U.N. Security Council. Some perceive in American actions in Iraq, Sudan, Afghanistan, Bosnia, and Kosovo a concerted attempt to loosen the traditional strictures of the international legal prohibition on the use of force by States contained in the United Nations Charter.⁹⁸ What, if anything, does the development of “non-lethal” weapons portend for international law on the use for force by States?

1. The Prohibition on the Use of Force and the Use of Force in Self-Defense

Article 2(4) of the United Nations Charter prohibits the use of force by States against the territorial integrity and political independence of other States.⁹⁹ Force may only be lawfully used in self-defense in response to an armed attack¹⁰⁰ or in connection with military operations authorized by the U.N. Security Council.¹⁰¹ These international legal rules on the use of force are considered fundamental and controversial. The controversies arise in connection with uses of force that are not self-defense or actions authorized by the U.N. Security Council. The broad prohibition on the use of force and the narrow exception of self-defense in the United Nations Charter does not accurately reflect State practice in the post-World War II era.¹⁰² Some of this State practice concerns the

98. See, e.g., Simon Chesterman & Michael Byers, *Has US Power Destroyed the UN?*, 21 LONDON REV. BOOKS, April 29, 1999 (visited Apr. 27, 1999) <<http://www.lrb.co.uk/v21/n09/ches2109.htm>> (arguing that the “US . . . now sees itself as having little need for the UN and international law.”).

99. U.N. CHARTER, art. 2, para. 4.

100. See *id.* art. 51.

101. See *id.* arts. 39, 42.

102. The nature of State practice in connection with the international legal prohibition on the use of force became a controversial issue in the *Nicaragua v. United States* case before the International Court of Justice (ICJ). In evaluating whether State practice supported the ban on the use of force as a matter of customary international law, the ICJ held that State practice involving uses of force did not undermine the prohibition. See *Military and Paramilitary in and Against Nicaragua* (Nicar. v. US), 1986 I.C.J. 14 (Merits) [hereinafter *Nicaragua v. U.S.*], para. 186. Numerous international legal commentators took the ICJ to task for how it handled the relevant State practice on the use of force. See, e.g., Thomas Frank, *Some Observations on*

controversial area of humanitarian intervention (see analysis below), but much of it simply diverges from the rules on the use of force in the United Nations Charter.

The relevant question for my analysis is how the development and use of "non-lethal" weapons may affect the international legal rules on the use of force. Given States' historically demonstrated willingness to bend and break the rules on the use of force, how would the availability of "non-lethal" weapons technology play into this long-standing dynamic? The first observation to make is that analysis of this question is premised on the successful development by States of militarily useful "non-lethal" weapons. I do not assume that the prohibitions and limitations on certain "non-lethal" weapons imposed by the arms control regimes analyzed earlier will be totally effective. In addition, the development and use of some "non-lethal" technologies is not affected by the conventional, biological, and chemical arms control regimes.

The second observation is that the development of new weapons technologies has historically played into the willingness of States to use force as an instrument of national policy. The dynamics of arms races illustrate this point. States have engaged in extensive and expensive efforts to develop competitive advantages in military weaponry and technology or at least not to fall too far behind the military technologies of a likely adversary. Technological inferiority in weapons produces military and political vulnerability and opportunities for enemies to shape the future on terms of their making. Threats of force are more real, and actual uses of force more dangerous, to a State without parity in military technologies.

It may, at first, seem strange that one could apply the traditional dynamics of weapon development to "non-lethal" weapons. After all, I doubt that any military commander is quaking in his boots about being attacked by an army equipped only with sticky foam.

The traditional dynamics of weapons development are, however, relevant because some "non-lethal" weapons may develop capabilities that make using force more rather than less attractive to States. Particularly important in this regard are potentially powerful "non-lethal" anti-matériel weapons. A "rogue" State possessing effective "non-lethal" anti-matériel weapons may find tempting the strategy of crippling an

the ICJ's Procedural and Substantive Innovations, 81 AM. J. INT'L L. 116, 119 (1987) ("The customary norms cited by the Court are adhered to, at best, only by some states, in some instances, and have been ignored, alas, with impunity in at least two hundred instances of military conflict since the end of World War II."); THEODOR MERON, HUMAN RIGHTS AND HUMANITARIAN NORMS AS CUSTOMARY LAW 110 (1989) (arguing that the ICJ's reference to State practice in *Nicaragua* "was more in the nature of a verbal protestation than a serious inquiry into the presence of the necessary elements of customary international law.").

adversary's military forces through "non-lethal" means in order to render the adversary more vulnerable to lethal force. The military and political advantage produced by "non-lethal" anti-matériel weapons could then be pressed through diplomacy or military means. The fear that certain "non-lethal" weapons technologies will fall into unfriendly hands is one reason why the American "non-lethal" weapons program is shrouded in secrecy.¹⁰³

The incentives can also be flipped. A status quo State having trouble containing the ambition of a "rogue" State may feel tempted to incapacitate the "rogue" State's military machine pre-emptively through "non-lethal" anti-matériel weapons. After such an incapacitation, the status quo State has the upper hand militarily and perhaps politically.

The development and use of "non-lethal" weapons may also give rise to new kinds of low-intensity conflict between States and within States. "Non-lethal" weapons may be attractive tools for the conduct diplomacy by other means in connection with, for example, border disputes or disputes over the control of economic or natural resources. In addition, "non-lethal" weapons would provide States and non-State actors, such as rebel or terrorist groups, with new ways to conduct insurgency/terrorist or counter-insurgency/counter-terrorist operations (see Part II.E.2 below). "Information warfare" or "cyber warfare" are possibilities that have military experts and civilian political leaders particularly worried.¹⁰⁴

These observations suggest that the development of "non-lethal" weapons would create environments where the use of force would be more, not less, likely. Given that it is unlikely that "non-lethal" weapons will be used exclusively in any conflict, the potential exists for "lethal" and "non-lethal" force being used. Such possibilities clearly would put greater pressure on the international legal rules regulating the use of force.

The development of "non-lethal" weapons also creates some interesting international legal questions for the interpretation of existing rules. For example, is the first use of a "non-lethal" weapon a use of force against the territorial integrity or political independence of a State? Although the international legal rules on the use of force developed with the assumption of lethal force as the target of regulation, there is no legal or political sense to seeing "non-lethal" force as outside the prohibition

103. See sources cited in note 45 *supra*.

104. See, e.g., Lyell Report, *supra* note 54, at paras. 4–20 (analyzing threat of information warfare). For legal analysis of information warfare, see Roger D. Scott, *Legal Aspects of Information Warfare: Military Disruption of Telecommunications*, 45 NAVAL L. REV. 57 (1998).

on the use of force by the States. But, given that the States have repeatedly through their actions attempted to narrow the scope of the prohibition on the use of force and expand the scope of the right to self-defense, arguments that "non-lethal" force is not force as intended by Article 2(4) of the United Nations Charter would be entirely predictable.

The development of "non-lethal" weapons also raises questions in connection with the right of self-defense. First, would the possession of "non-lethal" weapons encourage States to engage in anticipatory self-defense more frequently? Whether anticipatory self-defense is legitimate under international law has been controversial.¹⁰⁵ "Non-lethal" weapons might provide a capability that could be used to frustrate the military intentions of an adversary. As military technology has produced weapons capable of striking from ever greater distances at ever faster speeds, anticipatory self-defense becomes a more problematic concept. Throw "non-lethal" weapons into the mixture and perhaps the threshold for anticipatory self-defense is lowered. Such a lowering brings closer the erosion of the distinction between a use of force and an act of self-defense.

States have a right of self-defense if they are subject to an armed attack.¹⁰⁶ The International Court of Justice (ICJ) held in *Nicaragua v. United States* that there are distinctions in international law between: (1) an armed attack and a use of force; and (2) a use of force and an intervention.¹⁰⁷ Only an armed attack triggers the right of individual and collective self-defense.¹⁰⁸ "Non-lethal" weapons provide a way for States to exploit this international legal interpretation of the right to self-defense. "Non-lethal" weapons could be used in such a way that the use is either an intervention or a use of force (both illegal under international law)¹⁰⁹ but does not cross the "armed attack" threshold. Because the victim of the "non-lethal" weapons use has no right to self-defense in the absence of an armed attack, the State using the "non-lethal" weapon cannot be subject to a military response by the victim.

The glaring problems with the ICJ's interpretation of the right to self-defense in the *Nicaragua* case have been exposed and criticized by

105. See, e.g., HILAIRE MCCOUBREY & NIGEL D. WHITE, INTERNATIONAL LAW AND ARMED CONFLICT 91-96 (1992)(analyzing anticipatory self-defense).

106. See U.N. CHARTER art. 51.

107. *Nicaragua v. U.S.*, *supra* note 102, para. 195 (stating that military assistance to rebels may be a use of force or an intervention and yet not be an armed attack).

108. See *id.* (holding that "assistance to rebels in the form of the provision of weapons or logistical or other support" was not an armed attack justifying the use of force in self-defense).

109. On the illegality of intervention, see U.N. CHARTER art. 2(7), which prohibits intervention in the domestic affairs of other States.

international legal writers,¹¹⁰ and the development and possible use of “non-lethal” weapons underscore these criticisms. But “non-lethal” weapons pose other questions for the right to self-defense. While a State subject to a “non-lethal” weapons attack would clearly believe it could act in self-defense, such a State is subject to the principles of necessity and proportionality in responding to a “non-lethal” weapons use. The necessity principle holds that a State may only use force in self-defense when it is necessary in the sense that it faces an immediate and serious threat.¹¹¹ Usually an armed attack satisfies the necessity principle; but the nature of “non-lethal” weapons causes some concerns in this context. While the necessity principle would be satisfied by a use of “non-lethal” and “lethal” force combined, a use of “non-lethal” weapons alone presents a murkier situation. Would it be necessary to respond with “lethal” force to a “non-lethal” weapons attack? The answer to this question would depend on whether the “non-lethal” attack was continuing or completed and on the scale of the “non-lethal” attack. What is clear is that “non-lethal” weapons complicate analysis of the necessary principle in self-defense analysis under international law.

Assuming that a State satisfies the necessary requirement, its response to a use of force must be proportional to the original use of force and the continuing threat of force.¹¹² “Non-lethal” weapons also complicate this traditional international legal analysis. Would it be proportional to respond with “lethal” force to an attack that involved only “non-lethal” weapons? Again, the actual context would be important in conducting a proper analysis; but “non-lethal” weapons would make proportionality analysis more difficult. A State that cannot respond in kind to a “non-lethal” weapons attack may feel deterred from escalating the conflict to the level of “lethal” force. “Non-lethal” weapons would in such a situation give the aggressor an advantage because the onus to move to “lethal” force is on the victim. States would not envy being in that position, which would fuel the development of defensive measures

110. See, e.g., Louis Henkin, *Use of Force: Law and U.S. Policy*, in LOUIS HENKIN ET AL., *RIGHT V. MIGHT: INTERNATIONAL LAW AND THE USE OF FORCE* 37, 49 (1991) (arguing that the ICJ “did not address the victim’s right of armed response to ‘less than an armed attack,’ or what means other than force can be used in response to such interventions by either the victim or its friends”).

111. The necessity principle was famously stated in *The Caroline Case*: self-defense is permissible when the “necessity of that self-defense [is] instant, overwhelming, and leaving no choice of means, and no moment for deliberation.” *The Caroline Case*, in DAVID J. HARRIS, *CASES AND MATERIALS ON INTERNATIONAL LAW* 895 (5th ed. 1998).

112. See MCCOUBREY & WHITE, *supra* note 105, at 98 (noting the importance of the principle of proportionality in the international law on self-defense).

or offensive "non-lethal" capabilities. The "non-lethal" arms race would be underway.

2. The Use of Force in Peacekeeping Operations and Humanitarian Interventions

Another context in which force may legitimately be used is under U.N. Security Council authorization in connection with conflicts that threaten international peace and security.¹¹³ Since the end of the Cold War, the U.N. Security Council has authorized the use of military force in a number of peacekeeping and humanitarian operations.¹¹⁴ In addition, various regional international organizations have used force in response to civil wars and ethnic cleansing.¹¹⁵ Many difficult questions arise in connection with the applicability of international law to these peacekeeping and humanitarian interventions. This section focuses on the potential impact of "non-lethal" weapons on the decision whether to engage in peacekeeping or humanitarian intervention. A later section looks at the use of "non-lethal" weapons in peacekeeping and humanitarian operations (see Part II.D.8 below).

The question for decision makers contemplating using force in connection with a peacekeeping operation or humanitarian intervention is whether the availability of "non-lethal" weapons makes an affirmative decision more rather than less likely. "Non-lethal" weapons have been deployed and used in the United Nations humanitarian and peace building operation in Somalia¹¹⁶ and United Nations and NATO peacekeeping in Bosnia,¹¹⁷ but the availability of the weapons deployed cannot be said to have factored in the decisions to intervene. Assuming that "non-lethal" weapons continue to be developed and deployed, will their growing presence in military forces and their "non-lethal" capabilities factor into the decision whether to intervene militarily? Much, of course, depends on what "non-lethal" weapons are available and what type of effectiveness such weapons can achieve. In addition, the nature

113. See U.N. CHARTER arts. 39, 42.

114. See DANDO, A NEW FORM, *supra* note 5, at 3 (listing twenty-one UN peacekeeping missions initiated between 1988 and 1994).

115. The Economic Community of West African States (ECOWAS) intervened, for example, militarily in Sierra Leone in 1997. See Karsten Nowrot & Emily W. Schabacker, *The Use of Force to Restore Democracy: International Legal Implications of the ECOWAS Intervention in Sierra Leone*, 14 AM. U. INT'L L. REV. 321 (1998). NATO has intervened militarily in the Bosnian and Kosovo conflicts.

116. See Lewer & Schofield, *Non-Lethal Weapons for UN Military Operations*, *supra* note 54, at 79-80 (discussing use of "non-lethal" weapons in Somalia).

117. See U.S. Sends Non-Lethal Riot Gear to Bosnia, DEUTSCHE PRESSE-AGENTUR, Sept. 2, 1997, available in LEXIS, News File (reporting on use of "non-lethal" weapons by American troops in Bosnia).

of the conflict into which troops are to be inserted would remain a central consideration. Nevertheless, successful development and deployment of effective “non-lethal” weapons may create incentives for more military interventions by States, military alliances, such as NATO, or the United Nations.¹¹⁸

Given the painful experiences of recent peacekeeping, peacebuilding, and humanitarian operations, it seems unlikely that the continued development of “non-lethal” weapons would increase the appetite of international and regional organizations for such military interventions. In fact, the development of “non-lethal” weapons may increase the reluctance of such organizations and their constituent States to commit troops to military operations other than war. NATO reluctance to commit ground troops to the Kosovo conflict stemmed in part from a faith in air power augmented by sophisticated technology. Some believe that smart weapons technology has produced in civilian populations in developed countries a belief in the possibility of “surgical” warfare with few civilian casualties in the target country and little danger to the attacking military forces.¹¹⁹ The success of the NATO air campaign in the Kosovo conflict has reinforced the special place of air power in American and NATO military thinking. Perhaps “non-lethal” weapons will feed this phenomenon by encouraging people to develop even more unrealistic ideas about modern warfare.¹²⁰

D. “Non-Lethal” Weapons and International Humanitarian Law

“Non-lethal” weapons also have implications for international humanitarian law (IHL), which regulates how force and weapons are used during armed conflict. IHL is complex area of international law, and my analysis of “non-lethal” weapons and IHL is not exhaustive. My objective is to raise some important questions that “non-lethal” weapons pose for IHL.

118. See, e.g., Non-Lethal Weapons Research Project, *supra* note 10 (arguing that development of “non-lethal” weapons raises “concerns regarding the danger of lowering the threshold of intervention by the international community into the affairs of other nation states.”).

119. See, e.g., Cohen, *supra* note 43, at 109 (analyzing the “mystique” of American air power in the wake of the Persian Gulf War).

120. See *id.* (arguing that the combination of air power and “non-lethal” weapons “may offer an even more appealing prospect: war without casualties.”).

1. Prohibition on Attacking Civilians and Civilian Targets

IHL contains a general prohibition on military forces attacking civilians and civilian targets.¹²¹ This prohibition has been massively violated in the wars of the twentieth century. Developments in weapons technology, especially aircraft, made civilian populations increasingly vulnerable to military attack. Civilians also suffered terribly when attacked by armies and governments that had no intention of honoring the laws of war. But civilians also face threats from forces committed to IHL because civilian fatalities are caused by smart weapons. In addition, military forces often attack or destroy facilities, such as power plants, that are important to the health and well-being of civilian populations.¹²²

How might "non-lethal" weapons affect the IHL prohibition on military attacks on civilians and civilian populations? In some situations, "non-lethal" weapons pose familiar problems. During the Persian Gulf War, allied forces used "non-lethal" anti-matériel weapons to disrupt the Iraqi electricity infrastructure.¹²³ The ICRC reported that the destruction and disruption of electricity caused Iraqi civilians great hardships in forms of disease and other adverse health consequences.¹²⁴ Calling a weapon "non-lethal" does not remove its potential consequences from scrutiny under IHL.

Equally important is the possibility that the development of "non-lethal" weapons will encourage military forces to attack civilians and civilian targets more rather than less. Military forces might perceive that attacking civilians and civilian targets with "non-lethal" weapons is acceptable because the intent is to incapacitate or demoralize rather than kill. In some contexts, incapacitating or demoralizing civilians might make the use of "lethal" weapons against opposing military forces easier.

121. See, e.g., Geneva Protocol I, *supra* note 26, art. 51, para. 2 ("The civilian population as such, as well as individual civilians, shall not be the object of attack.").

122. See *id.* art. 54, para. 2 ("It is prohibited to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and irrigation works, for the specific purpose of denying them . . . to the civilian population or to the adverse Party, whatever the motive . . .").

123. See Aftergood, *supra* note 45, at 40 (quoting defense expert William Arkin as criticizing the use of "non-lethal" weapons (carbon-fiber warheads on Tomahawk sea-launched cruise missiles) against electrical installations because these weapons "devastated a civilian population that was otherwise largely spared the direct effects of bombing"). Similar weapons were available to NATO forces in the Kosovo air campaign. See Stephen S. Rosenfeld, 'Turning Off the Lights in Belgrade,' WASH. POST, May 7, 1999, at A39 (reporting on the U.S. Air Force's unveiling of "a secret 'blackout' bomb that evidently short-circuits the equipment but does not actually physically destroy it. This is what is meant by threats to 'turn off the lights in Belgrade.'").

124. See ICRC, *Water in Iraq* (ICRC Special Brochure, July 1996).

Using “non-lethal” weapons against civilians might provide a tactical military advantage in armed conflict. “Non-lethal” weapons would, thus, encourage the erosion of the IHL prohibition on attacking civilians.

Behind the IHL prohibition is the principle that military forces must discriminate between military and civilian targets.¹²⁵ Important to the IHL analysis will be whether “non-lethal” weapons can only be, or are being, used indiscriminately. A “non-lethal” weapon that cannot be used in a discriminate way would cause IHL concerns. Thus, if an acoustic weapon intended to incapacitate military forces cannot be used without also incapacitating civilians, such a “non-lethal” weapon cannot satisfy IHL. But one can easily see that people wanting to use the “non-lethal” weapon would argue that its indiscriminate use does not violate IHL because the intent is not to kill and the civilians are only temporarily incapacitated. In other words, the indiscriminate use of a “non-lethal” weapon causes acceptable collateral damage to civilians. Other weapons, such as bombs, that can be used discriminately cause fatal collateral damage that is routinely accepted as regrettable but not illegal. It would be anomalous to accept fatal collateral damage but reject incapacitation as legitimate collateral damage.

The IHL concern with this line of reasoning is that, with an indiscriminate weapon, the intent to attack only military forces is hollow; and the reality is that both military and civilian targets are being attacked intentionally. Allowing the use of an indiscriminate “non-lethal” weapon just because civilians are incapacitated but not killed would eat at the heart of the IHL protections for civilians. Less worrying is civilian collateral damage resulting from the use of a discriminate “non-lethal” weapon intended for use only against military forces because ample practice exists in connection with fatal civilian collateral damage resulting from discriminate attacks on military forces with conventional weapons.

2. Prohibitions on Attacking Combatants Who Are *Hors de Combat*

IHL prohibits military forces from attacking combatants who are incapacitated or disarmed and no longer present a military threat (*hors de combat*).¹²⁶ This aspect of IHL is clearly relevant to the use of

125. See Geneva Protocol I, *supra* note 26, art. 48 (“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.”).

126. See, e.g., Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, Aug. 12, 1949, art. 3(1), 6 U.S.T. 3114, 3116, 75 U.N.T.S. 31, 32 (“Persons taking no active part in the hostilities, including members

"non-lethal" weapons on the battlefield,¹²⁷ and "non-lethal" weapons raise a number of questions in this regard.

First, it is not clear how a soldier will be able to determine in the heat of the battle whether an enemy combatant is *hors de combat* as a result of the use of a "non-lethal" weapon. How much incapacitation is necessary to render a combatant *hors de combat*? Just as a soldier wounded by a "lethal" weapon may still pose a military threat to his enemy, an incapacitated soldier may also constitute a threat. Perhaps this observation suggests that the identification of a combatant *hors de combat* is difficult regardless whether "lethal" or "non-lethal" weapons are used, and that "non-lethal" weapons do not complicate this already difficult task. Much would depend, of course, on the particular physical effects of a "non-lethal" weapon, so it is difficult to speculate much. But the easier it is to recognize incapacitation the stronger will be the physical effect of the "non-lethal" weapon, perhaps raising other questions under IHL (see Part II.D.3 below).

Second, military forces have duties under IHL to treat combatants *hors de combat* humanely, including provision of medical treatment to wounded or sick combatants. How do these IHL duties relate to the incapacitation caused by "non-lethal" weapons? Is a soldier incapacitated by a "non-lethal" weapon wounded or sick within the meaning of IHL? Given the humanitarian thrust of IHL, the answer to the last question would be affirmative, in which case military forces using "non-lethal" weapons will have to train their troops in how to provide treatment to incapacitated enemy soldiers. While perhaps not conceptually difficult for IHL, this conclusion may create practical problems for forces in the field who will have to be trained to deal with traditional wounds and "non-lethal" incapacitation.

Third, unlike a traditional wound from a "lethal" weapon, the incapacitation caused by "non-lethal" weapons is assumed to be temporary in effect. Military forces in the field will face not only the problem of identifying whether the incapacitated are *hors de combat* but also the problem of how to neutralize the incapacitated before the incapacitation wears off. Military personnel would have to be diverted from the military objective to round up, contain, and then move incapacitated

of armed forces who have laid down their arms and those placed *hors de combat* by sickness, wounds, detention, or any other cause, shall in all circumstances be treated humanely . . ."); Loye, *supra* note 11, at 4 (stating that IHL "describes a person as being *hors de combat* when he or she: . . . has been rendered unconscious or been otherwise incapacitated by wound or sickness, and is therefore incapable of defending him[self] or herself.").

127. See Loye, *supra* note 11, at 4 (arguing that the concept of *hors de combat* "is particularly pertinent with regard to some of the technologies proposed in the context of 'non-lethal' weapons.").

combatants out of the battle zone. In the heat of battle, such activities might not be possible. Military personnel might confront the choice between attacking the incapacitated or seeing them shake off the effects of a “non-lethal” weapon and return to the fight. Faced with that choice, military forces would probably ignore rules protecting enemy combatants rendered *hors de combat* by a “non-lethal” weapon.

Fourth, IHL protections for combatants *hors de combat* have not been widely respected in twentieth century wars. Military forces in all likelihood will see incapacitation through “non-lethal” weapons as a means to maximize the impact of “lethal” force. The tactic might be to hit enemy troops first with “non-lethals” and to follow up this attack with “lethal” force. This combination tactic might maximize battle impact on the enemy while reducing casualties for the attacking side. As Loye argued, “[t]he combined use on the battlefield of ‘non-lethal’ and conventional weapons may well increase the overall mortality rate from conventional weapons and violate the rules on persons *hors de combat*.”¹²⁸ In this dynamic, the *hors de combat* principle gets pushed aside for purposes of military expediency.

3. Prohibitions on Weapons that Cause Superfluous Injury or Unnecessary Suffering

As seen earlier, another central principle of the IHL is the prohibition on weapons that cause superfluous injury or unnecessary suffering.¹²⁹ This principle has been behind a number of prohibitions of specific weapons systems, such as exploding bullets, blinding laser weapons, and anti-personnel land mines (see Part II.B.1 above). At first glance, it would seem that “non-lethal” weapons cause no concerns for this IHL principle because the intended physical effects are assumed to be temporary. It remains important for the integrity of IHL to apply the superfluous injury or unnecessary suffering principle to “non-lethal” weapons because the assumption of temporary incapacitation may not be warranted.

One concern for this principle of IHL is that the health effects of many potential “non-lethal” weapons are, as mentioned earlier, not known. The superfluous injury/unnecessary suffering principle should guide development of “non-lethal” weapons to ensure that the physical effects of the weapons are not severe or permanent.¹³⁰ Potentially very

128. *Id.*

129. See sources cited in note 74 *supra*.

130. See Geneva Protocol I, *supra* note 26, art. 36 (providing that States Parties are under a duty to ensure that the employment of new weapons do not violate the Protocol or any other rule of international law).

helpful in this regard is an objective approach to determining whether a weapon causes superfluous injury or unnecessary suffering developed by the ICRC.¹³¹ The ICRC argues that "[t]here has never been an objective means of determining what constitutes 'superfluous injury or unnecessary suffering'".¹³² The ICRC proposes to determine what weapons cause superfluous injury or unnecessary suffering by examining:

design-dependent, foreseeable effects of weapons when they are used against human beings and cause:

- specific disease, specific abnormal physiological state, specific abnormal psychological state, specific and permanent disability or specific disfigurement (*Criterion 1*);
- field mortality of more than 25% or hospital mortality of more than 5% (*Criterion 2*);
- Grade 3 wounds [large wounds] as measured by the Red Cross wound classification system (*Criterion 3*); or
- effects for which there is no well-recognized and proven treatment (*Criterion 4*).¹³³

The ICRC advocates using this objective approach to analyze all new weapons, including "non-lethal" weapons.¹³⁴

Countervailing pressures will exert themselves against the superfluous injury/unnecessary suffering principle. As mentioned earlier, greater incapacitation is preferable from a military perspective. The battlefield utility of a mild incapacitation of enemy troops is questionable. Greater incapacitation probably requires more significant physiological effects, perhaps increasing the chances for superfluous injury/unnecessary suffering. Given that chemical and biological "non-lethal" anti-personnel weapons are prohibited by international law, other "non-lethal" forces, such as acoustics or electromagnetism, would have to be used. The short- and long-term health effects of these more exotic "non-lethal" technologies is not currently well understood.

Another issue for which the superfluous injury/unnecessary suffering principle is relevant concerns the potential adjustability of some "non-lethal" weapons technologies. Military planners desire rheostatic or "tunable" weapons that the soldier can adjust between "lethal" and

131. See ICRC, THE SIRUS PROJECT: TOWARDS A DETERMINATION OF WHICH WEAPONS CAUSE "SUPERFLUOUS INJURY OR UNNECESSARY SUFFERING" (Nov. 1997).

132. *Id.* at 7.

133. *Id.* at 8.

134. *Id.* at 25.

“non-lethal” munitions.¹³⁵ Some laser, acoustic, microwave, and electromagnetic weapons will probably be adjustable, allowing the operator to increase or decrease the physiological effect of the weapon on the enemy forces. This adjustability is something new for IHL as the physical effect of existing weapons cannot be fine-tuned as laser, microwave, acoustic, and electromagnetic weapons could be. Adjustability is a concern because, from a military perspective, greater incapacitation of enemy troops is preferable. Tunable weapons might, therefore, be set at levels that reflect military expediency rather than humanitarian principles.¹³⁶

Finally, the development of “non-lethal” weapons may create IHL problems for the use of “lethal” weapons. If a military objective can be achieved by using “non-lethal” weapons, then the use of “lethal” weapons might be thought to cause superfluous injury or unnecessary suffering.¹³⁷

4. Regulation of the Treatment of POWs

IHL requires that military forces and governments treat prisoners of war (POWs) humanely. IHL contains a detailed and comprehensive set of rules on the treatment of POWs.¹³⁸ “Non-lethal” weapons implicate this area of IHL because the use of these weapons would presumably produce POWs through incapacitation and capture of enemy soldiers. Whether the use of “non-lethal” weapons would produce more POWs than the use of more traditional military weapons is, of course, speculative; but considering the intent behind the use of “non-lethal” weapons, it seems likely that the number of POWs would increase rather than decrease (assuming that armies did not take advantage of incapacitation by killing more combatants *hors de combat*).

The generally horrific treatment of POWs in the wars of the twentieth century gives one pause as to whether potentially increasing the number of POWs through the use of “non-lethal” weapons would be a

135. See, e.g., David Kruczynski, *Variable Velocity Individual Weapon*, paper presented at First Annual Non-Lethal Technology and Academic Research Symposium, Quantico, Virginia (May 3–5, 1999), (visited Nov. 29, 1999) <<http://www.unh.edu/orps/nonlethality/pub/proceedings1999.html#posters>> (describing the variable velocity combustion light gas gun).

136. See Loye, *supra* note 11, at 5 (“Experts advocate that this technical possibility [tunable weapons] will give the soldier more options. But is it not inevitable that under battlefield conditions the soldier will in most cases choose a high or even the maximum energy output? . . . The tunable option will quickly be reduced to one option, the maximum option.”).

137. See *id.* at 4 (asking “if a military objective can be achieved by using ‘non-lethal’ weapons, then would not the use of ‘non-lethal’ weapons in combination with ‘lethal’ force be in excess of the anticipated military advantage?”).

138. See Geneva Convention Relative to the Treatment of Prisoners of War, Aug. 12, 1949, 75 U.N.T.S. 135.

humane situation. With rare exceptions, armies and governments have badly mistreated POWs; and the development and use of "non-lethal" weapons would have little impact on the reasons for the massive violation of IHL on treatment of POWs. The knowledge that POW conditions will probably be very bad would probably motivate soldiers to resist capture as strenuously as possible. This motivation might make incapacitated soldiers dangerous to the enemy, feeding into the dynamics described earlier that point towards shooting rather than capturing and humanely treating victims of "non-lethal" weapons.

IHL on POWs is also relevant to "non-lethal" weapons as such weapons may be used to contain and control POWs in POW camps. One fear might be that POWs become subjects in experiments with "non-lethal" weapons. Armies seeking to "test drive" new "non-lethal" technologies might be tempted to make POWs laboratory subjects because the POWs are a captive resource that can be monitored and evaluated in a controlled environment. Japanese and German armies conducted medical experiments on POWs during World War II by testing chemical and biological weapons on them. Medical and scientific experiments on POWs was prohibited in international law after the Second World War.¹³⁹ The vulnerability of POWs, and the nature of "non-lethal" weapons, may combine to tempt militaries and governments to experiment on POWs with new "non-lethal" technologies. Such experimentation would, of course, be most alarming under IHL.

While the use of "non-lethal" weapons in POW camps might seem preferable to "lethal" weapons, more problems might in fact be created. POWs might be emboldened to escape from the camp or challenge guards if they believe that the primary response would be "non-lethal". Tensions in the camp may escalate, leading to greater violence on both sides and more "lethal" uses of force than might have occurred had only "lethal" weapons been involved from the beginning. Any potential deterioration in the conditions of POWs would be a grave concern for IHL.

5. Regulation of Treatment of Civilians in Occupied Territory

One of the intended uses of "non-lethal" weapons is crowd control, and such weapons could be useful to an occupying power in controlling the civilian population. IHL has detailed rules on how civilian populations in occupied territories are to be treated by the detaining power,¹⁴⁰ and any use of "non-lethal" weapons by a detaining power would have

139. See Geneva Convention Relative to the Treatment of Prisoners of War, *supra* note 138, art. 13, 75 U.N.T.S. at 146.

140. See Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 75 U.N.T.S. 287.

to conform to the IHL rules on occupation. As with other areas of IHL, the rules on protecting civilians in occupied territories have been massively violated in twentieth century wars. As with “non-lethal” weapons in the context of POWs, concerns might arise with the misuse of “non-lethal” weapons by detaining powers in their control over occupied civilian populations.

6. Regulation of Environmental Modification During Armed Conflict

IHL also contains rules that attempt to protect the environment from certain consequences of armed conflict. The State parties to the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques undertake “not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party.”¹⁴¹ An “environmental modification technique” is defined as “any technique for changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.”¹⁴² Geneva Protocol I prohibits “methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.”¹⁴³

Some “non-lethal” weapons, such as defoliants, soil destabilizers, and weather modification, manipulate parts of the Earth’s biota or atmosphere to achieve a military purpose and thus could be considered environmental modification techniques.¹⁴⁴ Whether such weapons have widespread, long-lasting, or severe effects on the environment needs to be one of the criteria guiding the evaluation of such weapons.

7. Use of “Non-Lethal” Weapons and War Crimes

IHL criminalizes certain behavior during times of armed conflict.¹⁴⁵ The supposed benign intentions behind “non-lethal” weapons might make us reluctant to believe that the use of such weapons could ever

141. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, *opened for signature* May 18, 1977, art. I, para. 1, 1108 U.N.T.S. 151, 153.

142. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, *supra* 141, art. II, 75 U.N.T.S. at 153.

143. Geneva Protocol I, *supra* note 26, art. 35, para. 3, 1125 U.N.T.S. at 21.

144. See Non-Lethal Weapons Research Project, *supra* note 10, at § 4 (noting that many analysts have criticized “non-lethal” weapons as environmentally unsafe).

145. See Statute of the International Criminal Court, *supra* note 19, art. 6 (defining crime of genocide), art. 7 (defining crimes against humanity), art. 8 (defining war crimes).

result in crimes in IHL. In addition, the physical harm caused by "non-lethal" weapons is supposed to be temporary, which suggests that "non-lethal" weapons could not as a general matter inflict the kind of harm criminalized under IHL. But "non-lethal" weapons may be used in ways that would constitute or contribute to criminal acts under IHL.

The crime of genocide includes acts such as causing serious bodily or mental harm to members of a national, ethnic, racial, or religious group with the intent to destroy such group.¹⁴⁶ "Non-lethal" weapons could be used to cause serious bodily or mental harm to members of a group as part of a strategy to destroy it in whole or in part. Fears have been raised that the revolution in biotechnology and human genomics could produce the potential for the development of "genetic weapons"—weapons designed to target specific racial or ethnic groups.¹⁴⁷ "Non-lethal" weapons could also be used to facilitate ethnic cleansing, such as occurred in the former Yugoslavia. Crimes against humanity include inhumane acts causing great suffering or serious bodily or mental injury as part of a widespread or systematic attack against a civilian population.¹⁴⁸ As with the crime of genocide, it is not inconceivable that military forces could use "non-lethal" weapons in committing crimes against humanity.

Similarly, "non-lethal" weapons could be used in the commission of various war crimes, such as (1) torture or inhuman treatment, including experiments on the human body;¹⁴⁹ (2) wilfully causing great suffering, or serious injury to body or health;¹⁵⁰ (3) intentionally directing attacks against the civilian population;¹⁵¹ (4) intentionally directing attacks against civilian objects;¹⁵² (5) attacking towns, villages, dwellings, or buildings that are undefended and that are not military objectives;¹⁵³ (6) killing or wounding a combatant who no longer has means of defense;¹⁵⁴ (7) subjecting persons to scientific experiments that endanger the health

146. See *id.* art. 6.

147. See BRITISH MEDICAL ASSOCIATION, BIOTECHNOLOGY, WEAPONS AND HUMANITY 66–67 (1999) (noting that genetic weapons may be developed in the future); Ethirajan Anbarasan, *Genetic Weapons: A 21st-Century Nightmare?*, THE UNESCO COURIER, Mar. 1999, at 37 (noting warnings of scientists about the possibility of genetic weapons); *Gene Warfare—Unless We Keep Our Guard Up*, 348 THE LANCET 1183 (1996).

148. See Statute of the International Criminal Court, *supra* note 19, art. 7.

149. See *id.* art. 8(2)(a)(ii).

150. See *id.* art. 8(2)(a)(iii).

151. See *id.* art. 8(2)(b)(i).

152. See *id.* art. 8(2)(b)(ii).

153. See *id.* art. 8(2)(b)(v).

154. See *id.* art. 8(2)(b)(vi).

of the individual;¹⁵⁵ and (8) employing weapons that cause superfluous injury or unnecessary suffering or which are inherently indiscriminate.¹⁵⁶

Using “non-lethal” weapons does not exculpate military acts from crimes established under IHL. This conclusion reinforces the point made repeatedly in this Article: it is the intent behind how a weapon is used and how a weapon is actually used that determine its treatment under IHL, not the politically correct name it is given.

8. IHL and Peacekeeping and Humanitarian Operations by Multinational Forces

Much of the impetus behind the “non-lethal” weapons movement has come from the experiences of multinational forces, such as United Nations forces, during peacekeeping or humanitarian operations. In such operations, multilateral forces have sensed a need for something other than “lethal” force in carrying out their missions. The addition of “non-lethal” weapons to the arsenal of multinational forces might help make such forces more effective in achieving their military and humanitarian objectives.¹⁵⁷ Considerable difficulty has arisen, however, in the application of IHL to multinational forces. Louise Doswald-Beck, the Head of the Legal Division of the ICRC, noted the difficulty of applying IHL to United Nations forces and other multinational forces.¹⁵⁸ She finds the effort to fit peacekeeping and humanitarian operations into rules of international law designed for “belligerents” to be an “insuperable” problem and calls for a specific international effort on applying IHL in peacekeeping and humanitarian operations by multinational forces.¹⁵⁹

This general problem relates to the development and use of “non-lethal” weapons by multinational forces engaged in peacekeeping and humanitarian operations. Part II of this Article demonstrates the continued relevance of a great deal of IHL to the use of “non-lethal” weapons. But if traditional IHL does not fit multinational peacekeeping and humanitarian operations, then it is difficult to apply IHL disciplines to the use of “non-lethal” weapons by multinational forces. Any international effort to clarify the relationship between IHL and peacekeeping and humanitarian operations by multinational forces should include

155. See Statute of International Criminal, *supra* note 19, art. 8(2)(b)(x).

156. See *id.* art. 8(2)(b)(xx).

157. See Lewer & Schofield, *Non-Lethal Weapons for UN Military Operations*, *supra* note 54 (analyzing deployment of “non-lethal” weapons as part of UN military operations and arguing that “non-lethal” weapons could contribute to the development of UN benign intervention).

158. Louise Doswald-Beck, *Implementation of International Humanitarian Law in Future Wars*, 52 NAVAL WAR C. REV. 24, 43 (1999).

159. *Id.*

consideration of "non-lethal" weapons given their apparent development to assist in such operations.

E. Other Areas of International Law

While the international law on the use of force and how force is used during armed conflict are the most relevant areas in connection with "non-lethal" weapons, their development and use implicate other areas of international law as well. In this section, I discuss the relationship between "non-lethal" weapons and (1) human rights, (2) terrorism, and (3) environmental protection.

1. Human Rights

While this Article has analyzed "non-lethal" weapons mainly in connection with their use in armed conflict, such weapons also have domestic applications that might raise human rights concerns. Domestic law enforcement agencies and forces also have developed serious interest in "non-lethal" technologies to give them more operational flexibility in protecting the public.¹⁶⁰ This benign interest in "non-lethal" technologies may not, however, be universal. International human rights non-governmental organizations, such as Amnesty International, regularly report on the massive scale of abuses of fundamental human rights by governments all over the world.¹⁶¹ Many older "non-lethal" weapons, such as tear gas, wooden batons, and rubber bullets, have been long used by oppressive regimes against their own people.¹⁶² It is possible that newer "non-lethal" weapons will also become part of the arsenal of authoritarianism that is used to repress dissent and deter political opposition. News reports indicate that "non-lethal" weapons, such as electronic stun guns, "taser" weapons, and stun belts "are being made available to regimes known to use such devices for torture."¹⁶³ Such "non-lethal" weapons are "popular" with torturers "not only because of the extreme pain they can inflict, but because they leave very little physical evidence of their use."¹⁶⁴ Only the naïve would believe that new "non-lethal" weapons will remain solely in the hands of the "good guys"

160. See NATIONAL INSTITUTE OF JUSTICE, *supra* note 3.

161. See, e.g., Amnesty International, 1998 ANNUAL REPORT (visited Aug. 11, 1999) <<http://www.amnesty.org/ailib/aireport/ar98/index.html>> (arguing that for most people in the world the rights enshrined in the Universal Declaration of Human "are little more than a paper promise.").

162. See, e.g., LEWER & SCHOFIELD, NON-LETHAL WEAPONS, *supra* note 5, at 97-98 (discussing use of "non-lethal" weapons as instruments of torture).

163. Lewer, *supra* note 48, at § 4.2; see also, LEWER & SCHOFIELD, NON-LETHAL WEAPONS, *supra* note 5, at 97-98.

164. Lewer, *supra* note 48, at § 4.2.

and will be used only for saving lives in peacekeeping and humanitarian operations. Some human rights groups have called for bans on the export of these “non-lethal” technologies to repressive governments.¹⁶⁵

2. Terrorism

States have used international law to create obligations to fight terrorism and to bring terrorists to justice.¹⁶⁶ “Non-lethal” weapons provide opportunities for States in their fight against terrorism, but they also provide terrorists with new means to attack political, economic, and social targets. As illustrated by the recent United States’ attacks on Afghanistan and the Sudan in response to the terrorist bombings of the American embassies in East Africa, the United States is willing to use force as part of its counter-terrorist policy. “Non-lethal” weapons may provide the United States and its allies more mission flexibility in striking at terrorist targets by offering a way to hit terrorist facilities without creating disturbing collateral damage sometimes caused by conventional weapons. “Non-lethal” weapons may also provide States with more options in dealing with terrorist biological or chemical facilities that would avoid potentially dangerous collateral damage.¹⁶⁷ “Non-lethal” weapons may also have utility in many different kinds of counter-terrorist activities that involve low-intensity, covert attacks. While many would welcome the use of “non-lethal” weapons in counter-terrorist activities, some worry that the United States violates international law in attacking alleged terrorist bases located in the territory of other States.¹⁶⁸ “Non-lethal” weapons may simply reinforce American willingness to ignore international rules on the use of force in order to strike back at terrorists.

Terrorists, on the other hand, may also find great utility in “non-lethal” weapons. Such weapons may allow terrorists to disrupt political, economic, and social activities in new and insidious ways. Terrorists armed with “non-lethal” weapons might be more dangerous than those

165. *See id.*

166. The U.S. government is party, for example, to eleven treaties that address various aspects of the fight against terrorism. *See International Terrorism Conventions*, Aug. 17, 1998 (visited Aug. 11, 1999) <http://www.state.gov/www/global/terrorism/980817_terror_conv.html>.

167. *See* John D. Willet, *In Situ Defeat of Chemical and Biological Weapons of Mass Destruction: The Emerging Utility of Non-Lethal Weapons*, paper presented at First Annual Non-Lethal Technology and Academic Research Symposium, Quantico, Virginia (May 3–5, 1999), (visited Nov. 29, 1999) <<http://www.unh.edu/orps/nonlethality/pub/proceedings1999.html#posters>> (discussing potential utility of “non-lethal” weapons in dealing with terrorist biological or chemical facilities).

168. *See* Chesterman & Byers, *supra* note 98 (“It is . . . unclear whether the acts of terrorist organisations can give rise to a right to launch armed attacks against the territorial integrity of another sovereign state.”).

with only conventional weapons because the "non-lethal" weapons give the terrorists mission flexibility just as such weapons might give military forces more options in achieving an objective. The dangers of terrorists possessing new ways to disrupt the status quo are revealed in concerns about such possibilities as cyber-terrorism. As Bunker has argued, "[c]yber based non-lethal technology . . . [i]n the hands of non-state (criminal) soldiers/new warmaking entities, . . . provides a projected warfighting capability against which modern society and political organization (the nation-state) are ultimately defenseless."¹⁶⁹

3. Environmental Protection

Another area of international law that bears some attention in connection with some "non-lethal" weapons is international environmental law. For example, a key chemical ingredient of sticky form is Freon-12 (dichlorodifluoromethane), which is on the list of ozone-depleting substances being phased out by the Montreal Protocol on Substances that Deplete the Ozone Layer.¹⁷⁰ United States law implementing the Montreal Protocol banned the production and consumption of Freon-12 after December 31, 1995.¹⁷¹ This case illustrates that the environmental aspects of "non-lethal" weapons also play a role in international legal evaluation of these weapons.

III. AN INTERNATIONAL LEGAL APPROACH TO "NON-LETHAL" WEAPONS

The main theme of Part II of this Article has been that international legal vigilance across many different areas of international law is required in connection with the development and use of "non-lethal" weapons. The feel-good term "non-lethal" masks the extent to which these weapons create significant concerns for arms control, international law on the use of force, international humanitarian law, and other areas of international law. The need to review and scrutinize "non-lethal" weapons under international law is manifest, and it can never be taken for granted that the development or use of "non-lethal" weapons are legitimate under international law.

The United States government has implemented a policy that reflects the importance of vetting "non-lethal" weapons under international law. The Department of Defense Policy for Non-Lethal Weapons requires

169. Bunker, *supra* note 25.

170. See Coppernoll, *supra* note 75, at 120.

171. See *id.*

that the development and use of all “non-lethal” weapons be subjected to a legal review to assess their conformity with domestic and international law, especially the laws of war.¹⁷² Coppernoll reported that the Department of the Navy Judge Advocate General (Navy JAG) has conducted several legal reviews of various “non-lethal” weapons, including stinger grenades, 12-gauge shotgun firing bean bags, rubber pellets, and wood baton rounds, 40 millimeter foam-rubber pellet, bean bag, and wood baton rounds, sticky foam, barrier foam, and foam-rubber mortar round.¹⁷³ Navy JAG has also conducted a preliminary legal review of certain chemically based “non-lethal” weapons.¹⁷⁴

While the United States practice of reviewing the development and deployment of “non-lethal” weapons is important, the conformity of “non-lethal” weapons with international law cannot be left solely in the hands of great military powers. First, it is the United States that is leading the “non-lethal” weapons movement because its military perceives utility in these weapons. Thus, the danger exists that interpretations of international law might be self-serving in order to promote the development and deployment of “non-lethal” weapons. Second, American interpretations of international legal rules do not always represent the interpretations of the rest of the world. The American position on RCAs under the CWC is a case in point. The United States clearly maintains that RCAs may be used during armed conflict in certain situations despite the prohibition on the use of RCAs as a “method of warfare.” The American position on this issue is not shared universally.

There is, thus, a need for other States and non-governmental organizations to take a serious interest in the international legal implications of “non-lethal” weapons. As more governments get involved in analyzing these technologies, it will be important for international legal scrutiny to be high on their list of priorities, as it is in the United States. Similarly, non-governmental organizations need to be involved in the international legal scrutiny of “non-lethal” weapons, and the concern and interest of

172. See Department of Defense Directive 3000.3, *supra* note 32, para. E(6)(b) (“Ensure that a legal review of the acquisition of all non-lethal weapons is conducted. The review should ensure consistency with the obligations assumed by the U.S. Government under all applicable treaties, with customary international law, and, in particular, the laws of war.”).

173. See Coppernoll, *supra* note 75, at 118.

174. Coppernoll reported that this preliminary legal review addressed chemically and biologically based “non-lethal” weapons for both anti-matériel and anti-personnel purposes. See *Id.* She reported that “[o]nly microbes did not receive approval for development; this category of weapons was held to violate the Biological Weapons Convention.” *Id.*

the ICRC in this area is one indication of the value of NGO involvement.¹⁷⁵

Drawing on the analysis presented in this Article, I believe the international legal approach to be applied in evaluating the development and use of "non-lethal" weapons should combine the following general principles:

1. No analytical value can be given to the term or concept of "non-lethal." Given the current state of these new technologies, and their likely future development, thinking about these weapons as "non-lethal" is inaccurate, misleading, and can lead to assumptions that are not warranted by the facts.
2. International legal analysis of "non-lethal" weapons has to proceed as it does with the development and use of any new weapon: what is the technology involved, what are the capabilities of the technology, what is the intent behind the use of the technology, what are the specific contexts in which it will be used, and what are the actual (or foreseeable) effects of the technology's use?
3. "Non-lethal" weapons often pose novel problems for international law. While analysis sometimes proceeds to clear answers (e.g., the illegality of "non-lethal" biological weapons), in other situations the technology envisaged, such as adjustable force weapons, create situations not previously addressed by international law. Thus, "non-lethal" weapons present international lawyers with challenges that will have to be met with rigor and creativity.
4. While "non-lethal" weapons pose new challenges in some circumstances, they also replay well-known dynamics in the area of weapons development and use. The age-old tension between military necessity and humanitarian principle recurs in connection with "non-lethal" weapons. Familiarity with old controversies will help guide analysis with regard to the evaluation of the new "non-lethal" weapons.
5. Maintaining balance will be important for international lawyers examining "non-lethal" weapons. New weapons

175. See analyses of two ICRC officials: Coupland, *supra* note 15 and Loye, *supra* note 11. The Federation of American Scientists has also been monitoring the emergence of "non-lethal" weapons technologies and the potential problems they create. See Steven Aftergood, *Monitoring Emerging Military Technologies*, F.A.S. PUBLIC INTEREST REP., Jan.-Feb. 1995, (visited Apr. 20, 1999) <<http://www.fas.org/faspir/pir0295.html>>.

developments will occur, so blanket opposition to new weapons technologies is an unhelpful position. While “non-lethal” weapons promise results that would hearten any doctor or international humanitarian lawyer, it would likewise be a mistake to take such promises at face value.¹⁷⁶ The traditional weighing of military necessity and humanitarian concerns (e.g., in the principle of proportionality) also reflects the need for balanced judgements in connection with examining new weapons technologies.

6. International lawyers have to remember that they depend on input from many disciplines in evaluating weapons: the medical profession, scientists, civilian military experts, and military forces. “Non-lethal” weapons are a good illustration of how multi-disciplinary weapons evaluation has to be. Constructive dialogue among these participants will be more helpful in the long-run than animosity and exclusion.

The international legal approach sketched in the above principles is general and provides no specific guidance on any particular “non-lethal” weapon. Each “non-lethal” weapon will have to be approached on a case-by-case basis. The major point is, however, that international law be one of the key tools in the development, deployment, and use of “non-lethal” weapons by military forces.¹⁷⁷

CONCLUSION

“Non-lethal” weapons are not the answer to the current crisis faced by ethical and international legal restraints on war. International law on armed conflict faces graver threats today than the use of bean bag grenades and sticky foam. “Non-lethal” weapons hold out the promise of a technological way to reduce the suffering and destruction of war, but the promise of such a technological approach to humanizing war is more chimerical than real. The concept of “non-lethal” weapons is itself misleading; the most promising military use of “non-lethal” weapons is in combination with “lethal” ones; and “non-lethal” weapons may have malevolent consequences and uses their designers never intended.

176. See Spinney, *supra* note 52, at 26 (quoting Robin Coupland, an ICRC surgeon, as saying that “I would embrace anything that produces less death and less injury on the battlefield. I am not yet convinced that all these [“non-lethal”] technologies will produce that.”).

177. See *id.* (quoting Nick Lewer of the University of Bradford’s Non-Lethal Weapons Research Project as arguing that in controlling “non-lethal” weapons “[y]ou have to fall back on the laws of war and international humanitarian law.”).

The Head of the Legal Division of the ICRC has argued that one of the major problems with the implementation of international humanitarian law in the twentieth century has been that the laws of war have moved from reflecting State practice to preventing such practice.¹⁷⁸ New, ever more destructive military technologies in the twentieth century meant that statespersons and international lawyers could no longer let the laws of war reflect State practice.¹⁷⁹ Quickly the gap between the reality of armed conflict and the laws of war widened to an embarrassing and depressing abyss. In addition, the development of international humanitarian law produced some strange conclusions: certain bullets were outlawed but nuclear weapons were not.¹⁸⁰ "Non-lethal" weapons present the potential for further situations that do not appeal to common sense. As the Council of Foreign Relations argued, "[i]t would be ironic if lethal weapons were employed because ambiguities in international law prevented the use of non-lethal weapons."¹⁸¹

The new area of "non-lethal" weapons presents an opportunity for international law to avoid unacceptable alternatives: international law either simply reflects the true ugliness of State practice, or it acts in futility to prevent ugly State practice. The opportunity is for international law to be useful in *guiding* State practice towards an acceptable condition that reflects military and humanitarian considerations. This is, however, an opportunity more easily conceptualized than achieved. The values underpinning rules of international law are not often shared by States and non-State actors in the international system. It is simply foolish to believe that the respectable intentions behind the "non-lethal" weapons movement are or will be widely shared around the world, particularly during times of armed conflict.

"Non-lethal" weapons emerge into a situation already marked by great tension between international law and the realities of international politics. Nowhere is this tension more serious than in times of armed conflict. This is why there should and will be tension between international law and the development and use of "non-lethal" weapons. Without this tension, benign motivations behind "non-lethal" weapons development will quickly be drowned or corrupted into malevolent designs that adversely affect the lives and hopes of peoples. With "non-lethal" weapons, there is the danger present in all political and military

178. Doswald-Beck, *supra* note 158, at 27.

179. *See id.*

180. *See id.*; *see also* Legality of the Threat or Use of Nuclear Weapons, Advisory Opinions, ICJ Rep. 226 (1996)(discussing the legality of the use of nuclear weapons by States).

181. COUNCIL ON FOREIGN RELATIONS, REPORT OF AN INDEPENDENT TASK FORCE, NON-LETHAL TECHNOLOGIES: MILITARY OPTIONS AND IMPLICATIONS, 1995, at xi.

situations that, as Yeats put it, the best lack all conviction, while the worst are full of passionate intensity. International law cannot prevent the path to hell being paved with malevolent intentions, but it can perhaps help us prevent paving that path with good intentions.