



**NAVAL
POSTGRADUATE
SCHOOL**

MONTEREY, CALIFORNIA

THESIS

**CONFLICT WITHOUT CASUALTIES: NON-LETHAL
WEAPONS IN IRREGULAR WARFARE**

by

Richard L. Scott

September 2007

Thesis Advisor:
Second Reader:

Robert McNab
Sophal Ear

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.			
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE September 2007	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE Conflict Without Casualties: Non-Lethal Weapons in Irregular Warfare		5. FUNDING NUMBERS	
6. AUTHOR(S) Richard L. Scott		8. PERFORMING ORGANIZATION REPORT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000		10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A		11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.	
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited		12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) In this thesis I show that the casualties associated with warfare can be largely avoided. This includes combatant casualties, as well as noncombatant and friendly forces. The U.S. military is frequently tasked with deploying into foreign countries and performing duties that range from conventional combat operations to humanitarian relief and training host nationals. The politics of every deployment are complicated and invariably there will be some resistance, both domestically and internationally. People may feel victimized or marginalized and may demonstrate with protests, both peaceful and violent. How, then, may the use of non-lethal force be best applied in hostile situations in lieu of the "shout or shoot" approach commonly associated with military operations? Scientific advances in non-lethal technology may serve to curb violence while still allowing Soldiers and Marines to accomplish their missions.			
14. SUBJECT TERMS Non-Lethal Weapons, NLW, Less Lethal, Irregular Warfare, Unconventional, Asymmetric, Guerilla Warfare, Counterinsurgency, COIN, Military Operations in Urban Terrain, MOUT, Low Intensity Conflict, Stabilization and Reconstruction, Stability Operations, Support Operations, SOSO, Security Operations.		15. NUMBER OF PAGES 93	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

**CONFLICT WITHOUT CASUALTIES: NON-LETHAL WEAPONS IN
IRREGULAR WARFARE**

Richard L. Scott
Captain, United States Army
B.A., University of Washington, Tacoma, 2001

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(STABILIZATION AND RECONSTRUCTION)**

from the

**NAVAL POSTGRADUATE SCHOOL
September 2007**

Author: Richard L. Scott

Approved by: Robert McNab
Thesis Advisor

Sophal Ear
Second Reader

Douglas Porch
Chairman, Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

In this thesis I show that the casualties associated with warfare can be largely avoided. This includes combatant casualties, as well as noncombatant and friendly forces. The U.S. military is frequently tasked with deploying into foreign countries and performing duties that range from conventional combat operations to humanitarian relief and training host nationals. The politics of every deployment are complicated and invariably there will be some resistance, both domestically and internationally. People may feel victimized or marginalized and may demonstrate with protests, both peaceful and violent. How, then, may the use of non-lethal force be best applied in hostile situations in lieu of the “shout or shoot” approach commonly associated with military operations? Scientific advances in non-lethal technology may serve to curb violence while still allowing Soldiers and Marines to accomplish their missions.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	MOTIVATION	1
B.	THESIS	3
C.	HISTORICAL CONTEXT	5
D.	CURRENT REQUIREMENTS AND CAPABILITIES.....	8
E.	STRUCTURE OF THESIS.....	9
II.	LITERATURE REVIEW	11
A.	INTRODUCTION.....	11
1.	Strategic Policies	12
2.	Tactical Publications.....	14
3.	Commercial Publications	18
B.	COIN PRINCIPLES AND IMPERATIVES	21
C.	LETHAL FORCE IN IRREGULAR WARFARE	24
D.	NON-LETHAL WEAPONS AND IRREGULAR WARFARE.....	26
E.	CONCLUSIONS	29
III.	CASE STUDIES.....	31
A.	INTRODUCTION.....	31
B.	CHECKPOINT OPERATIONS.....	33
C.	URBAN RIOTS.....	34
D.	CROWD CONTROL.....	36
E.	CONCLUSIONS	38
IV.	NLWS AND STABILITY OPERATIONS.....	41
A.	INTRODUCTION.....	41
B.	RISKS.....	42
1.	Strategic Risks.....	43
2.	Operational Risks.....	44
3.	Tactical Risks	45
C.	BENEFITS.....	46
1.	Strategic Benefits	46
2.	Operational Benefits	47
3.	Tactical Benefits	48
D.	COSTS	49
E.	CONCLUSIONS	51
V.	CONCLUSIONS AND RECOMMENDATIONS.....	53
A.	CONCLUSIONS	53
B.	RECOMMENDATIONS.....	54
1.	Strategic Recommendations.....	55
2.	Operational Recommendations	56
3.	Tactical Recommendations	57
APPENDIX A:	FORCE CONTINUUM.....	59

APPENDIX B: CURRENT AND DEVELOPMENTAL NLW TECHNOLOGIES.....	61
APPENDIX C: APPLICABLE TREATIES AND LAWS.....	65
LIST OF REFERENCES.....	67
INITIAL DISTRIBUTION LIST.....	77

LIST OF ACRONYMS AND ABBREVIATIONS

4GW	Fourth Generation of Warfare
AAR	After Action Review
ACF	Anti-coalition Forces
ADS	Active Denial System
AO	Area of Operations
AOR	Area of Responsibility
BOSUN	Bibliographic Online System Utilis Nautis
CALL	Center for Army Lessons Learned
COE	Contemporary Operating Environment
COIN	Counterinsurgency
CWC	Chemical Weapons Convention
DA	Department of the Army
DoD	Department of Defense
DoS	Department of State
DTIC	Defense Technical Information Center
EMP	Electromagnetic Pulse
FAFC	Force Application Functional Concept
FBI	Federal Bureau of Investigation
FM	Field Manual
GWOT	Global War on Terror
HN	Host National
HRT	Hostage Rescue Team
HRW	Human Rights Watch
IAW	In accordance with
ICRC	International Committee of the Red Cross
IED	Improvised Explosive Device
INIWIC	Inter-Service NLW Instructor Course
IW	Irregular Warfare
JNLWD	Joint Non-lethal Weapons Directorate
JNLWP	Joint Non-lethal Weapons Program

JOA	Joint Operations Area
JP	Joint Publication
JSTOR	Journal Storage
LOAC	Law of Armed Conflict
MARFORPAC	Marine Forces, Pacific
MCO	Major Combat Operations
MOA	Memorandum of Agreement
MOUT	Military Operations in Urban Terrain
MTT	Mobile Training Team
NATO	North Atlantic Treaty Organization
NDS	National Defense Strategy
NLCS	Non-lethal Capability Set
NLW	Non-lethal Weapon
NLW/C	Non-lethal Weapons and Capabilities
NMS	National Military Strategy
NPS	Naval Postgraduate School
NSC	National Security Council
NSS	National Security Strategy
OCONUS	Outside Continental United States
PKO	Peacekeeping Operation
PSF	Pharmaciens Sans Frontieres (Pharmacists Without Borders)
PVAB	Portable Vehicle Arresting Barrier
QDR	Quadrennial Defense Review
RCA	Riot Control Agent
RFO	Rules for the Use of Force
ROE	Rules of Engagement
SECDEF	Secretary of Defense
SOSO	Stability Operations, Support Operations
STINET	Scientific and Technical Information Network
TRADOC	Training and Doctrine Command
TTP	Tactics, Techniques and Procedures
UN	United Nations

UNMIK	United Nations Mission in Kosovo
USA	United States Army
USMC	United States Marine Corps
VBIED	Vehicle Born Improvised Explosive Device
VLAD	Vehicle Lightweight Arresting Device

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

This thesis originated from an interest to determine how the U.S. military may achieve its objectives without also producing catastrophic consequences. I would like to express my sincere appreciation to several individuals who contributed to the development of this thesis.

I would like to thank my thesis advisor, Professor Robert McNab. Without your guidance, countless hours of research would instead more closely resemble the product of a chimp banging on a keyboard. Professors Sophal Ear and Karen Guttieri and CAPT Scott Jasper always kept a door open for me as I challenged the theory that “the only stupid question is the one not asked.” Additionally, I would like to extend my sincere appreciation to the faculty and staff of NPS for your valuable insights, mentorship, patience, and encouragement.

Telephone conversations and correspondence also provided invaluable to the development of this report. Thank you very much to Dr. John B. Alexander of Joint Special Operations University, Lt Cdr Cabot Aycock of the JNLWD, and LT Col Robert Norton from the NLW/ C at MARFORPAC, for providing me with your insights and opinions.

Finally, I want to thank my family. To my wife Dena, thank you for allowing me to pursue my selfish endeavors often at the cost of you pursuing yours. Thank you to Chloe and Jake for making me laugh when sometimes life got too serious.

I would like to dedicate this thesis to the memory of Nichole and Anne Toole. We spent too few days together and far too many apart. I miss you both dearly, but someday I'll see you again. Thank you for your inspiration.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

A. MOTIVATION

There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order.¹

With the emergence of irregular warfare as the dominant operating environment in the foreseeable future (2006 *Quadrennial Defense Review*), the ability of U.S. forces to judiciously use force is central to the challenge of operating in unconventional environments.² The incorrect application of force may have catastrophic strategic implications. However, scientific advances in non-lethal technology may serve to reduce the level of violence our service members receive, as well as dispense, while performing counterinsurgency (COIN) operations, peace keeping operations (PKO), and stability operations, support operations (SOSO). Each of these missions is characterized by asymmetric threats, complex or congested terrain, and belligerents intermingled with innocents. Non-lethal weapons (NLW) may limit noncombatant fatalities, lessen collateral property damage, and demonstrate the ability to dispense a controlled and appropriate amount of force.³ If the United States integrates NLWs into its doctrine and operations, it is likely that our allies and other nations will follow. If the United States

¹ Niccolo Machiavelli, *The Prince*, trans. Paul Sonnino (Atlantic Highlands, NJ: Humanities Press International, Inc., 1996), 49.

² The 2006 *Quadrennial Defense Review* will be discussed in greater detail along with other strategic level policies in Chapter II.

³ Department of Defense, *Directive 3000.3, Policy for Non-Lethal Weapons* (Washington, D.C.: Department of Defense, July 9, 1996), 2. This policy defines NLWs as “weapons that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.” The DoD term *non-lethal weapon* and its definition apply to all service members of the U.S. military and should not be confused with other terms such as nonlethal defense, less-lethal weapons, less than lethal weapons, noninjurious disabling measures, sub-lethal, low-end, pre-lethal, tunable lethality, limited-effects technology, soft kill, new age weapons, disabling technologies, nonlethal disabling technologies, and low collateral-damage weapons.

casts doubt on the efficacy of NLWs in hostile operating environments, it is likely to impede the development and deployment of these weapons.

Service members, Department of Defense (DoD) employees, and U.S. contractors currently deployed overseas are expected to comply with established rules of engagement (ROE) and rules for the use of force (RUF). Unfortunately, forces being deployed to Iraq and Afghanistan are still designed for Major Combat Operations (MCO) and not COIN. Given the decentralized nature of irregular warfare (IW), combatants may face incidents that have geo-political ramifications. With technological advancements in telecommunications, satellite imagery, and the demand for 24 hour news, a higher standard of conduct is expected as states deploy their forces. Respond too lightly and risk unacceptable levels of military and civilian casualties and a loss of legitimacy. Respond with too much force and risk losing the moral high ground, public support, and in some environments, support of the population.

Several issues must be addressed before employing NLWs into IW operations. One must quickly and easily be able to determine whether rules or laws exist that prohibit their use (general legality), whether the weapon(s) may cause excessive injury or suffering (legality of the weapon), and whether the weapon can be controlled in such a way that may distinguish between combatants and noncombatants (legality of use). Having first determined the legalities associated with the use of NLWs, commanders may then consider how best to approach fielding the weapons and the controls under which they must be employed. First, there is a cost associated with NLWs, and commanders must choose this option over other available and possibly cheaper kinetic tools and weapons. Second, clear and concise rules of engagement must be established. Third, benefits must be weighed and risk must be assessed by all levels of command. And fourth, troops must be trained on a full spectrum of weaponry and be able to recognize and apply appropriate levels of force in potentially volatile or unstable situations.

Conceptually, the use of NLWs in IW is appealing. NLWs, if effective, would allow the judicial application of force, limiting tactical and strategic risk. Yet for all the perceived appeal of NLWs, doctrine and guidance for their deployment is scant at best. This absence of doctrine exposes the potential user of NLWs to questions about the

appropriate usage of NLWs. Ambiguity for tactical units should be avoided. Junior NCOs and officers are thus left with kinetic tools, even though NLWs may be more efficient and effective in IW operations.

Given the complexities of IW and the likelihood that asymmetric conflict, not conventional warfare, will dominate operations in the near-term, developing and deploying NLWs may provide increased capability at lower risk to deployed forces. NLWs may drastically decrease the gap in the force continuum (Appendix A) for missions such as facility security, crowd control and crisis management. NLWs, if deployed properly, can limit civilian casualties as well as limit the adverse consequences of kinetic operations and bring security to conflict prone environments. This seems particularly relevant given General Petraeus' comments in September 2007. He states, "In Baghdad -- and throughout Iraq -- we have tried to complement kinetic, military operations with equally aggressive non-kinetic reconstruction operations."⁴ NLWs can not be merely seen as a less-than-lethal weapon system, but need to be viewed within the context of IW and the need for alternative forms of response that conserve scarce resources, lower operational risk, and still provide our forces with a robust means of response to hostile intent.

B. THESIS

In this thesis, I examine whether NLWs can enhance the capability of the U.S. armed forces to conduct IW operations. This study analyzes the costs, benefits and risks associated with NLWs in an IW environment. If NLWs can provide a more robust set of kinetic alternatives without increasing cost or risk, then NLWs should be integrated into existing doctrine and deployed for use in current operations. On the other hand, if NLWs raise cost or risk, whether NLWs should be deployed into IW environments becomes more ambiguous. The purpose of this course of research is to provide a set of concepts and tools that, when fully developed and implemented, can enhance the capability of

⁴ *The Boston Globe*, "Q&A with General David Petraeus," National News. http://www.boston.com/news/nation/washington/articles/2007/09/07/qa_with_general_david_petraeus/?page=4 (accessed 13 September 2007).

American forces to provide security and stabilize conflict and post-conflict environments. Unlike previous analyses of the use of NLWs in IW environments, this study explicitly connects the use of NLWs and the principles and imperatives of COIN doctrine found in Army Field Manual (FM) 3-24, *Counterinsurgency*. The principles and imperatives are varied, and certainly NLWs may not be deemed appropriate for every situation.

The principle of *understanding the environment* may be supported by demonstrating an ability to deescalate a situation based on disciplined and mature decision-making and an understanding that one's actions may lead to more serious ramifications or irreversible damage.⁵ *Security under rule of law* occurs when the populace supports and legitimizes its government, and a government that confronts violence with less than lethal force retains a position of morality and restraint.⁶ Using the *appropriate level of force* not only shows restraint, humility, and an ethical and moral understanding of law and basic human rights, but also strengthens the government's authority and legitimacy.⁷ The principles, imperatives and paradoxes of COIN may all be referenced in FM 3-24. After an understanding of the nature of IW and then of the current and developing NLW stock, one can begin to see just how far warfare has evolved since the columns and rows of our forefather's muskets filled the air with gun smoke. With so many other options to lethality including diplomatic, political, economic, social, infrastructural, and information operations, NLWs provide one more alternative between shouting and shooting. This research attempts to show how NLWs may be applied to a multitude of situations within an IW environment and still not violate or denigrate any of the principles or imperatives.

⁵ United States Army, *Field Manual 3-24, Counterinsurgency* (Washington, D.C.: Department of the Army, 15 December 2006), 1-22.

⁶ *Ibid.*, 1-23.

⁷ *Ibid.*, 1-25.

C. HISTORICAL CONTEXT

The Lieber Code of 1863 is considered by many to be the cornerstone of humanitarian law.⁸ Initially produced for the Union army during the U.S. Civil War, it established that “military necessity does not embrace means and methods of warfare that are cruel, and that it must take into account the long-term consequences of the use of a particular weapon.”⁹ The St. Petersburg Declaration of 1868 was the first international treaty concerning weapon design, essentially banning the use of bullets that exploded upon contact with the human body.¹⁰ Similarly, the Hague Declaration of 1899 went on to outlaw the use of dum-dum bullets, or bullets which “expand or flatten easily upon the body,” and the Geneva Protocol of 1925, bans the use of chemical and biological weapons.¹¹

On 8 April 1975, President Ford issued Executive Order 11850, which renounced first use of Riot Control Agents (RCA) by the United States, except as a defensive military measure.¹² RCA is defined as chemicals that “can produce rapidly in human’s sensory irritation or disabling effects which disappear within a short time following termination of exposure.”¹³ Only five years removed from the Kent State shootings, this was in an effort to protect civilians under U.S. military control such as demonstrators and rioters.¹⁴ In short, the order states that “the United States renounces... first use of riot

⁸ Dietrich Schindler and Jiri Toman, *The Laws of Armed Conflicts: A Collection of Conventions, Resolutions and Other Documents* (Dordrecht, The Netherlands: Martinus Nijhoff, 1988), 3–23.

⁹ Margaret Coppernoll, “The Non-Lethal Weapons Debate,” *Military Press* (Spring 1999), 2. <http://www.nwc.navy.mil/press/Review/1999/spring/art5-SP9.htm> (accessed 11 August 2007).

¹⁰ Robin Coupland, “Clinical and Legal Significance of Fragmentation of Bullets in Relation to Size of Wounds: Retrospective Analysis,” *British Medical Journal* (14 August 1999), 1. http://findarticles.com/p/articles/mi_m0999/is_7207_319/ai_55670104 (accessed 2 August 2007).

¹¹ Department of Peace Studies, University of Bradford, “The 1925 Geneva Protocol/ Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous, or Other Gases, and of Bacteriological Methods of Warfare,” Genomics Gateway. <http://www.brad.ac.uk/acad/sbtwc/gateway/ARMS/GENEVA.HTM> (accessed 15 July 2007).

¹² Joseph Benkert, “U.S. Policy and Practice with Respect to the Use of Riot Control Agents by the U.S. Armed Forces,” (paper presented to the Senate Committee on Armed Services, Subcommittee on Readiness and Management Support, Washington, D.C., 27 September 2006).

¹³ *Ibid.*, 2.

¹⁴ Scott Bills, *Kent State/May 4: Echoes Through a Decade* (Kent, OH: Kent State University Press, 1988).

control agents in war” with four exceptions. These exceptions include (1) the military may use RCAs “in areas under direct and distinct U.S. military control”; (2) when “civilians are used to mask or screen attacks and civilian casualties can be reduced or avoided”; (3) during certain rescue missions; and (4), the military may use RCA “in rear echelon areas outside the zone of immediate combat.”¹⁵ The Resolution of Ratification adopted by the Senate specifically requires that the President shall not alter the RCA usage provisions promulgated in the executive order.¹⁶

The U.S. signed the Chemical Weapons Convention (CWC) in 1993. It bans the possession and use of chemical weapons but allows the use of toxic chemicals and their precursors in law enforcement including domestic riot control purposes, provided that the types and quantities are consistent with such purposes.¹⁷ The CWC also allows states to possess RCA, however, bans the use of RCA as “a method of warfare.”¹⁸ This is exactly where proponents for the use of NLWs in IW encounter reluctance by bureaucrats and politicians who fail to pursue clarification of terminology for the use of RCA in domestic law enforcement and for IW. Some proponents argue that law enforcement is one aspect of COIN, as well as of stabilization operations. Opponents might argue that using NLWs for operations outside domestic law enforcement would undercut the nature of the CWC.

In 1995, Lt. Gen. Anthony Zinni anticipated the need to fill the void between verbal warnings and lethal force for unarmed hostiles while extracting United Nations (UN) peacekeepers from Somalia.¹⁹ His plan involved the withdrawal of over 6000 coalition troops. He used intelligence operations to ensure the local population was informed that his forces were armed and ready with non-lethal grenade launchers and

¹⁵ Benkert, “U.S. Policy and Practice with Respect to the Use of Riot Control Agents by the U.S. Armed Forces,” 4.

¹⁶ Joseph Benkert, “U.S. Policy and Practice with Respect to the Use of Riot Control Agents by the U.S. Armed Forces,” (paper presented to the Senate Committee on Armed Services, Subcommittee on Readiness and Management Support, Washington, D.C., 27 September 2006), 2.

¹⁷ Arms Control Association, “Rumsfeld Wants to Use Riot Control Agents in Combat,” Arms Control Today. http://www.armscontrol.org/act/2003_03/nonlethal_mar03.asp (accessed 1 June 2007).

¹⁸ Ibid., 1.

¹⁹ Erik L. Nutley, “Non-Lethal Weapons: Setting Our Phasers to Stun? Potential Strategic Blessings and Curses of Non-Lethal Weapons on the Battlefield,” *Occasional Paper 34*, (August 2003). <http://www.au.af.mil/au/awc/awcgate/cst/csatsat34.pdf> (accessed 29 July 2007).

shotguns that fired pepper sprays, stinger grenades, flash bangs, and sticky foam, as well as caltrops to supplement various barriers at night.²⁰ In the end, not a single shot was fired and all troops and equipment were withdrawn without suffering a Task Force casualty.²¹ Lt. Gen. Zinni became an outspoken supporter for the military employment of NLWs stating, “Our experience in Somalia with non-lethal weapons offered ample testimony to the tremendous flexibility they offer to warriors on the field of battle.”²²

In 1996, DoD issued *Directive 3000.3, Policy for Non-Lethal Weapons*. DoD policy specifically states that with NLWs there still remains a risk of injury or fatality.²³ NLWs are only non-lethal by design, or intent, in an effort to minimize fatalities and permanent injuries. DoD *Directive 3000.3* also highlights that NLWs may be used in conjunction with lethal force, do not preclude the first use of lethal force when appropriate, and do not limit one’s authority to use all available weapons in the event of self-defense.²⁴ It is here that the U.S. NLW policy seems to contradict the more restrictive CWC and Executive Order 11850. Because of this duality in policy, there may be some wiggle room for senior administration officials and military officers to address the need for NLWs in IW, particularly since both the nature of threats and availability of NLWs have changed so dramatically since 1975 and even 1993. This was followed by The National Defense Authorization Act for FY 96, which identified the significance of advanced NLW technologies and reinforced the importance of providing the U.S. military with tools which would facilitate operations in future conflicts.²⁵

²⁰ F. M. Lorenz, “Less Lethal Force in Operation United Shield,” *Marine Corps Gazette* 79, no. 9 (1995), 70.

²¹ F. M. Lorenz, “Non-Lethal Force: The Slippery Slope to War?” *Parameters* 26, no. 3 (1996), 58.

²² Government Executive, “Force without Fatalities,” Defense. <http://www.govexec.com/features/0501/0501s4.htm> (accessed 15 July 2007).

²³ Department of Defense, *Directive 3000.3*, 1-4.

²⁴ Department of Defense, *Directive 3000.3*, 2.

²⁵ 104th Congress, “National Defense Authorization Act for Fiscal Year 1996,” *Report 104-112*, (1995). http://www.globalsecurity.org/military/library/congress/1995_rpt/s104112.htm (accessed 23 June 2007).

D. CURRENT REQUIREMENTS AND CAPABILITIES

The *Joint Concept for Non-Lethal Weapons* establishes two large categories of NLWs, which further subdivides into six functional areas.²⁶ These categories include counter-personnel technologies and counter-materiel technologies. A third, smaller, category involves counter-capability assets which are designed to disable or neutralize buildings or other mechanical/ electrical objectives. Counter-personnel technologies include agents for crowd and riot control, personnel debilitation, facility clearing and area denial for personnel. Counter-materiel technologies include agents for area denial to vehicles and vessels and facility obstructions. A brief description of each is provided below:

Counter-personnel technologies permit the use of military force while also reducing the risk of casualties among friendly forces, noncombatants, and enemy forces:

- Crowd control capabilities may deter a potentially hostile crowd or an out of control mob.
- Incapacitation of personnel means having the ability to capture a particular target, without harming personnel standing nearby.
- Area denial systems might include obstacles which cause distress to personnel who enter a restricted area. These systems may also serve as an effective and humane alternative to landmines.
- Clearing facilities of personnel reduces the risks of noncombatants casualties and collateral damage associated with military operations in urban terrain (MOUT).

Counter-materiel technology aims to reduce or eliminate the effectiveness of a combatant's weapons and or equipment. Counter-materiel options are more productive and less destructive than conventional weapons and reduce political ramifications as well as combatant/ noncombatant fatalities. These options include:

- Area denial to vehicles has application in sea and air, but is predominately used in denying vehicles to land areas. Current technologies include wheeled

²⁶ Commandant of the Marine Corps, Joint Non-Lethal Weapons Directorate, "Joint Concept for Non-Lethal Weapons," Federation of American Scientists. <http://www.fas.org/man/dod-101/sys/land/docs/NONLETH.HTM> (accessed 15 March 2007).

and tracked vehicles and may include systems which reduce maneuverability through an area, such as physical barriers.

- Disabling vehicles, vessels, and facilities involve systems that alter the ability for an engine, transmission, wheel or track to function properly. Certain technological developments involve agents which target rubber and insulation.

One may see these types of weapons in any number of operations including communication and information control techniques, psychological operations, and disturbing command-and-control operations.²⁷

E. STRUCTURE OF THESIS

The remainder of this thesis is structured as follows. In the following chapter, I review the literature of NLWs in IW. Separately, there is a multitude of resources for each, but combined, the literature is sparse. This literature review considers each separately and considers each in the context of this thesis. COIN principles and imperatives will then be reviewed, followed by information regarding the use of lethal force in IW and the use of NLWs in IW. Chapter III, “Case Studies,” considers relevant and contemporary historical lessons learned with regard to the use of force in military operations, both conventional and unconventional. Three cases, all based on ground troop operations in Iraq in 2003, will also be reviewed. Chapter IV, “NLWs and Stability Operations,” begins by considering NLWs in stability ops, and then reviews potential risks, benefits and costs to conclude the chapter. Chapter V, “Conclusions and Recommendations,” summarizes the material covered in this thesis and presents some final thoughts by the author for bridging the gap between show of force and lethal force.

²⁷ Richard L. Garwin and W. Montague Winfield, *Non-Lethal Technologies: Progress and Prospects* (New York: Council on Foreign Relations, 1999), 12.

THIS PAGE INTENTIONALLY LEFT BLANK

II. LITERATURE REVIEW

A. INTRODUCTION

*If we knew what it was we were doing, it would not be called research, would it?*²⁸

The employment of NLWs in wartime remains a matter of debate. As early as 500 BC, the Chinese tactician Sun Tzu argued that the epitome of skill was to subdue the enemy without fighting, implying that non-lethal tactics were of superior utility to kinetically oriented lethal applications of force.²⁹ Yet, to some, the attempt to remove force from warfare is associated with kindness, whereby kindness is the most costly of mistakes. Clausewitz argued that the search for such ingenious methods to disarm or defeat an enemy was, in essence, a fallacy.³⁰ The debate continues to this day. Do NLWs facilitate mission accomplishment or do NLWs expose service members to greater risk?

In this chapter, I examine the literature on the development and employment of NLWs in IW operations. I examine whether existing doctrine and policies for NLWs complement IW and COIN doctrine. If there is a gap between NLW and IW doctrine, then such a gap must be closed else service members may face conflicting instructions on the employment of NLWs. On the other hand, if the literature adequately addresses the use of NLWs in IW, the question becomes, why do we observe such an infrequent use of NLWs in current operations?

The remainder of the chapter is structured as follows. Following the literature review, we delve deeper into *Field Manual 3-24, Counterinsurgency* (FM 3-24), to

²⁸ Quote commonly attributed to Nobel Prize winning physicist Albert Einstein.

²⁹ Sun Tzu, *The Art of War*, trans. Thomas Cleary (London: Shambhala Publications Inc., 2005), 5.

³⁰ Carl von Clausewitz, *On War*, ed. Michael Eliot Howard and Peter Paret (Princeton, N.J: Princeton University Press, 1984), 732.

discuss COIN principles and imperatives. The next section examines the question of the application of lethal force in IW environments. The final section concludes and identifies gaps in the literature.

1. Strategic Policies

The issue of NLWs is contentious and historical and contemporary examples support and reject the use of NLWs in warfare. While there is an abundance of information and opinions regarding NLWs and IW tactics, there is a distinct lack of literature on the use of NLWs in IW. The lack of literature is curious given the potential for NLWs in IW; potential that appears to be untapped to this day. In this section, I review the strategic policies on the use of NLWs in the promotion of national security goals.

While the 2006 *National Security Strategy (NSS) of the United States* does not explicitly address the development and employment of NLWs, the NSS does explicitly state that two of the goals of the U.S. are to maintain order and establish the rule of law.³¹ This guidance permeates all subsequent strategy documents and doctrine. More specifically, the U.S. is a signatory to Additional Protocol I of the Geneva Conventions. Of the 185 countries that are party to the Geneva Conventions, there are 135 countries party to Additional Protocol I (AP I).³² AP I asserts the principle that states do not have unlimited latitude in the methods and means of warfare. AP I stipulates “no weapon system should render death inevitable, that weapons should not be indiscriminate in their effects, and that their effects should not inflict superfluous injury nor cause the victim suffering that is unnecessary for the military purpose of the user.”³³

³¹ White House, *National Security Strategy of the United States of America* (Washington, D.C., White House, 2006), 4.

³² R.M. Coupland, “The Effect of Weapons: Defining Superfluous Injury and Unnecessary Suffering,” *Medicine and Global Survival*, 3:A1, (1996), 1. <http://www.askywhale.com/oldies/jeuxaides/militaryservice/effetshospitaliers.html> (accessed 2 August 2007).

³³ *Ibid.*, 2.

From the NSS, the Secretary of Defense derives his own vision in the *National Defense Strategy* (NDS). The NDS fails to mention the application of NLWs in national defense, but does recognize the importance of flexibility as the military will continue to perform operations ranging “from training and humanitarian efforts to major combat operations.”³⁴ The NDS essentially states what missions may be performed, and why, but not how they will be conducted. From the NSS and NDS, the Chairman of the Joint Chiefs of Staff can establish his National Military Strategy (NMS).

The *2006 National Military Strategic Plan for the War on Terrorism* provides the “comprehensive military plan to prosecute the Global War on Terrorism,” and claims to be built upon four years of lessons learned fighting the GWOT, as well as from the findings of the 9/11 Commission and various other DoD contributors.³⁵ The NMS references irregular or unconventional warfare as being associated with the enemy’s tactics or capabilities, but not the U.S. ability to respond as such. Additionally, there is no mention of NLWs in the NMS, however, the document identifies an objective to, “interface with national, Military Department, and commercial laboratories to maintain awareness of promising state-of-the-art GWOT technology for the warfighter.”³⁶

The *2006 Quadrennial Defense Review* (QDR) describes on multiple occasions asymmetric threats, irregular warfare, unconventional tactics, techniques and procedures, counterinsurgent operations, and technological advancements.³⁷ One passage states, “The QDR sought to provide a broader range of military options for the President and new capabilities needed by Combatant Commanders to confront asymmetric threats.”³⁸ The document continues, “the force will include a wider range on non-kinetic and conventional strike capabilities” and “non-kinetic capabilities will be able to achieve

³⁴ Department of Defense, *National Defense Strategy of the United States of America* (Washington, D.C.: Department of Defense, 2005), 6.

³⁵ Department of Defense, *National Military Strategic Plan for the War on Terrorism* (Washington, D.C.: Department of Defense, 2006), 3.

³⁶ *Ibid.*, 29.

³⁷ Department of Defense, *Quadrennial Defense Review* (Washington, D.C.: Department of Defense, 2006).

³⁸ *Ibid.*, 1.

some effects that currently require kinetic weapons.”³⁹ This may be the first overt reference to how NLWs may be incorporated into the overall strategy of the U.S. Armed Forces.

“Full spectrum dominance” is the key term in *Joint Vision 2020*.⁴⁰ Unfortunately, in almost every subsequent strategic document established since its writing in 2000, there is virtually no reference as to how that full spectrum dominance may be achieved using anything more than conventional weapons against an unconventional adversary. Because of this omission, many of the U.S. military’s field manuals are subsequently void of similar verbiage. The omission is striking as it suggests that kinetic operators are the sole requirement for full spectrum dominance.

2. Tactical Publications

This section analyzes existing Army doctrine that drives military operations. The publications, in general, range in dates from the Cold War to the GWOT. This is particularly disconcerting due to the significant changes in threat composition and tactics since the mid-1980s. There is progress including NLWs into doctrine, most notably since the DoD established its NLW policy in 1996. Unfortunately, the policy itself may not be enough as senior leaders struggle with limited guidance and budgets and face an unconventional enemy.

At first glance, there does not appear systemic guidance on the use of NLWs. *FM 19-15, Civil Disturbances*, contains scant reference to the employment of RCA.⁴¹ DoD further limited the use of lasers in 1995 and codified policy with DoD *Directive 3000.3, Policy for Non-Lethal Weapons*, in 1996.⁴² *Directive 3000.3* mandates the establishment of a joint service organization responsible for the development and employment of

³⁹ Department of Defense, *Quadrennial Defense Review*, 49.

⁴⁰ Department of Defense, *Joint Vision 2020* (Washington, D.C., Department of Defense, 2000), 3.

⁴¹ United States Army, *Field Manual 19-15, Civil Disturbances* (Washington, D.C.: Department of the Army, 25 November 1985).

⁴² U.S. Department of Defense News Release, “DOD Announces Policy on Blinding Lasers,” DefenseLink. “<http://www.defenselink.mil/releases/release.aspx?releaseid=608> (accessed 1 August 2007).

NLWs; defines “non-lethal weapons”; and designates the Commandant of the U.S. Marine Corps as the executive agent (EA) for the Joint Non-Lethal Weapons Program (JNLWP).⁴³

By December of 1996, the Department of the Army (DA) Training and Doctrine Command (TRADOC) published *Pamphlet 525-73, Concept for NonLethal Capabilities in Army Operations*, which identifies various restrictions upon the military concerning the application of certain non-lethal technologies, but which also clarifies diverse types of nonlethal technologies and their potential applications.⁴⁴ A Memorandum of Agreement dated 21 January 1997 (*MOA-1997*), established how each of the four services (Army, Navy, Air Force, and Marines) including the U.S. Special Operations Command would each have oversight for the development and application of NLWs applicable to their respective mission and objectives.⁴⁵ Section 230 of the National Defense Authorization Act for Fiscal Year 1997 included the NLW program and funded it for the consolidation and integration of the DoD and individual services NLW technology programs.⁴⁶ Also in 1997, in a move to put into effect “Public Law 104-106, Section 219, Non-lethal Weapons Study,” DoD established the action office for the JNLWP at Marine Corps Base, Quantico, Virginia.⁴⁷

In 1998, TRADOC published *FM 90-40/ MCRP 3-15.8, Multiservice Procedures for the Tactical Employment of Nonlethal Weapons*, which “provides initial guidance for the employment of NLW in a tactical environment.”⁴⁸ In December of the same year, DoD established *Directive 5100.77, Law of War Program*, which ensures that the U.S.

⁴³ Department of Defense, *Directive 3000.3*, 2.

⁴⁴ United States Army, *TRADOC Pamphlet 525-73, Concept For Nonlethal Capabilities in Army Operations, Vol. C1*, (Fort Monroe, Virginia, Department of the Army, Training and Doctrine Command, 1 December 1996), 1-5.

⁴⁵ Coppernoll, 3.

⁴⁶ 104th Congress, “National Defense Authorization Act for Fiscal Year 1997,” *Report 104-201* (1996). <http://www.fas.org/nuke/control/ctr/docs/hr3230.html>; accessed 23 June 2007.

⁴⁷ Nick Lewer, “Research Report 2,” Bradford Non-Lethal Weapons Research Project (BNLWRP), June 1998. http://www.bradford.ac.uk/acad/nlw/research_reports/researchreport2.php (accessed 27 July 2007).

⁴⁸ United States Army, *Field Manual 90-40, Multiservice Procedures for the Tactical Employment of Nonlethal Weapons* (Washington, D.C.: Department of the Army, October 1998).

military shall serve in conformity with the regulations respecting the international laws and customs of land warfare.⁴⁹ This was followed by a MOA dated 23 June 1999 (*MOA-1999*), which made only slight changes to its previous MOA (*MOA-1997*) and still mandated a tactical function for any NLW development. The Joint NLW Master Plan, established in June 2000 takes both a top-down and bottom-up approach to development and implementation by addressing the need for the integration of NLWs into advanced concept technologies as well as for those Soldiers and Marines who require specific technologies for specific missions at the tactical level.⁵⁰

In March of 2002, DoD *Directive 3216.2, Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research*, establishing protective policies for humans associated with DoD research.⁵¹ Joint NLW research, development, testing and evaluation programs are validated by the EA, but managed by lower-tiered DoD departments in accordance with (IAW) DoD *Directive 5000.1, Defense Acquisition*⁵², and DoD *Directive 5000.2-R, Mandatory Procedures for Major Defense Acquisition Programs and Major Automated Information systems*.⁵³

FM 90-40, Multiservice Procedures for the Tactical Employment of Nonlethal Weapons (October 1998), received an update in January 2003. Re-labeled *FM 3-22.40*, the manual states, “Now more than ever, the minimal level of tolerance for collateral damage and loss of human life, coupled with the tendency for the typical adversary to exploit the rules of engagement (ROE) to his benefit, necessitates an effective and

⁴⁹ Department of Defense, *Directive 5100.77, DOD Law of War Program* (Washington, D.C.: Department of Defense, 9 December 1998).

⁵⁰ United States Joint Forces Command, “Doctrinal Implications of Low Collateral Damage Capabilities,” *The Joint Warfighter Center Joint Doctrine Series, Pamphlet 2* (27 January 2003). http://www.dtic.mil/doctrine/jel/other_pubs/jwfc pam2.pdf (accessed 16 June 2007).

⁵¹ Department of Defense, *Directive 3216.2, Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research* (Washington, D.C.: Department of Defense, 25 March 2002).

⁵² Department of Defense, *Directive 5000.1, Policy for the Defense Acquisition System* (Washington, D.C.: Department of Defense, 12 May 2003).

⁵³ Department of Defense, *Directive 5000.2-R, Policy for the Operation of the Defense Acquisition System* (Washington, D.C.: Department of Defense, 12 May 2003).

flexible application of force through non-lethal weapons.”⁵⁴ Possibly the most concise NLW reference for the military, it contains guidance on various NLWs and how they may be employed as well as lessons learned from previous NLW experiences.

In April 2005, *FM 19-15, Civil Disturbances*, received an update and was re-labeled *FM 3-19.15, Civil Disturbance Operations*. It addressed civil unrest for OCONUS operations and the military role of providing assistance to civil authorities.⁵⁵ These are each significant due to the global threat and each includes relevant tactics, techniques, and procedures to today’s threat environment. Similar to *FM 3-22.40, Multiservice Procedures for the Tactical Employment of Nonlethal Weapons*, this manual identifies situations in which NLWs may be employed and provides information on available NLW systems, including the Non-Lethal Capability Set (NLCS).⁵⁶

Considering the significant absence of tactical guidance for employing NLWs in a contemporary operating environment (COE), one case highlights how NLWs can be employed in unconventional operations. A U.S. military police unit successfully employed NLWs in response to “a violent rock-throwing and stick-wielding crowd,” while providing support for United Nations Mission in Kosovo (UNMIK) in 2000.⁵⁷ Because of the success of this operation, Brown argues that NLWs should be a standard part of all deploying task forces to peacekeeping operations. He further argues that

⁵⁴ United States Army, *Field Manual 3-22.40, Tactical Employment of Nonlethal Weapons* (Washington, D.C.: Department of the Army, January 2003), ix.

⁵⁵ United States Army, *Field Manual 3-19.5, Civil Disturbance Operations* (Washington, D.C.: Department of the Army, April 2005).

⁵⁶ United States Army, *Field Manual 3-22.40*, E-1. See also, Council on Foreign Relations, “Non-Lethal Weapons,” Defense. http://www.cfr.org/publication/7750/defense.html?breadcrumb=%2Fissue%2F61%2Fnonlethal_weapons (accessed 20 August 2007). The article states, “each NLCS has supplies for 200 soldiers and contains a range of NLW, including expandable batons, 12-gauge “point” rounds made of sponges, riot helmets, riot shields, and Caltrops.” Of note, the NLCS is adaptable and can be modified for varying weapons and costs.

⁵⁷ James B. Brown, “Non-Lethal Weapons and Moral Preeminence in Peacekeeping Operations,” Joint Non-Lethal Weapons Program, 2000, 1. <https://www.jnlwp.com/Resources/Articles/LtColJamesBrown.htm> (accessed 1 December 2006).

research into non-lethal technologies should be encouraged to exploit the ability of our armed forces to employ force without unnecessarily taking life when it can possibly be avoided.”⁵⁸

These operational level documents attempt to provide guidance for tactical level troops based on ambiguous references to “non-kinetic capabilities” and “asymmetric threats” propagated in higher level strategic documents. Senior military leaders must therefore interpret strategic policies and intent and exercise careful consideration when attempting to employ weapons or tactics not reinforced by their superiors. For example, the *Law of War Program* highlights principles of the laws of armed conflict which include the principles of discrimination and proportionality. Discrimination is based on the idea that civilians should not be made to suffer in war and deliberate attacks on noncombatants should be avoided. Proportionality is based on the idea that it is unjust to inflict greater harm than that unavoidable to achieve legitimate military objectives. Without familiarity of these principles, tactical level operators may be violating restrictions and limitations outlined in manuals that they are unfamiliar with. Furthermore, the few references for NLWs found within military documents pertain to such a limited scope of NLWs that they may not apply to an interested party. As such, there appears to be little incentive for Soldiers and Marines to employ weapons outside of the conventional arsenal.

3. Commercial Publications

In the previous section, I identified the lack of strategic and tactical doctrine on the use of NLWs in MCO and IW. As noted in the 2006 QDR, IW is the most likely challenge facing U.S. forces in the near future. To adequately discuss whether the literature suggests that NLWs can complement IW operations, I first briefly review the seminal works on IW. Establishing these concepts is imperative to the subsequent discussion of the principles of COIN and how NLWs may enhance COIN capabilities.

⁵⁸ Brown, 1.

Hammes argues in support of fourth generation warfare (4GW) theory.⁵⁹ This theory asserts that warfare evolves based upon the state's ability to recognize its opponent's critical weaknesses and then exploit those weaknesses over time.⁶⁰ 4GW includes guerilla warfare, terrorism, asymmetric warfare, unconventional conflict, and counterinsurgency, with no distinction between each. 4GW supporters assert that those who are able to push their message out to the most people and get those people to buy into the message generally win the war. Hammes ultimately seeks to demonstrate to the reader the significance of 4GW theory as it applies to the current military-politico climate, particularly with regard to Islamist jihad. He uses the current wars in Iraq and Afghanistan, as well as the GWOT as examples of 4GW and tinges his thesis with the assertion that the U.S. has never won a 4GW engagement, citing Vietnam, Lebanon and Somalia as examples.

In places like Afghanistan and Iraq, anti-coalition forces (ACF) are using every asset at their disposal to ensure that public support for the war wanes. In 4GW, they employ asymmetric strategies to avoid their conventional military disadvantage. They do not attempt to present physical sources that can be targeted by conventional means, but employ global networks, the internet, broadband, DVD, and the global media. Hammes' book highlights the necessity for counterinsurgents to use these same resources against insurgents. Moreover, his book compels discussion on whether lower lethality tools such as NLWs may combat the information war propagated by the insurgents. NLWs, when combined with media, can strike fear into a potential adversary and disrupt his ability to function, particularly if the adversary understands that they suffer publicly, will not be martyred, and will be held accountable for his actions.

Galula's work, *Counterinsurgency Warfare: Theory and Practice*, is considered by many to be the seminal text on the laws of insurgency, outlining strategy and tactics to combat such threats. Galula states that "the population...becomes the objective for the

⁵⁹ Thomas X. Hammes, *The Sling and the Stone*, First Edition ed. (St. Paul, MN: Zenith Press, 2004), ix.

⁶⁰ William S. Lind, et al., "The Changing Face of War: Into the Fourth Generation," *Marine Corps Gazette*, (October 1989).

counterinsurgent as it was for his enemy.”⁶¹ This is critical for discussions pertaining to conventional military operations in Iraq and Afghanistan. In both wars, though each may separately involve various combat operations, they are essentially a struggle for the hearts and minds of the people. Because the legitimate government must win both the political and military battles, it is essential that they remain cognizant of the third and fourth order effects associated with their tactics for each. Although Galula’s text was written nearly fifty years ago and primarily for COIN and revolutionary war, many of its lessons are relevant today and can be seen reflected in contemporary literature.

Nagl describes the counterinsurgency doctrine practiced by the British during the Malayan Emergency from 1948 to 1957, and compares it with the actions taken by the United States in Vietnam between 1950 and 1975.⁶² In describing these operations, he underscores the need to learn continuously and adapt to improve situations. Central to his text is the importance of winning the hearts and minds of the population. Winning the support of the population, Nagl contends, “is the critical battle in a counterinsurgency campaign.”⁶³ While it may seem an engagement may be won by employing kinetic weapons, that win may be at the expense of alienating the people, thus strengthening the insurgent. Nagl cites examples of U.S. forces in Vietnam employing overwhelming firepower, but the subsequent death and destruction further alienated the COIN from the population. He concludes that while the British military learned to adapt during its irregular warfare experience of counterinsurgency in Malaya, the U.S. Army failed to adapt during similar experiences in Vietnam.⁶⁴

Nagl also contributed to an article titled, “Principles, Imperatives, and Paradoxes of CounterInsurgency,” a precursor to the Army’s *Field Manual 3-24, Counterinsurgency*.⁶⁵ The authors argue in favor of certain conditions that must be met

⁶¹ David Galula, *Counterinsurgency Warfare: Theory and Practice* (Pall Mall Press, 1964), 52.

⁶² John A. Nagl, *Learning to Eat Soup with a Knife: Counterinsurgency Lessons from Malaya and Vietnam* (Praeger Publishers, 2002).

⁶³ *Ibid.*, 28-29.

⁶⁴ *Ibid.*, 215-217.

⁶⁵ S. E. Cohen, et al., “Principles, Imperatives, and Paradoxes of Counterinsurgency,” *Military Review* (Mar-Apr 2006): 49–53.

in order to defeat an insurgency. These conditions, framed in principles and imperatives of COIN will be reviewed in the next section, along with several paradoxes of COIN. What is central to this section is the theme of the article itself. The authors state “conducting COIN operations is counterintuitive to the traditional American approach to war and combat operations.”⁶⁶ Furthermore, the authors argue, “dollars and ballots will have a more important effect than bombs and bullets.”⁶⁷ This underscores Nagl’s assertion that the U.S. military will have to learn to think beyond kinetic capabilities in order to achieve success in IW.

NLWs are unconventional weapons that may provide the U.S. military a useful tool during unconventional operations. If one considers the goal of COIN operations is to win hearts and minds, these technologies provide capabilities aimed at reducing collateral damage and minimizing casualties in operations occurring in close proximity to noncombatants. Rather than killing a confrontational civilian, NLWs enable live capture. Rather than bomb a structure, NLWs can deny access, clear buildings, or neutralize critical infrastructure and equipment. Unfortunately, while there appears no shortage of authors contributing to the literature of either counterinsurgency or NLWs, those which describe how NLWs may serve IW are far less abundant. Therefore, the result is an absence of discussion as to how NLWs may benefit not just the population, but the forces that use them.

B. COIN PRINCIPLES AND IMPERATIVES

Joint Publication 1-02 defines counterinsurgency as, “those military, paramilitary, political, economic, psychological and civic actions taken by a government to defeat insurgency. Also called COIN.”⁶⁸ This section will take a closer look at the Army’s *FM 3-24, Counterinsurgency*, to present for the reader the military perspective of COIN operations and how it should be conducted. Eight principles and five imperatives are described and serve as references for those forces serving in COIN operations. When

⁶⁶ Cohen, 52.

⁶⁷ Cohen, 52.

⁶⁸ Department of Defense, *Joint Publication 1-02, Dictionary of Military and Associated Terms* (Washington, D.C.: Department of Defense, 12 April 2001), 127.

reading them, it is important to keep in mind, that COIN is “a struggle for the population’s support.”⁶⁹ A government can only force its citizens to do so much before they revolt. Therefore, there has to be some effort for a government to consider the needs of the people as it seeks legitimacy.

FM 3-24, Counterinsurgency, was introduced in December 2006. It highlights some of the key insurgencies of the 20th century and serves as sort of a “how-to” guide on what works and why. It describes the various principles and imperatives of COIN in detail. The principles include legitimacy as the main objective; unity of effort; political primacy; understanding the environment; intelligence as the driver for operations; isolating insurgents from their cause and support; security under the rule of law; and long-term commitment. While the majority of military manuals such as *Counterinsurgency* may address military involvement in a full spectrum of operations, each falls short of providing even a clear explication of understanding for the role of NLWs in IW.

According to FM 3-24, the central issue in COIN operations is maintaining legitimate political power of an established government.⁷⁰ However, just as important is the battle for the support of the population. The difference is that a government can use levels of force to influence its citizenry to obey its laws in order to maintain its legitimacy, but more force results in obedience, not necessarily support. A counterinsurgent is responsible for “establishing legitimacy and gaining popular support for the HN (host national) government.” How legitimacy and support may be harnessed may be found in the following principles and imperatives.

Principles of COIN include:

- Legitimacy is the main objective.
- Unity of effort is essential.
- Political factors are primary.
- Counterinsurgents must understand the environment.

⁶⁹ United States Army, *Field Manual 3-24*, 1-28.

⁷⁰ United States Army, *Field Manual 3-24*, 1-1.

- Intelligence drives operations.
- Insurgents must be isolated from their cause and support.
- Security under the rule of law is essential.
- Counterinsurgents should prepare for a long-term commitment.

Imperatives include:

- Manage information and expectations.
- Use the appropriate level of force.
- Learn and adapt.
- Empower the lowest levels.
- Support the host nation.

After the principles and imperatives, FM 3-24 lists several paradoxes of counterinsurgency. The significance is that while these paradoxes are critical to the discussion of NLWs in COIN operations, they can not be referenced as a checklist, and serve as more of a guide of hazards to avoid during COIN operations.

The following paradoxes represent just a few of the many lessons learned about the fluid and unpredictable nature of COIN:

- Sometimes, the more you protect your force, the less secure you may be.
- Sometimes, the more force is used, the less effective it is.
- The more successful the counterinsurgency is, the less force can be used and the more risk can be accepted.
- Sometimes doing nothing is the best reaction.
- Some of the best weapons for counterinsurgents do not shoot.
- The host nation doing something tolerably is better than us doing it well.
- If a tactic works this week, it might not work next week; if it works in this province, it might not work in the next.
- Tactical success guarantees nothing.
- Many important decisions are not made by Generals.

These lessons learned reflect years of time, energy, and resources invested, and sometimes wasted, in counterinsurgencies all over the globe over the past century. After reviewing these principles, imperatives, and paradoxes one can see that the population's support is contingent upon how well a weakened government can respond to its needs. This means that the government, and those supporting it, must not act in such a way that alienates the vast number of people who just want to feel safe. Understanding the principles of COIN is central to the argument for using NLWs in IW. Imperatives such as "use the appropriate level of force" and "learn and adapt" underscore the importance of considering unconventional weapons for unconventional warfare. The paradoxes of COIN reinforce this argument. The next section covers lethal force in IW and further examines how the U.S. military may achieve its goals without the catastrophic consequences associated with traditional military operations.

C. LETHAL FORCE IN IRREGULAR WARFARE

For more than half a century noncombatants have fallen victim to violence at an increasing and alarming rate. In the 1950s, nearly half of all casualties were said to be noncombatants. By the 1980s the number of noncombatants rose to roughly 80% of all casualties.⁷¹ The alarming trend of noncombatants injured or killed in combat operations should be enough to force those at the highest levels of government to carefully consider their strategy for future conflict. In order to limit noncombatant death and collateral damage, and curb the subsequent violence that follows, there must be more than rhetoric when planning operations aimed at intervening rogue states or failed states.

In his 2003 State of the Union address President Bush stated, "If war is forced upon us, we will fight in a just cause and by just means -- sparing, in every way we can, the innocent."⁷² By December 2004, the administration appeared flummoxed with how to address issues associated with increased levels of urban attacks on U.S. armed forces. In an interview with Soldiers in Kuwait, then Secretary of Defense Rumsfeld offered,

⁷¹ Joseph Siniscalchi, "Non-Lethal Technologies Implications for Military Strategy," *Center for Strategy and Technology, Air War College, Air University* (Occasional Paper No. 3, 1998), 24.

⁷² *The Christian Science Monitor*, "Who Counts the Casualties?" Global Issues. <http://www.csmonitor.com/2004/0331/p15s01-wogi.html> (accessed 3 August 2007).

“you go to war with the army you have, not the army you might want or wish to have at a later time.”⁷³ The idea of using NLWs as a method of protecting innocents and demonstrating the ability to use the appropriate level of force may have significantly reduced the number of attacks made against U.S. troops by angry Iraqis. This administration observed the need to change tactics in order to consider the fallout from attacking noncombatants, but continued only with rhetoric rather than actively seeking ways to implement a non-lethal policy for operations such as crowd control and checkpoint operations.

In 2005, Secretary of Defense Donald Rumsfeld stated, “The old rigid divisions between war and peace, diplomacy, between conflict and stability operations - those don’t exist any more.”⁷⁴ The Secretary’s remarks ring true and conventionally organized military forces will face significant challenges to mission success if they are not restructured, trained and equipped for insurgent uprisings or civil disturbances in urban settings. Although some future conflicts may emerge as conventional, it is essential that Soldiers and Marines have available to them an appropriate arsenal of weapons to accomplish their missions. Sending them into such situations armed only with conventional weapons is highly inappropriate.

In an IW environment, a full range of synchronized operations must include military, paramilitary, political, economic, psychological, and civic organizations. In COIN operations, counterinsurgents must support local institutions which serve to supply necessary social services, economic opportunities, public order, and security. This relationship is mutually gratifying as each legitimizes the other. But deeply rooted in all of this coordination, synchronization, and collaboration are cultural, ideological and societal tensions, as well as perceived injustices.

⁷³ PBS Online NewsHour, “Under Armored,” A NewsHour with Jim Lehrer Transcript. http://www.pbs.org/newshour/bb/military/july-dec04/armor_12-9.html (accessed 12 August 2007).

⁷⁴ U.S. Department of Defense News Release, “Rumsfeld Describes Changing Face of War,” DefenseLink. <http://www.defenselink.mil/news/newsarticle.aspx?id=31577> (accessed 2 August 2007).

Unconventional conflict can not be approached in the same way as conventional conflict. There are more than a few issues regarding the application of lethal force in counterinsurgency. For example:

- How does one balance using lethal weapons as a primary means yet still claim a respect for human life and pursue a public support agenda for one's cause?
- How might a counterinsurgent's willingness to employ NLWs in certain situations, strengthen his position and add to his legitimacy, further weakening the insurgent?
- How might the outcome of a situation be degenerated by the application of lethal force, in lieu of another method?

The introduction of FM 3-24, states, "The military forces that successfully defeat insurgencies are usually those able to overcome their institutional inclination to wage conventional war against insurgents."⁷⁵ Where in one form of warfare there are nuances and subtleties, in the other there is only blunt force trauma. Chapter 1 of FM 3-24 begins, "Counterinsurgency is not just thinking man's warfare—it is the graduate level of war."⁷⁶ If this holds true, and the primary objective of any COIN operation is to foster development of effective governance by a legitimate government, one must prudently consider the means by which he pursues his end. If our Soldiers and Marines are to deploy to conduct irregular warfare, peacekeeping and/ or security and stability operations, they must be armed with weapons appropriate for their mission. Unconventional problems call for unconventional solutions.

D. NON-LETHAL WEAPONS AND IRREGULAR WARFARE

The connection between NLWs and irregular conflict is not easily drawn for students of conventional warfare. With IW one must learn an entirely different perspective where goals, strategies, tactics and information operations are completely dissimilar to conventional warfare. Galula espoused this doctrine in 1964 when he wrote of counterinsurgency,

⁷⁵ United States Army, *Field Manual 3-24*, ix.

⁷⁶ *Ibid.*, 1-1.

Reflexes and decisions that would be considered appropriate for the soldier in conventional warfare and for the civil servant in normal times are not necessarily the right ones in counterinsurgency operations. A soldier fired on in conventional war who does not fire back with every available weapon would be guilty of a dereliction of his duty; the reverse would be true in counterinsurgency warfare, where the rule is to apply the minimum of fire.⁷⁷

Over forty years later, MG Peter Chiarelli mirrored those sentiments when he stated,

The other thing I learned is we are good at lethal effects; but in a counterinsurgency, nonlethal effects are as important as, and, at times, more important than kinetic effects. We are very good at fighting and breaking things and teaching other people to do the same. But nonlethal effects are critical to winning the war in Iraq. So, if we're really serious about fighting an insurgency, we have to change our culture and accept the importance, and sometimes preeminence, of non-lethal effects.⁷⁸

In Iraq and Afghanistan, Soldiers and Marines are conducting operations where they are exposed to the use of humans as shields and so called "intermingled targets," whereby assailants hide amongst the people or in vehicles parked next to mosques, hospitals and schools. NLWs could be used to target those assailants without causing unnecessary loss of life or property damage. NLWs are most effective for the stability operations conducted within COIN, but can also be applied in offensive and defensive operations, as well. An example might include military police conducting activities where they will be expected to control or disperse a crowd, provide convoy protection, transport suspects or detainees, or just to augment their arsenal of lethal weapons.

NLWs provide an option for those desiring to maintain control of a particular situation, person or population while also maintaining legitimacy and preserving basic human dignity. NLWs are an option, to be utilized in appropriate situations, by trained professionals, and nothing more. They provide the user with a tool to protect his interests and achieve his objective without the secondary effects associated with lethal weapons.

⁷⁷ Galula, 66.

⁷⁸ Peter W. Chiarelli, "The 1st Cav in Baghdad: Counterinsurgency EBO in Dense Urban Terrain," *Field Artillery Magazine*, September-October, 2005, 7.

It is to this extent that NLWs may prove to be a valuable asset for a government to consider as it attempts to win the hearts and minds of an unsettled domestic population.

In IW environments, combatants continually look for ways to exploit government weakness and cause the civilian population to lose faith in its ability to provide security. With NLWs employed into a COIN scenario, it is conceivable that the NLW might be used against the counterinsurgent and local population, particularly if used in concert with a lethal device. How much more effective would insurgents be if they also had the capacity to apply rapid-hardening rigid foam traction modifiers or nets against first responders in the vicinity of a catastrophe? If the government can blind, dazzle and disorient, one can expect that terrorists might try the same.

The ability for the government to employ NLWs in IW is a major cause for concern, particularly with regard to who within the government can or should employ what sort of NLW. This is a valid concern and a topic as highly contentious as any other associated with NLWs. For example, on October 26, 2002, approximately fifty Chechen separatist guerrillas seized a theater in Moscow, taking approximately 750 hostages. The hostage-takers were heavily armed, carrying automatic weapons, grenades and high explosives. Refusing to negotiate with the separatists, the Russian government brought NLWs, as well as a small arsenal of lethal weapons. On October 28th, Russian Special Forces released a gas form of the opiate anesthetic fentanyl into the ventilation system, resulting in comatose hostages and hostage-takers. Unconscious hostages were rushed to hospitals and every unconscious Chechen was killed on site. In the end, approximately 33 terrorists and 128 hostages died. Many survivors are expected to have permanent disabilities due to respiratory depression and aspiration pneumonia, resulting from an overdose of the opiate.⁷⁹

How, then, may a government use NLWs in lieu of the “shout or shoot” approach commonly associated with conventional military operations? And, how might the government prepare for misapplications of NLW technologies by terrorists against its populace? This is the minefield that the government officials who are charged with

⁷⁹ *The Moscow News*, “Nord-Ost Tragedy Goes on,” *The Moscow News Weekly*. <http://english.mn.ru/english/issue.php?2004-41-2> (accessed 21 November 2006).

protecting its citizenry, must navigate. To back away from applying NLWs into IW operations risks sending the message that either the military or the government is too lazy to determine how to employ them, too dumb to determine which NLWs would be most advantageous for a given situation, or too scared to attempt a form of warfare that involves having to deal with dissatisfied people as human beings and not simply as targets.

E. CONCLUSIONS

Contemporary battles are non-linear and asymmetrical, requiring cooperation with combined and joint forces, enmeshing a multitude of technologies with social and cultural differences. Today's service members are expected to understand complex political, cultural and religious climates and appear professional and diplomatic at all times, particularly in this web-centric age of live streaming media and twenty-four hour news. Ground troops have to make quick, tactical decisions in dangerous situations, sometimes during joint operations, while conducting non-standard missions, while also considering local civil populations and the media. This underscores the importance of the issue and makes it incumbent upon military and civilian defense planners to consider all available options when preparing for conflict. Although currently the President and the National Security Council (NSC) have not issued a formal policy on NLWs, such a policy might serve to accelerate current efforts. Certainly, such a move would raise the issue of NLW proliferation from a DoD issue to an issue of national importance.

Should the Commander in Chief choose to raise the issue of NLW proliferation to a more visible, international audience by establishing formal policy and officially endorsing the tactics, techniques, and procedures (TTP) of their use, he would also be deliberately wading into the crux of the debate. And while the president could bring considerable credibility to issues such as arms control, and the State Department could address issues pertaining to the military application of NLWs on civilian populations, finding anyone in the upper levels of government administration to address issues related to contracts, special interests and soft money may be elusive. The decision to

decentralize control of the NLW program and let the DoD oversee its activities, by way of the JNLWP, make much more sense when viewed from the perspective of the highest-ranking administration officials.

There must be an educated discussion by our government officials to advance our understanding of how NLWs may be integrated into our global strategy as well as how our enemies may use those technologies against us. There is a role for NLWs in IW. The difficulty lies in educating and training leaders on the wide variety of non-lethal tools of force, as well as having an understanding of the terrorist threat. NLW technologies cover the spectrum of possibility, including kinetic weapons. As people begin to understand the vast array of NLWs being developed around the world, as well as the complexity of IW, it becomes very apparent that this is an issue with profound relevance. There is a place for lethality during conventional warfare. There is also a place for lethality in unconventional conflict. But as technology advances, leaders must begin to look for ways to achieve their political goals while also protecting the sanctity of human life through the use of non-lethal methods.

III. CASE STUDIES

A. INTRODUCTION

*Wider integration of NLWs into the U.S. Army and Marine Corps could have reduced damage, saved lives, and helped to limit the widespread looting and sabotage that occurred after the cessation of major conflict in Iraq. Incorporating nonlethal capabilities into the equipment, training, and doctrine of the armed services could substantially improve U.S. effectiveness in conflict, postconflict, and homeland defense.*⁸⁰

As noted in FM 3-24, one of the keys to winning a counterinsurgency is winning the hearts and minds of the affected population.⁸¹ In most military operations being conducted around the world, it can be very difficult to differentiate between combatants and innocent civilians. As such, any weapon employed which reduces collateral damage to property, or reduces the potential for killing noncombatants is beneficial. This is especially significant for COIN operations as it is not necessarily desirable to kill the insurgent in order to declare victory. NLWs may provide some answers for these tactically complicated problems. For example, in Vietnam, if a patrol suddenly found itself taking sniper fire from a “friendly” village, the only options available involved either (a) return fire and risk generating even more casualties, or (b) break contact and withdraw. Neither option is conducive to winning hearts and minds. Non-lethal weapons offer the ability to capture a suspect for subsequent interrogation. This capacity also

⁸⁰ Council on Foreign Relations, “Lack of Nonlethal Weapons Capabilities Hindering U.S. Efforts in Postwar Iraq; Experts Urge Department of Defense to Increase Spending Seven-Fold,” CFR. <http://www.cfr.org/publication.html?id=6794> (accessed 23 July 2007).

⁸¹ United States Army, *Field Manual 3-24*, A-5.

allows for intelligence gathering, “a critical element in defeating an insurgency.”⁸² As LtCol (USMC) Robert Norton, of the Marine Forces Pacific (MARFORPAC) Non-lethal Weapons and Capabilities (NLW/C) states, “NLWs allow a Marine to shoot first AND ask questions later.”⁸³

This chapter considers examples of actions taken by Soldiers and Marines in Iraq in 2003. The examples include, crowd control, urban operations and checkpoint operations. The conditions for each situation are similar: U.S. troops, stationed in Iraq, in 2003, responding to an unconventional threat with conventional weapons and tactics. In each instance, U.S. troops responded with what they believed to be the appropriate use of force. The key to understanding why such actions were taken is as important as the actions taken themselves. The purpose for this chapter is to further illustrate how leadership failures have contributed to the worsening of an already troubling state of affairs in Iraq.

One section is allotted for each of the three separate issues. After each issue, a brief discussion will address any changes to TTP taken by U.S. or other forces since the original incident. Finally, a recommendation is included which offers non-lethal tools which may further prevent any such instances from happening again.⁸⁴ In each issue, all troops acted in accordance with established ROE and only responded as they were instructed. During each of the scenarios, no Marine or Soldier was ever charged with a crime, but their actions speak volumes about the U.S. government’s ability, or inability, to utilize options other than lethal force to achieve its stated goals.

⁸² Joseph Cook, et al., “Nonlethal Weapons: Technologies, Legalities, and Potential Policies,” *Special Edition* (1995), 1. <http://www.airpower.maxwell.af.mil/airchronicles/apj/mcgowan.html> (accessed 26 July 2007).

⁸³ Interview with LtCol Robert Norton of MARFORPAC (NLW/C). LtCol Norton is responsible for coordinating NLW capabilities for Cobra Gold 2007. The exercise is a Thailand, United States Co-Sponsored exercise designed to train United States forces operating with Thailand and additional nations in Joint and Multinational operations.

⁸⁴ All NLWs recommended may be referenced through the Joint Non-Lethal Weapon Program’s website at www.jnlwp.com or are indicated otherwise.

B. CHECKPOINT OPERATIONS

Issue. In March 2003, U.S. troops fired upon a vehicle carrying thirteen women and children, killing seven, at a military checkpoint.⁸⁵ According to reports, when the vehicle failed to stop at the checkpoint, troops were ordered to open fire, as they were apparently faced with no alternative means to make the vehicle stop. U.S. Central Command in Iraq later issued a public statement that its soldiers had followed prescribed rules of engagement to protect themselves.

Discussion. Soldiers and Marines must be able to differentiate between a legitimate threat and a noncombatant who may be disoriented or fleeing for his or her life. The actions taken by those charged with operating the checkpoint may have profound results. Stories continue to be reported of Iraqi families who failed to slow down at military checkpoints, resulting in injuries, deaths and strained relations between nations. Meanwhile, U.S. and Iraqi forces continue to face a threat which uses vehicles loaded with explosives for suicide missions.

Lt. Gen. Pete Chiarelli, the second highest ranking general in Iraq recently stated, "If you believe, like I believe, that the insurgency over time has repopulated itself, you have to ask the question why has that occurred? I think this is one of the reasons. What I'm trying to tell you (is) every time we do this we're creating more people that shoot at us, make bombs and plant bombs."⁸⁶ COL Brian Jones, commander of the 3rd Heavy Brigade Combat Team, 4th Infantry Division agreed, "We need kits that block a road well up front of our lead and trail vehicles. Sawhorses, cones, signs, spike mats and similar tools help prevent these unfortunate circumstances from arising."⁸⁷ In response to requests from the warfighter, gun-mounted lasers are being fielded and tested as a means to get Iraqi drivers' attention, so they will slow down, turn away or stop. The Iraqi

⁸⁵ GlobalSecurity.Org, "Iraq: U.S. Expresses Regret Over Civilian Deaths," Military. <http://www.globalsecurity.org/wmd/library/news/iraq/2003/iraq-030401-rfel-134446.htm> (accessed 27 July 2007).

⁸⁶ *Stars and Stripes*, "U.S. seeks to reduce civilian deaths at Iraq checkpoints," Stars and Stripes Mideast Edition. <http://stripes.com/article.asp?section=104&article=34944&archive=true> (accessed 5 September 2007).

⁸⁷ *Ibid.*

Interior Ministry is also working with the U.S. on a well overdue media campaign aimed at instructing Iraqis how to conduct themselves around convoys and at checkpoints, so as to avoid any unnecessary injuries or deaths.

Recommendation. The Portable Vehicle Arresting Barrier (PVAB) is lightweight, portable, easily emplaced and recoverable. This system can be unpacked/set-up for use with a two man team in less than two hours and allows normal traffic flow. Upon command, if an approaching vehicle fails to stop, the checkpoint guard activates the system to capture mode with a remote control pendant from a distance between 300-1000 feet. The capture net raises to full height in less than two seconds, wraps around vehicle, and the capture lines are tightened by vehicle motion. It is capable of stopping a 7,500 pound truck traveling at 45 miles per hour within a distance of 200 feet. Vehicle occupants are inhibited from opening doors, impeding escape. Another option is the Modular Crowd-Control Munition (MCCM) which resembles the claymore mine, except that it is filled with six hundred 32-caliber rubber pellets. Other NLW options include: (1) Caltrops scattered on roads and runways. Caltrops are non-reflective and always land with one of its four spikes in an upright position. The spikes are hollow and can perforate a self-sealing rubber tire. (2) Road spikes can be thrown in front of speeding cars to blow out their wheels (3) Road barriers and devices may rise multiple feet above the road surface and physically prevent access to any vehicle. (4) Vehicle Lightweight Arresting Device (VLAD) is a small, lightweight mesh blanket consisting of road spikes which entangles wheels and axles.

C. URBAN RIOTS

Issue. In June, 2003, six British Soldiers and four Iraqi civilians were killed and another eight Brits and seventeen Iraqis wounded when a protest involving over four hundred people converged in the town of Majar al-Kabir.⁸⁸ Apparently, the protest was in reaction to alleged “intrusive searches” by the British, that the local population felt offensive to Muslim tradition. As the situation deteriorated and grew larger, more vocal

⁸⁸ CNN.com, “UK to review Iraq troop presence,” War in Iraq. <http://edition.cnn.com/2003/WORLD/meast/06/25/sprj.irq.intl.main/> (accessed 12 August 2007).

and more violent, the British were left with only rubber bullets and lethal ammunition to quell the uprising. As children began to throw stones, the British responded with warning shots followed by lethal fires into the crowd.

Discussion. In this previous scenario, the British found themselves in a situation familiar to Americans serving in Vietnam three decades earlier. Troops were faced with either doing nothing at all or employing their lethal weapons. This black and white perspective of conflict forces ground troops to make decisions which may have international repercussions. Recognizing this, in 2006 the British Royal Marines reached out to the international community and, along with U.S. Marines, established a non-lethal training program during the annual Tradewinds exercise in Jamaica.⁸⁹ More than 120 troops participated in a scenario involving belligerents hurling bricks and flour bombs as well as demeaning insults at the students. To begin, the “rioters” stayed primarily on the street and moved without obstruction. But as the scenario intensified, they moved into the city alleys for a more authentic feel. British Royal Marine Capt. Rhys Hopkins stated, “We teach the troops that they just can’t shoot unruly people...it is good to learn non-lethal systems to establish order.”⁹⁰ In the end, over 1,200 troops were trained on how to appropriately handle an urban riot situation. Although it took a tragic international incident to serve as the impetus for such training, the British have recognized the urgency to correct past mistakes and properly prepare their troops for the challenges associated with unconventional operations.

Recommendation. A variety of NLWs exist which may be significantly advantageous for dismounted troops encountering an unfriendly mob, but preferring to maintain control of the situation rather than exacerbate it. One of the most effective systems, and the only one recommendation here not yet available to the military, is the Active Denial System (ADS). The U.S. Air Force Research Laboratory (AFRL) and the

⁸⁹ United States Federal News Service, “Royal Marines Teach Non-Lethal Crowd Control for 2007 World Cup of Cricket,” Kingston, Jamaica. <https://www.jnlwp.com/Resources/Articles/RoyalMarines.htm> (accessed 5 September 2007).

⁹⁰ United States Federal News Service, “Royal Marines Teach Non-Lethal Crowd Control for 2007 World Cup of Cricket,” Kingston, Jamaica. <https://www.jnlwp.com/Resources/Articles/RoyalMarines.htm> (accessed 5 September 2007).

JNLWD have teamed up to develop a non-lethal technology which may be as useful as Israel's "Scream" weapon. The ADS uses electromagnetic energy to stop or deter a hostile enemy. It provides the user the ability to stop aggressors without causing permanent injury and before a confrontation turns deadly. With a range of 700 yards, the ADS can be used for protection of DoD resources in operations such as peacekeeping, humanitarian missions and other unconventional situations in which lethal force is undesirable. Another interesting option would be a variation of the Long Range Acoustic Device (LRAD). This NLW consists of a 45-pound dish, which can emit a warning tone at a level that is adjustable and capable of permanently damaging hearing, and 50 times the normal human threshold of pain. The maximum range of the LRAD is 500 yards, but at 300 yards its tone is similar to the high-pitched shrill tone of a smoke detector, only louder. These devices have been used on U.S. ships since the summer of 2003.⁹¹ Other options include MK4 Pepper Spray, M84 Stun Grenade, M1012 12-Gauge Rubber Projectile, M1013 Crowd Dispersal Round, M203 40mm M1029 Crowd Dispersal Cartridge, M1006 40mm Sponge Round, GG04 Stun Hand Grenade, and the M26 Taser.

D. CROWD CONTROL

Issue. In his book, *Fiasco*, Tom Ricks details an unfortunate crowd control situation occurring in Iraq between civilian demonstrators and U.S. military personnel on patrol near Fallujah.⁹² The situation may very well have been avoided, if only for the employment of non-lethal technologies. An active duty Colonel is quoted saying, "The lead vehicle fires a warning shot to get (the people) out of the way... a gunner in one of the rear vehicles puts his head down and opens up with a fifty cal, just opens up, and lays down seven people." Another witness states,

The demonstration was approximately 200 persons... (S)ome shots were fired from AK-47 assault rifles from the rear of the demonstration. Generally these shots were not aimed, sometimes they were. The Humvee

⁹¹ Military.com, "Troops in Iraq Get High Tech Noisemaker," *Associated Press*. http://www.military.com/NewsContent/0,13319,FL_noise_030304,00.html?ESRC=eb.nl (accessed 5 September 2007).

⁹² Thomas E. Ricks, *Fiasco: The American Military Adventure in Iraq* (New York: Penguin Press, 2006), 138-142.

gunner from their D Co. (Anti-Tank Company), did fire a burst of .50 cal. The Iraqi who was killed I remember the most was an elderly man who took a .50 cal round to the head at short range. Given that I was not in that soldier's position, I cannot say he made a bad call.

Discussion. Both descriptions of this situation reflect a common theme, which is that U.S. forces responded to civilian demonstrators with the level of force they deemed appropriate and people subsequently died. Unfortunately, this situation may have been avoided had these troops been trained on and equipped with NLWs such as those used by U.S. troops in Somalia in 1995 and Kosovo in 2000. Various countries around the world actively train on and employ NLWs for situations just as this. For example, the Israeli Army used a non-lethal weapon to disperse a crowd of Palestinians, numbered in the hundreds, who were demonstrating against Israel's security forces in the West Bank in 2005.⁹³ When the Palestinians began throwing rocks at the Soldiers, the Israelis employed a weapon they call the "Scream," which emits bursts of sound that causes an overwhelming sense of dizziness and nausea.⁹⁴ The target feels "dizziness, and nausea and potentially a burning sensation on the skin, and ultimately they could not stay for any length of period in the effective range of the weapon."⁹⁵ This NLW fires what amounts to acoustic bullets at a desired frequency which can be dialed up or down depending on the amount of energy one desires to generate. It can not be overstated how useful a NLW such as a land based LRAD, the Israeli "Scream" or ADS would be for U.S. troops in future IW scenarios.

Recommendation. Barring fielding of a land based LRAD, ADS, or "Scream," for U.S. troops currently deployed, M84 stun hand grenades may prove useful. These may confuse and disorient the enemy by causing pain, shortness of breath and extreme discomfort, but no long term effects. Several variations of the MK19 grenade launcher can achieve effects similar to stun grenade, but from a distance of 100-500 meters. Other

⁹³ National Public Radio online, "Malcolm Davis discusses the non-lethal weapon used by the Israeli Army to disperse a Palestinian crowd using sound waves." All Things Considered. <http://proquest.umi.com/pqdweb?did=853298511&Fmt=3&clientId=417&RQT=309&VName=PQD&cfc=1> (accessed 5 September 2007).

⁹⁴ CBS News Online, "Israeli Army Gets The Scream," World. <http://www.cbsnews.com/stories/2005/06/10/world/main700979.shtml> (accessed 5 July 2007).

⁹⁵ Ibid.

options include MK4 Pepper Spray, M1012 12-Gauge Rubber Projectile, M1013 Crowd Dispersal Round, M1029 Crowd Dispersal Cartridge, and the M26 Taser.

E. CONCLUSIONS

History generously provides us with hindsight and that hindsight is the luxury that allows people the ability to look at how things might have been different given another chance. For example, NLWs may have proved useful during Operation Restore Hope in Somalia between 1992 and 1993. Foamed barriers, noxious smells, and piercing audio waves might have been utilized in lieu of lethal ground-based and airborne platforms. In Rwanda, electro-magnetic pulse (EMP) or other high-energy technologies could have quashed radio broadcasts urging genocide. In Macedonia, malodorants or dyed foam coupled with personnel-capturing nets could have been used against those who attacked the U.S. embassy in 1999.

General Wesley Clark's extensive bombing campaign in 1999 against Serbian targets in Kosovo serves as another example. He engineered successful air strikes against Serbian targets in Kosovo, largely to minimize the risk of death to American ground forces and noncombatants and to reduce unnecessary collateral damage.⁹⁶ NLWs might have made a difference if NATO jammed Serbian TV broadcasts or radio towers, similar to how the U.S. employed these technologies over Iraqi power stations during Operation Desert Storm. EMP could have been used to disable air-defense and other military electronic systems. Noxious malodorants, delivering revolting smells, could have been used against command and control facilities. NATO could have blocked, rather than bombed, key bridges, railroads, and roadways.

After the bombing campaign had ended, changes were considered, and when military police deployed to Kosovo, in 2000, they deployed prepared to use NLWs. For this mission, they were tasked with conducting peace support operations, civil military operations, and provide support to local Kosovar law enforcement for various missions.⁹⁷

⁹⁶ Wesley Clark, *Waging Modern War* (New York: Public Affairs, 2001), 238.

⁹⁷ Paul R. Capstick, *Non-Lethal Weapons and Strategic Policy Implications for 21st Century Peace Operations* (U.S. Army War College, 2001), 54.

While working peace enforcement operations, the soldiers quashed civil uprisings on two separate occasions with NLWs.⁹⁸ But examples of success such as that of the MPs in Kosovo in 2000 or of General Zinni's experience in Somalia in 1995 are far outnumbered by examples of failure.

Currently, the TTP of second guessing actions taken by commanders through studies of after action reviews (AAR), lessons learned websites, and articles in the media is a reactive approach to how we engage our adversaries. The current priorities of senior leaders do not address the use of NLWs and how they can be incorporated into the arsenal of available weapons alternatives. Therefore, the consequence of not having NLW alternatives may result in more tactical blunders and missed opportunities. In each scenario described within this chapter, tools were available which could have saved lives and done more to help win advantage than those actions which were taken. There must be an expectation for leaders to demonstrate vision and maximize opportunities to employ tactics, which do more than make a bad situation worse and bring about only effects associated with death and destruction.

⁹⁸ J. B. Brown, "Non-Lethal Weapons and Moral Preeminence in Peacekeeping Operations," (Naval War College, 2005), 3.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. NLWS AND STABILITY OPERATIONS

A. INTRODUCTION

When used, force should be precise, timely, appropriate and proportionate. However, any recourse to force should be designed to resolve and defuse a crisis, and prevent further escalation. The unnecessary or irrational use of force may provoke a hostile reaction throughout the Joint Operations Area (JOA) and adversely affect the perceived impartiality and credibility of the Pharmaciens Sans Frontieres (PSF), leading potentially to a loss of consent and the possible failure of the mission.⁹⁹

This chapter looks at how U.S. troops conduct stabilization operations and considers if NLWs might be used to facilitate those operations.¹⁰⁰ With over 325,000 troops deployed worldwide, conducting a variety of missions including peacekeeping, combat, security and deterrence operations, the need for non-lethal alternatives appears to be only increasing.¹⁰¹ From 1992 to 2001, for example, the U.S. military engaged in almost 60 military operations.¹⁰² Many of the missions included providing humanitarian aid, noncombatant evacuation operations and stabilization and reconstruction. As noted previously, these challenges are likely to increase in the foreseeable future. After examining U.S. military involvement with stabilization operations, this chapter will then consider costs and benefits associated with NLWs to determine whether their use would be problematic or advantageous.

⁹⁹ Organization for African Unity, "Peace Support Operations: A Working Draft Manual for African Military Practitioners," *DWM 1-2000*, February, 51.

¹⁰⁰ Department of Defense, *Joint Publication 1-02*, defines stability operations as, "an overarching term encompassing various military missions, tasks, and activities conducted outside the U.S. in coordination with other instruments of national power to maintain or reestablish a safe and secure environment, provide essential governmental services, emergency infrastructure reconstruction, and humanitarian relief."

¹⁰¹ CNN.com, "Major U.S. Troop Deployments," CNN.com, World. <http://www.cnn.com/interactive/maps/world/fullpage.troop.deployments/world.index.html> (accessed 2 August 2007).

¹⁰² Center for Defense Information, "U.S. Military Deployments/ Engagements," Defense. <http://www.cdi.org/issues/USForces/deployments.html> (accessed 3 August 2007).

In stability operations, Soldiers and Marines can expect to control crowds, deny access to personnel and vehicles, neutralize vehicles, clear facilities, and shape the area of responsibility (AOR) as needed. It is unacceptable to expect Soldiers and Marines conducting stability and support operations to be equipped only with weapons which kill people or destroy buildings, commerce and social order. In order to achieve success noncombatant casualties must be kept to a minimum. Limiting collateral damage and noncombatant deaths serves to encourage stability and restore key infrastructure. NLWs facilitate conflict diminishment; however, this is contingent upon the availability of the appropriate weapons and properly training those charged with their use.

In general, most military missions that the U.S. concerns itself with are aimed at restoring peace and stability. Subsequently, the ultimate goal of these missions can not be accomplished through destruction and brute force. NLWs are designed to provide the user the capacity to incapacitate or repel a hostile, much as lethal weapons, but without the permanent consequences. There are currently a wide variety of counter-personnel and counter-materiel NLWs, as well as some counter-capability options which can be used in conventional military operations and in unconventional warfare, such as COIN operations. In the end, a successful COIN operation rests on the counterinsurgent's ability to protect the population, and meet their needs to the extent of overt support from the populace for the government. And while there still exists the possibility of misapplication or misuse of these weapons, the comparative diminution of irreversible damage makes them all the more advantageous for stability operations.

B. RISKS

In this section I examine the strategic, tactical and personal risks involved with NLWs. Strategic risks include the misconceptions and misinterpretations of various international laws and treaties governing their use; operational risks include the (ROE) which establish tactical guidelines for the employment of NLWs; and tactical risks involve ensuring Soldiers and Marines are adequately familiarized with the NLW contained within their arsenal and addressing the possibility of NLWs being used against U.S. service members.

1. Strategic Risks

The strategic risks of using NLWs may be great to a user facing an uninformed public with misunderstandings about the legality or morality of their use. For example, Amnesty International and Human Rights Watch (HRW) have identified electro-shock technology used as a method of torture used in at least 76 countries, including the United States and other developed and lesser developed countries.¹⁰³ The problem with targeting NLWs solely as a product used for torture is that “torture is an issue of human intent, not devices.”¹⁰⁴ This is exactly the point Rappert argues when he states, “any object can be used as an instrument of torture or ill treatment, it is the intent of the user that is the problem.”¹⁰⁵ Alexander agrees that regardless which weapon is used, what matters is the intent of the user. He states, “The North Koreans are reported to employ a simple but effective method for obtaining information... they use a hammer to smash a joint on the prisoner’s finger. The argument has nothing to do with non-lethal weapons, but rather, the intent of the perpetrator.”¹⁰⁶

Because of a general lack of understanding of the methodology of torture, watchdog groups such as the HRW and the International Committee of the Red Cross (ICRC) have strongly opposed the proliferation of NLWs, going so far as campaigning to have them banned.¹⁰⁷ What these organizations and others like them fail to recognize is that torture, regardless of the tool used, is immoral and illegal and strictly prohibited by the 1907 Hague Regulations and the 1949 Geneva Conventions (to include Protocol I passed in 1977).¹⁰⁸ Critics may argue that people who are incapacitated or immobilized by entanglements or adhesives will be subsequently easier to target with lethal weapons.

¹⁰³ Amnesty International, *Stopping the Torture Trade* (London: Amnesty International Publications, 2001), 23.

¹⁰⁴ John B. Alexander, “Changes in Future Conflict and the Implication of Non-Lethal Weapons.” Principles of War Culminating Seminar, Arlington, VA., 13 April 2005. http://www.jhuapl.edu/POW/library/Alexander_4-13_POW.ppt (accessed 1 July 2007).

¹⁰⁵ Brian Rappert, *Non-Lethal Weapons as Legitimizing Forces?* (London: Frank Cass, 2003), 153.

¹⁰⁶ John B. Alexander, *Future War: Non-Lethal Weapons in Twenty-First-Century Warfare* (St. Martin’s Press: New York, 1999), 186.

¹⁰⁷ Nick Lewer and Steven Schofield, *Non-Lethal Weapons--a Fatal Attraction?: Military Strategies and Technologies for 21st Century Conflict* (Atlantic Highlands, NJ: Zed Books, 1997), 99.

¹⁰⁸ Lewer and Schofield, 155.

This contradicts Article 41 of the Geneva Additional Protocol 1 1977, which stipulates that a person who is “*hors de combat* shall not be made the object of attack.”¹⁰⁹ All members of the DoD must comply with the law of war and it clearly prohibits such actions.¹¹⁰

The question of legality is a slippery slope, particularly when it involves litigation against the U.S. For example, the United States employed NLWs during Operation Desert Storm when Tomahawk Cruise missiles dispersed thousands of carbon fibers over an electrical power station. The carbon fibers drifted down and short-circuited the power station.¹¹¹ Following Operation Desert Storm, the human rights organization Middle East Watch claimed that since the U.S. had so called “smart munitions,” the use of “dumb bombs” was illegal.¹¹² Nothing substantial materialized, but the legal groundwork had been laid and in a country as litigious as the United States, it is not unrealistic to imagine another country might pursue such a judicial recompense.

2. Operational Risks

The purpose of ROE is to establish limits to how Soldiers and Marines may respond in conflict. With this in mind, it becomes paramount that ROE are concise and easy to read in order to effectively limit how forces may dispense violence and restrict Soldiers and Marines from acting recklessly. ROE for lethal and non-lethal weapons should be the same and should be written by the commander, in concert with his staff, reviewed by his legal advisor, for the benefit of the troops. ROE should accommodate strategic level political issues while at the same time being precise enough so that the troops at the tactical level can understand what they can and can not do. Pretentiously

¹⁰⁹ International Committee of the Red Cross, “Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts,” (Protocol I), 8 June 1977; International Humanitarian Law - Treaties & Documents. <http://www.icrc.org/ihl.nsf/WebART/470-750050?OpenDocument> (accessed 2 September 2007).

¹¹⁰ Department of Defense, *Directive 5100.77, DOD Law of War Program*, 2.

¹¹¹ James C. Duncan. “A Primer on the Employment of Non-Lethal Weapons,” *Naval Law Review* no. XLV (1998), 2.

¹¹² Coppernoll, 3.

written legalese will only serve to confuse and frustrate Soldiers and Marines who may not have the luxury of legal counsel standing by to advise them.

Another operational risk associated with NLWs involves determining the appropriate situation for their use. Commanders must not just establish well-written ROE, but also consider which situations warrant NLWs and whether their forces are adequately prepared to employ NLWs competently. NLWs shape circumstances in such a way that an uninformed or misled commander may order his troops to employ NLWs when lethality is warranted. One can easily imagine a situation where an adversary manipulates the media. If the U.S. responds to a violent situation with lethality, an adversary may claim that those killed were simply demonstrators. There will be an expectation for U.S. forces to use NLWs in conflict.

3. Tactical Risks

Soldiers and Marines must have confidence in their weapon system in order to support their commander's guidance and confidence can only be attained as a result of training. If a Soldier or Marine is not confident in their non-lethal system, they will be apprehensive to employ them and their NLW will become little more than extra baggage. Only through familiarization, extensive qualification and testing, and simulations and exercises will ground forces feel confident employing NLWs. Alexander addressed the importance of training when he wrote, "Part of the opposition to non-lethal weapons by troops on the ground is that they are unsure of how well the weapons systems will perform."¹¹³ The long term risks of not properly training Soldiers and Marines with NLWs may be measured in claims of excessive use of force and the erosion of public support.

Another tactical risk associated with NLWs involves the enemy's ability to employ these weapons against U.S. troops. Insurgents do not abide by the Hague Regulations or Geneva Conventions and any insurgent, criminal or terrorist would readily accept any device which might be used to further their efforts. How much more effective would a terrorist plot be, if given the capacity to apply traction modifiers, nets or rapid-

¹¹³ Alexander, *Future War: Non-Lethal Weapons in Twenty-First-Century Warfare*, 183.

hardening rigid foam against first responders in the vicinity of a catastrophe? If envelopes laced with Anthrax powder can shut down a federal building, the same could be said for terrorists releasing a gas derivative of the opiate anesthetic fentanyl into the ventilation system of a federal building or on an airplane while in flight. One can imagine the effect of not simply killing masses of people, but doing so in such a way that truly terrorizes even those not directly affected by the act. If the government can blind, dazzle and disorient, one can expect that others might do the same.

C. BENEFITS

The need for NLWs is self-evident when one considers the scope of operations the military must carry out. As General Wayne Downing pointed out in 1994, “It’s kind of incongruous to be someplace on a peacekeeping mission and kill people.”¹¹⁴ The DoD established a mandate in 1996 in the form of *Directive 3000.3, Policy for Non-Lethal Weapons*, which states, “Non-lethal weapons, doctrine, and concepts of operation shall be designed to reinforce deterrence and expand the range of options available to commanders.”¹¹⁵ NLWs support DoD strategy and provide an alternative for tactical troops faced with shouting verbal warnings and firing lethal munitions. This section will specifically address how NLWs may benefit the strategic, operational and tactical goals of the DoD.

1. Strategic Benefits

The obvious benefits for employing NLWs in combat operations include a reduction in collateral damage and consideration for facilities and infrastructure. The costs absorbed by a country which destroyed another and must therefore incur the responsibility for reconstruction can be staggering. According to The New York Times,

¹¹⁴ Defense News, “One on One,” *Defense News* 9, No. 14 (11- 17 April 1994).

¹¹⁵ Department of Defense, *Directive 3000.3*, 2.

In the days before the war almost five years ago, the Pentagon estimated that it would cost about \$50 billion. But the deteriorating situation in Iraq has caused the initial predictions to be off the mark by a scale that is difficult to fathom. The operation itself... is costing more than \$300 million a day. That translates into a couple of billion dollars a week and, over the full course of the war, an eventual total of \$700 billion in direct spending.¹¹⁶

This is in contrast to the Marshall Plan, widely considered to be a model for economic re-building after World War II, which cost more than \$13 billion, or roughly 85 billion dollars today.¹¹⁷

The message sent by using NLWs, when employed legally and properly, is that the U.S. respects the sanctity of human life and will commit itself to the moral high ground. The ability to convey this message will be contingent upon senior leaders communicating clearly with the media and through its information operations (IO). This message is particularly relevant to stability operations where “winning hearts and minds” remains a strategic objective. One way to support this strategy is to limit the adversary’s ability to attack without unnecessary killing or destruction. For example, counter-materiel technologies could be used to disable an enemy’s air defense or field artillery systems before they are employed. This sends the message that the U.S. military is capable of achieving its objectives without catastrophic consequences and may seriously impact an enemy’s will to fight, particularly after learning he might have been killed had lethal weapons been used.

2. Operational Benefits

NLWs will facilitate a much easier transition from conflict to post-conflict operations than kinetic weapons. Alexander states, “By cutting down on casualties whenever possible, these weapons can assist in the enemy’s acceptance of terms for

¹¹⁶ *The New York Times*, “What 1.2 Trillion Dollars Can Buy,” Business. <http://www.nytimes.com/2007/01/17/business/17leonhardt.html?ex=1326690000&en=7f221bfce7a6408c&ei=5090%23secondParagraph> (accessed 7 September 2007).

¹¹⁷ Estimates regarding combat and post-combat operations vary depending on sources and metrics used. For a substantive review and discussion, see Stephen Lewarne and David Snelbecker, “Economic Governance in War Torn Economies: Lessons Learned from the Marshall Plan to the Reconstruction of Iraq,” Long Report, The Services Group, USAID. http://www.dec.org/pdf_docs/PNADB572.pdf (accessed 7 September 2007).

termination of conflict while minimizing resistance and animosity that destabilizes the post-conflict situation.”¹¹⁸ Families may be traumatized by a loss of liberty, income or loved one, and the U.S. can not afford to add fuel to the fire by responding to a crisis with an inappropriate response. Consider the person who is guilty of nothing more than consuming too much alcohol when Soldiers enter his domicile armed only with lethal weapons. NLWs allow for intangibles that lethal weapons do not. One must consider the collection of actionable intelligence that may be derived from being able to isolate, capture, and interrogate a person rather than kill him. NLWs provide our troops better situational awareness, improved targeting and precision of lethal systems, instantaneous results, scalability, reduced risk for catastrophic consequences, and applicability to the full spectrum of military operations, both unconventional and conventional.

Any weapons, tools or technologies that can provide combatant commanders with more options, is useful. This holds particularly true for stability operations where commanders must be prepared for conflict involving individuals, crowds, combatants and noncombatants. NLWs allow forces to separate good guys from bad guys and collect actionable information for use in future operations. NLWs help fill the gap between inaction and the use of deadly force and have the potential to enhance mission effectiveness and reduce casualties.

3. Tactical Benefits

As the U.S. military becomes less engaged with conventional operations and more involved in stability operations, a greater need will inevitably emerge for developing skills to deal with noncombatants, rather than armed soldiers. Tactical operations will become less about death and destruction and more about establishing security and rule of law and restoring government power. NLWs, most of which are readily available commercial off-the-shelf (COTS) technologies, can be used to augment existing assets to stop, deter, or turn back an approaching adversary. In a tactical environment, NLWs may be used for crowd control, to reduce damage to infrastructure and lessen the long term environmental impact of conventional weapons, and limit noncombatant fatalities. Some

¹¹⁸ Alexander, “Changes in Future Conflict and the Implication of Non-Lethal Weapons,” 1-41.

of these weapons are already being used in various locations by the U.S. military, but the majority being used come in the form of the NLCS, which equips a platoon of approximately 30 Soldiers.

Current stabilization and reconstruction operations require new tools such as the NLCS and U.S. troops are currently applying this system in tactical situations overseas. The NLCS contains primarily low technology kinetic, chemical and optical systems, to include the Taser. These sets also contain various “riot control” tools such as flexi-cuffs, batons, shields and bullhorns. By early 2004, around 80 NLCS were known to be shipped to various locations around the world, but mostly to Soldiers and Marines in Iraq and Kosovo.¹¹⁹ U.S. forces in Iraq also have the LRAD and various bright lights and lasers for use protecting convoys and stopping vehicles at checkpoints. Had more of these NLWs been made available to Soldiers and Marines during the initial phases of combat, and in the immediate aftermath following the fall of Saddam Hussein’s regime, much of the sabotage and looting that occurred may have been avoided.

D. COSTS

According to a February 2004 article by an independent task force sponsored by the non-partisan Council on Foreign Relations, the use of NLWs could have significantly changed the course of Phase IV reconstruction in Iraq¹²⁰ The task force summarized, that “equipping U.S.-trained and supported local forces in Afghanistan and Iraq with NLW would help reinforce authority and be more acceptable to the local population.”¹²¹ It also recommended expanding the office of the JNLWP and vastly increasing the JNLWD budget. Currently, the JNLWD operates on a budget of \$43 million annually, up from seven continuous years of approximately \$22 million but still inadequate according to the report.¹²²

¹¹⁹ Graham T. Allison, et al., *Non-Lethal Weapons and Capabilities: Report of an Independent Task Force Sponsored by the Council on Foreign Relations* (New York: Council on Foreign Relations, 2004), 1.

¹²⁰ *Ibid.*

¹²¹ *Ibid.*, 4.

¹²² Council on Foreign Relations, “Lack of Nonlethal Weapons Capabilities Hindering U.S. Efforts in Postwar Iraq; Experts Urge Department of Defense to Increase Spending Seven-Fold,” 2.

Alexander argues, the cost of NLW research, development, testing, and fielding is negligible in comparison to the entire U.S. DoD budget. He states,

my best guess is that the total military NLW arms budget for the entire world is about fifty million dollars (U.S.). Of that, \$44 million is allocated by the United States. When compared with other arms development and operational expenditures, the cost of NLWs is nearly insignificant.¹²³

Alexander goes on to argue that through 2004, the cost of operations in Iraq and Afghanistan ran five billion dollars per month; the U.S. Missile Defense Program costs nine billion dollars annually; one F-22 fighter aircraft costs about three hundred million dollars, which is six times that spent on NLWs in 2004; 10 M-1 tanks (less than a single company) is roughly equal to that spent on all NLWs the same year; and finally, one nuclear carrier ran four billion dollars to build and twenty two billion for the life cycle. This means that NLWs made up about 0.3 per cent of the 2004 U.S. R&D budget, which accrued \$16 billion annually, and only comprised 0.012 percent of the total U.S. DoD budget, roughly \$380 billion annually.¹²⁴

The costs of design, research and development, training, and fielding must be proportionate to effectiveness. Lethality may edge out measured response for simplicity and/or cost effectiveness. However, all of the NLWs described in this paper have already been tested and are ready for fielding. Future funding will have to be based upon results of existing NLWs and potential for future operations based on military strategy. There must be a dialogue between tactical users of NLWs and those designated to provide funding to ensure that money is wisely spent on those systems used most effectively and for which we are prepared to argue both the legal and moral reasons for their use.

¹²³ John B. Alexander, "Non-Lethal Weapons: Perspective and Reality," (paper presented at the Subcommittee on Disarmament, Arms Control, and Non-Proliferation of the German Bundestag on 10 November 2004). Alexander graciously allowed permission of his unpublished work for reference in this document.

¹²⁴ John B. Alexander, "The Role of Nonlethal Weapons in Future Military Operations," in Anthony D. McIvor, ed., *Rethinking the Principles of War* (Annapolis: Naval Institute Press, 2005), 403.

E. CONCLUSIONS

Due to failures at the strategic level, the benefits of using NLWs do not currently overwhelmingly outweigh the risks. Just as Soldiers and Marines must train to gain proficiency, so too must senior level leadership. This is precisely where leadership has failed. Senior military and civilian leaders must recognize the appropriate situations for NLWs and ensure that the forces charged with using these weapons are properly resourced and adequately trained. An example of being properly resourced, but inadequately trained involves the Federal Bureau of Investigation's (FBI) elite hostage rescue teams (HRT) to successfully employ NLWs at Waco, in 1994, cast NLWs into a dim light and resulted in the loss of 82 Americans, at the hands of Americans, on American soil.¹²⁵ An example of not recognizing an appropriate situation includes checkpoint operations in Iraq. In 2005, U.S. troops manning a checkpoint fired upon a vehicle carrying a recently freed Italian journalist and her escorts, killing one of the intelligence agents assigned to protect her and wounding another.¹²⁶ Opportunities appeared between Waco and the war in Iraq and a few such opportunities were exploited such as Somalia in 1995 and Kosovo in 2000. Unfortunately, neither Somalia nor Kosovo served to effectively change the common misperception that NLWs are anything less than novelty weapons. Until our country can adequately identify optimal opportunities for NLWs and ensure users are properly resourced and trained, success stories will be too few and far in between to make a difference.

NLWs can no longer be considered toothless tools consisting only of stun guns and bean bags. Although NLWs are not going to completely replace the necessity for lethal weapons, they are cost efficient, benefit everyone occupying the AO, and have a place in contemporary military operations. The 2004 *Force Application Functional Concept* (FAFC) states,

¹²⁵ 106th Congress, "The Tragedy at Waco: New Evidence Examined, Eleventh Report by the Committee on Government Reform," *Report 106-1037* (2000). <http://www.gpo.gov/congress/house/house07cr106.html> (accessed 25 June 2007). See also William Gazecki, "Waco: Rules of Engagement," *New York Video*, 2003.

¹²⁶ CNN.com, "U.S. Knew Agent Going to Airport," CNN.com, World. <http://www.cnn.com/2005/WORLD/europe/03/09/italy.sgrena/> (accessed 7 August 2007).

The shifting military environment is likely to see greater mixing of enemy combatants with noncombatants and there are likely to be situations where lethal force is undesirable. Increasing non-lethality widens the range of effect the joint force is able to achieve without using deadly force. Non-lethal ability should not detract from our ability to apply lethal means as required.¹²⁷

The examples cited in this chapter serve to illustrate that the FAFC findings are based on research which supports the crux of this paper, which is that NLWs are relevant to today's military operating environment and must be considered as such by today's senior military strategists and war planners.

¹²⁷ Department of Defense, *Force Application Functional Concept* (Washington, D.C. Department of Defense, February, 2004).

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

These weapons are actively being sought by all branches of the U.S. military and come in a dazzling variety, from “incapacitants” or chemicals that put people to sleep, acoustic and light-pulsing devices that disrupt cognitive and neural processes; odors so disgusting they sicken; sudden colored fog that creates panic; optical equipment that causes temporary blindness; and mechanisms that stimulate nerve endings as though they are fire, among dozens of others.¹²⁸

Politically, religiously or ideologically driven insurgents are only going to be conquered when the message they are purveying no longer appeals to either the masses or to enough of their “soldiers” to keep their political movement going. To undermine an insurgency’s message, the legitimate authorities have to establish the conditions in which the economy and employment are vibrant, as well as punishing the perpetrators of violence and minimizing collateral damage to innocents.

This study examines the use of NLWs in IW and highlights the broader concepts associated with the increasing use of U.S. service personnel active in foreign civil affairs. Essentially, the U.S. military must determine whether the use of violence by political actors in an urban environment is a form of warfare, or simply criminal activity. This invariably leads to the question of how any security force can neutralize, cause the dissolution of or destroy a politically driven group of violent actors without disrupting the society in which they are enmeshed. If the battle is an extended one, a large array of non-lethal tools must be considered.

As militaries become active in such political activities as planning economic development and running essential services their must also be discussions pertaining to how to approach the problem of MOUT or COIN. What specific NLWs might be useful in one situation or another? How can we keep our military adhering to its traditional

¹²⁸ *The American Journal of Bioethics*, “Medical Ethics and Non-Lethal Weapons,” Bioethics.net. http://bioethics.net/journal/j_articles.php?aid=622 (accessed 3 August 2007).

position in regard to civilian authority? How do we help dysfunctional societies achieve the requisites for democracies while fighting insurgencies, crime, ignorance, superstition, radicalization and poverty? U.S. forces are facing these challenges like these every day as they work to provide resources and services to the people of Iraq and Afghanistan. NLWs might be more appropriate in situations when it is difficult to distinguish an innocent bystander from a potential gunman, as well as for sweeping routes for IEDs and VBIEDs, and stopping vehicular suicide attacks before they reach their target.

This study has illustrated the seemingly impossible mission and responsibilities associated with those missions for the US military. For those situations, Soldiers and Marines are going to need a wide variety of weapons, both kinetic and non-kinetic. In sum, there remains little doubt that NLWs are an effective resource for those seeking to curb the effects of catastrophic damage associated with lethal munitions. This study concludes that NLWs can enhance US armed forces IW operations by providing a robust set of non-lethal alternatives without increasing cost or risk. NLWs can enhance the capability of American forces in conflict and post-conflict environments and should be integrated into doctrine and current military operations.

B. RECOMMENDATIONS

Currently, the United States' investment into NLWs is unparalleled. DoD funds an impressive array of non-lethal technologies which may be used in irregular operating environments.¹²⁹ But without increased and continued funds for research and development, and informed and proactive leadership, the efforts of past proponents will be for naught and U.S. troops will again be left with only lethal weapons for use in IW. This section will present recommendations for further incorporating NLWs into the arsenal of the U.S. military.

¹²⁹ Nick Lewer, *The Future of Non-Lethal Weapons: Technologies, Operations, Ethics, and Law* (London: Frank Cass, 2002), 54. Lewer provides an excellent description of NLWs and their capabilities, as well as their potential for application in unconventional military operations.

1. Strategic Recommendations

For seven years the JNLWD was forced to conduct business with a budget of approximately \$22 million annually until 2004 when the budget increased to just over \$43 million. The Secretary of Defense should consider the recommendations of the 2004 CFR sponsored Task Force cited in the previous chapter, which also argues for a larger budget. Although the JNLWD budget almost doubled in 2004, the CFR contends the JNLWD budget is still inadequate and should be increased seven-fold.¹³⁰ The CFR recommends a budget closer to \$300 million a year, which still amounts to less than \$1 for every \$1,000 spent on defense.¹³¹

The Task Force presents four actions for further integrating NLWs into the U.S. military:

- Expand NLW deployment more widely in the Marine Corps and the Army Infantry. Ensure that Navy and Air Force have such capabilities adapted for their force-protection missions.
- Extend the range of NLW payloads to 100 meters through precision delivery and fusing systems.
- Complete development of the NLW system that can stop, deter, and turn back an advancing adversary from hundreds of meters by heating the skin of an individual without permanent injury.
- Advance the development of concepts such as the advanced tactical laser—which shows promise for use against equipment—along with the advent of nonlethal payloads that home in on a laser spot.¹³²

There must be comprehensive discussions between senior level civilians and senior military representatives regarding the application of non-lethal technologies for strategic objectives. Senior leaders must determine how NLWs may be employed to

¹³⁰ Council on Foreign Relations, “Lack of Nonlethal Weapons Capabilities Hindering U.S. Efforts in Postwar Iraq; Experts Urge Department of Defense to Increase Spending Seven-Fold,” 2.

¹³¹ Ibid.

¹³² Ibid.

facilitate, and not restrict, Soldiers and Marines. They must also consider strategic consequences, if any, which may arise and determine the most effective means of employing such weapons.

Civilians should be encouraged to ask questions and demand answers from their legislators. Too many lessons may be drawn upon regarding NLW successes, failures and missed opportunities in combat environments. People should understand how their military is being prepared for warfare and what is being done to ensure their safety. Winning public support is an essential aspect of integrating NLWs into the military arsenal because without it senior leaders will hesitate to present guidance and establish the policies and regulations which guide our service members. Establishing policies and regulations is essential because those same policies and regulations will be used by combatant commanders to develop clear and concise ROE for ground troops. This means that if our national strategy is to prepare for and conduct “full spectrum operations,” senior leaders, both civilian and military, will be forced to consider a legitimately full spectrum of options.

2. Operational Recommendations

Commanders are encouraged to review current policies relevant to NLWs and revise policies accordingly. Disseminate all relevant changes to ensure clear guidance is understood by all subordinate commands. NLWs should be incorporated into the acquisition process and NLW training should be incorporated into all training plans. Careful and continuous evaluation of the effectiveness of these tools will help maintain an accurate historical record of all NLW activities. Those systems that have been proven most successful should be made programs of record in order to facilitate full systems integration.

One set of ROE should cover both lethal and NLWs. With this in mind, combatant commanders should understand where NLWs fall in the force continuum. NLWs provide the combatant commander with additional options for scenarios that do not clearly require lethality. Therefore, it is essential that ROE is developed by the commander for the troops and not passed off to be written by the Judge Advocate

General (JAG). Complex or ambiguous ROE will only confuse those Soldiers and Marines who may be forced to make life and death decisions.

3. Tactical Recommendations

Incorporating NLWs into U.S. military operations might have significantly minimized civilian casualties, decreased damage, and prevented the extensive looting that occurred following the conclusion of MCO in Iraq in 2003. In a joint statement with Tony Blair issued in April 2003, President Bush stated,

We also grieve for the loss of civilian life in Iraq. Coalition forces take great care to avoid civilian casualties. We are taking every step possible to safeguard Muslim holy sites and other protected places in Iraq that are important to the religious and cultural heritage of Islam and of Iraq. We reaffirm our commitment to protect Iraq's natural resources, as the patrimony of the people of Iraq, which should be used only for their benefit.¹³³

Resources such as NLWs might have significantly improved the effectiveness of Soldiers and Marines to support the President's goals and may help forces in future conflict and post-conflict operations.

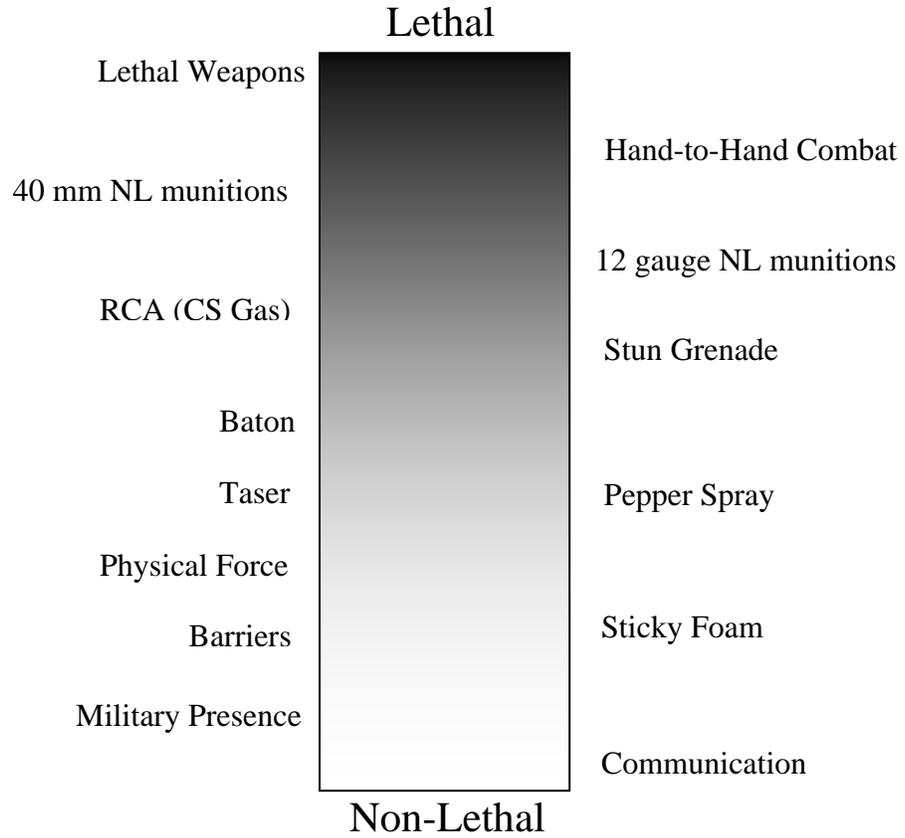
Soldiers and Marines operate at the level of where the axe meets the grindstone. All tactical level users of non-lethal technologies must evaluate the effectiveness of their weapons, both lethal and non-lethal, for their operations. One may present a compelling argument against employing some NLWs, but the arsenal is multi-dimensional and aside from cost, or physical limitations, it would be hard to argue against all NLWs. If it is determined that opportunities exist whereby a certain NLW could improve current TTPs, then there comes a responsibility to make those findings known. However, if it is determined that NLWs will only serve to impair current TTPs, then it is equally important to make those findings known.

It is essential that the tactical level users of these technologies communicate their experiences both vertically and horizontally, and compile lessons learned for use by

¹³³ White House, "Joint Statement by President Bush, Prime Minister Blair on Iraq's Future," (press release 8 April 8 2003). <http://www.whitehouse.gov/news/releases/2003/04/20030408-1.html> (accessed 7 July 2007).

resources such as Inter-Service NLW Instructor Course (INIWIC) and the Center for Army Lessons Learned (CALL). INIWIC is the only school authorized by the DoD to train units and certify NLW trainers. Not only is training provided for all services at Ft. Leonard Wood, Mo., but also in the form of mobile training teams (MTT), who may travel at a unit's request to any military installation in the United States for home base training. INIWIC is vital to any discussion about NLWs because it represents where the axe meets the grindstone. Tactical feedback to CALL and INIWIC may serve as a direct link between the NLW user and those responsible for fielding NLW technologies.

APPENDIX A: FORCE CONTINUUM¹³⁴



¹³⁴ There are numerous versions of the force continuum. The force continuum is applicable to any agent or agency, civilian or military, charged with applying force to establish and maintain security. This depiction is based upon the author's familiarity and experience with the weapons listed.

THIS PAGE INTENTIONALLY LEFT BLANK

**APPENDIX B: CURRENT AND DEVELOPMENTAL NLW
TECHNOLOGIES¹³⁵**

Counter-personnel

TECHNOLOGY	DESCRIPTION
ACOUSTIC	
Audible sound	Low level annoying sounds to disperse crowds.
Infrasound	Incapacitation, disorientation, nausea, vomiting, bowel spasms; effects stop when generator is turned off, no lingering physical damages.
Infrasound from non-linear superposition of two ultrasound beams (tested in Great Britain)	Intolerable sensations.
Very Low Frequency noise	Disorientation, vomiting fits, bowel spasms, uncontrollable defecation.
BIOLOGICAL	
Neural inhibitors	Incapacitates personnel, paralysing synaptic pathways. Induces reversible crippling effects
CHEMICAL	
Adhesive agents	Quick-setting polymer foams. Immobilize targets and require special solvents to remove. Mainly sticky foams.
Barriers	Dense, rapidly expanding aqueous bubbles. Isolates and immobilizes to control evacuation or escape. May be used with odours, dyes, etc.
Calmative agents	Temporarily incapacitate personnel.
Hallucinogens	Narcotics that disorient, confuse and incapacitate.

¹³⁵ Vincent Sautenet, "Legal Issues Concerning Military Use of Non-lethal Weapons," *Murdoch University Electronic Journal of Law*, Volume 7, Number 2, (June 2000). http://www.murdoch.edu.au/elaw/issues/v7n2/sautenet72_text.html; accessed 30 August 2007. The tables listed here have been modified slightly from their original form.

Irritants	Pepper spray, gases, etc. Causes temporarily but intense and debilitating pain.
Lubricants	Turns dirt into chemical mud and makes surfaces slippery.
Neuroblockers	Tranquilizers darts and anesthetic bullets. Causes incapacitation.
Neuro-inhibitors	Loss of neurological control. The nervous system “overheats” and gets out of control.
Taggants	Tracks personnel
ELECTROMAGNETIC	
Electronic rifles	Includes taser, dart and stun guns. Debilitates central nervous system, short-circuiting human synaptic pathways. Causes incapacitation.
Pulsed High Power Microwaves (HPM)	Induces confusion, stupor or coma.
KINETIC	
Entanglement munitions	Mainly nets.
Non-penetrating projectiles	Stinger grenades, wax, wood and plastic bullets.
Water cannons	May be used with chemical additives.
OPTIC	
Low energy lasers	May be used to <u>temporarily</u> blind personnel.
Optical munitions	Flash bang grenades, pulsing light, etc.
Obscurants	Inhibits observation.
Strobe lights	Pulsed high-intensity light. Disorient.

Counter-materiel

TECHNOLOGY	DESCRIPTION
ACOUSTIC	

Infrasound	Disrupt metal and composite materials
BIOLOGICAL	
Biodeteriorative microbes	Degrades roads and bridges surfaces, turns aviation fuel into jelly, “eats” rubber of vehicle wheels.
CHEMICAL	
Adhesive agents	Quick-setting polymer foams. Immobilize targets and require special solvents to remove.
Super-caustics	Acids that corrode or degrade structural materials.
Contaminators	Additives that cause fuel to gel or solidify making it unusable.
Liquid metals Embrittlement agents	Agents that change the molecular structure of base metals or alloys, significantly reducing their strength. Could be used to attack critical metal structures, aircrafts, ships, trucks, metal treads.
Lubricants	Substances that cause lack of traction. Delivery by aircrafts. Can render roads, ramps, railroads unusable for limited time.
Taggants	Tracks equipment, materiel.
ELECTROMAGNETIC	
Conductive particles	Any variety of particles that can induce short circuits in electrical or electronic equipment.
Directed energy/Particle beams	Destroys electronic systems. Changes molecular structure of weapons rendering them useless.
Non-nuclear electromagnetic pulse	Pulse generators producing gigawatts of power could be used to explode ammunition dumps or paralyze electronic systems. Vulnerable systems include electronic ignition systems, radars, communications, data processing, navigation, and electronic triggers of explosive devices.
Pulsed High Power	Disrupt and neutralizes electronics. Shuts down

Microwaves (HPM)	engines, explode ammunition.
KINETIC	
Ceramic shards	Damages aircraft engines and degrades air vehicle stealthiness.
Entanglement munitions	Nets, meshes, cables, chains, etc. Disables treads, propellers, rotor-blades, and axles trapping targets.
OPTIC	
High energy lasers	Destroy optical sensors
Low energy lasers	Includes laser rifles and anti-air laser canons. Overloads and disables electro-optical sensors.
Optical munitions	Anti-sensor munitions.
Obscurants	Inhibits observation.

APPENDIX C: APPLICABLE TREATIES AND LAWS¹³⁶

1. Convention (IV) Respecting the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land. The Hague, 18 October, 1907.
2. Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare. Geneva, 17 June 1925.
3. Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in the Armed Forces in the Field. Geneva, 12 August 1949.
4. Geneva Convention (II) for the Amelioration of the Condition of the Wounded, Sick, and Shipwrecked Members of the Armed Forces at Sea. Geneva, 12 August 1949.
5. Geneva Convention (III) Relative to the Treatment of Prisoners of War. Geneva, 12 August 1949.
6. Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War. Geneva, 12 August 1949.
7. Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction. Opened for Signature at London, Moscow, and Washington. 10 April 1972.
8. Convention on the Prohibition of Military or any Hostile Use of Environmental Modification Techniques. 10 December 1976.
9. Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977.
10. Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), 8 June 1977. (The U.S. is not a party to this protocol).
11. United Nations Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects (UNCCW). Geneva, 10 October 1980.

¹³⁶ This list is developed from various sources, however, an excellent resource for most of these treaties and laws is Erik Nutley's paper, "Non-lethal Weapons: Setting Our Phasers to Stun? Potential Strategic Blessings and Curses of Non-Lethal Weapons on the Battlefield," which is also cited in Chapter I, Section C of this paper.

12. UNCCW Protocol on Non-Detectable Fragments (Protocol I). Geneva, 10 October 1980.
13. UNCCW Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-traps, and Other Devices (Protocol II). Geneva, 10 October 1980.
14. UNCCW Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III). Geneva, 10 October 1980. (The U.S. is a party to this protocol, with restrictions).
15. Nairobi International Telecommunications Convention, 10 January 1986.
16. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction. Paris, 13 January 1993.
17. UNCCW Protocol on Blinding Laser Weapons (Protocol IV to the 1980 Convention), 13 October 1995.
18. UNCCW Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-traps and Other Devices as Amended on 3 May 1996 (Amended Mines Protocol).
19. Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, 18 September 1997. (The U.S. is not a party to this convention).
20. Rome Statute of the International Criminal Court, 17 July 1998. (The U.S. is not a party to this treaty).

LIST OF REFERENCES

- 104th Congress. "National Defense Authorization Act for Fiscal Year 1996." *Report 104-112* (1995).
http://www.globalsecurity.org/military/library/congress/1995_rpt/s104112.htm
(accessed 23 June 2007).
- . "National Defense Authorization Act for Fiscal Year 1997." *Report 104-201* (1996). <http://www.fas.org/nuke/control/ctr/docs/hr3230.html> (accessed 23 June 2007).
- 106th Congress. "The Tragedy at Waco: New Evidence Examined, Eleventh Report by the Committee on Government Reform." *Report 106-1037* (2000).
<http://www.gpo.gov/congress/house/house07cr106.html> (accessed 25 June 2007).
- Alexander, John B. "Changes in Future Conflict and the Implication of Non-Lethal Weapons." Principles of War Culminating Seminar, Arlington, VA., 13 April 2005.
http://www.jhuapl.edu/POW/library/Alexander_4-13_POW.ppt (accessed 1 July 2007).
- . *Future War: Non-Lethal Weapons in Twenty-First-Century Warfare*. St. Martin's Press: New York, 1999.
- . "Non-Lethal Weapons: Perspective and Reality." Paper presented to the Subcommittee on Disarmament, Arms Control, and Non-Proliferation of the German Bundestag, 10 November 2004.
- . "The Role of Nonlethal Weapons in Future Military Operations," in Anthony D. McIvor, ed., *Rethinking the Principles of War* Annapolis: Naval Institute Press, 2005.
- Allison, Graham T., Kelley, Paul X., Garwin, Richard L. *Non-Lethal Weapons and Capabilities: Report of an Independent Task Force Sponsored by the Council on Foreign Relations*. New York: Council on Foreign Relations, 2004.
- Amnesty International. *Stopping the Torture Trade*. London: Amnesty International Publications, 2001.
- Arms Control Association. "Rumsfeld Wants to Use Riot Control Agents in Combat." *Arms Control Today*. http://www.armscontrol.org/act/2003_03/nonlethal_mar03.asp
(accessed 1 June 2007).

- Benkert, Joseph. "U.S. Policy and Practice with Respect to the Use of Riot Control Agents by the U.S. Armed Forces." Paper presented to the Senate Committee on Armed Services, Subcommittee on Readiness and Management Support, Washington, D.C., 27 September 2006.
- Bills, Scott. *Kent State/May 4: Echoes Through a Decade*. Kent, OH: Kent State University Press, 1988.
- Brown, James B. "Non-Lethal Weapons and Moral Preeminence in Peacekeeping Operations." Joint Non-Lethal Weapons Program.
<https://www.jnlwp.com/Resources/Articles/LtColJamesBrown.htm> (accessed 1 December 2006).
- Capstick, Paul R. *Non-Lethal Weapons and Strategic Policy Implications for 21st Century Peace Operations*. U.S. Army War College, 2001.
- CBS News Online. "Israeli Army Gets The Scream." World.
<http://www.cbsnews.com/stories/2005/06/10/world/main700979.shtml> (accessed 5 July 2007).
- Center for Defense Information. "U.S. Military Deployments/ Engagements." Defense.
<http://www.cdi.org/issues/USForces/deployments.html>; accessed 3 August 2007.
- Chiarelli, Peter W. "The 1st Cav in Baghdad: Counterinsurgency EBO in Dense Urban Terrain." *Field Artillery Magazine*, September-October 2005.
- Clark, Wesley. *Waging Modern War*. New York: Public Affairs, 2001.
- Clausewitz, Carl von. *On War*. Edited by Michael Eliot Howard, and Peter Paret. Princeton, N.J: Princeton University Press, 1984.
- CNN.com. Major U.S. Troop Deployments." CNN.com, World.
<http://www.cnn.com/interactive/maps/world/fullpage.troop.deployments/world.index.html> (accessed 2 August 2007).
- . "UK to review Iraq troop presence." War in Iraq.
<http://edition.cnn.com/2003/WORLD/meast/06/25/sprj.irq.intl.main/> (accessed 12 August 2007).
- . "U.S. Knew Agent Going to Airport." CNN.com, World.
<http://www.cnn.com/2005/WORLD/europe/03/09/italy.sgrena/> (accessed August 7, 2007).
- Cohen, E., Crane, C., Horvath, J., and Nagl, J. "Principles, Imperatives, and Paradoxes of Counterinsurgency." *Military Review* (Mar-Apr 2006).

- Commandant of the Marine Corps, Joint Non-Lethal Weapons Directorate. "Joint Concept for Non-Lethal Weapons." *Federation of American Scientists*. <http://www.fas.org/man/dod-101/sys/land/docs/NONLETH.HTM> (accessed 15 March 2007).
- Cook, Maj Joseph W., III., Maj David P. Fiely, and Maj Maura T. McGowan. "Nonlethal Weapons: Technologies, Legalities, and Potential Policies." *Special Edition* (1995). <http://www.airpower.maxwell.af.mil/airchronicles/apj/mcgowan.html> (accessed 26 July 2007).
- Coppernoll, Margaret Anne. "The Non-Lethal Weapons Debate." *Military Press*, Spring 1999. <http://www.nwc.navy.mil/press/Review/1999/spring/art5-SP9.htm> (accessed 11 August 2007).
- Council on Foreign Relations. "Lack of Nonlethal Weapons Capabilities Hindering U.S. Efforts in Postwar Iraq: Experts Urge Department of Defense to Increase Spending Seven-Fold." CFR. <http://www.cfr.org/publication.html?id=6794> (accessed 23 July 2007).
- . "Non-Lethal Weapons." CFR. http://www.cfr.org/publication/7750/defense.html?breadcrumb=%2Fissue%2F61%2Fnonlethal_weapons (accessed 20 August 2007).
- Coupland, R.M. "Clinical and Legal Significance of Fragmentation of Bullets in Relation to Size of Wounds: Retrospective Analysis." *British Medical Journal*. 14 August 1999. http://findarticles.com/p/articles/mi_m0999/is_7207_319/ai_55670104 (accessed 12 August 2007).
- . "The Effect of Weapons: Defining Superfluous Injury and Unnecessary Suffering." *Medicine and Global Survival*. 3:A1, (1996). <http://www.askywhale.com/oldies/jeuxaides/militaryservice/effetshospitaliers.html> (accessed 2 August 2007).
- Defense News. "One on One," *Defense News* 9, No. 14 (11- 17 April 1994).
- Department of Defense. *Directive 3000.3, Policy for Non-Lethal Weapons*. Washington, D.C.: Department of Defense, 9 July 1996.
- . *Directive 3216.2, Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research*. Washington, D.C.: Department of Defense, 25 March 2002.
- . *Directive 5000.1, Policy for the Defense Acquisition System*. Washington, D.C.: Department of Defense, 12 May 2003.

- . *Directive 5000.2-R, Policy for the Operation of the Defense Acquisition System*. Washington, D.C.: Department of Defense, 12 May 2003.
- . *Directive 5100.77, DoD Law of War Program*. Washington, D.C.: Department of Defense, 9 December 1998.
- . *Force Application Functional Concept*. Washington, D.C.: Department of Defense, February, 2004.
- . *Joint Publication 1-02. Dictionary of Military and Associated Terms*. Washington, D.C.: Department of Defense, 12 April 2001.
- . *Joint Vision 2020*. Washington, D.C.: Department of Defense, 2000.
- . *National Defense Strategy of the United States of America*. Washington, D.C.: Department of Defense, 2005.
- . *National Military Strategic Plan for the War on Terrorism*. Washington, D.C.: Department of Defense, 2006.
- . *Quadrennial Defense Review*. Washington, D.C.: Department of Defense, 2006.
- Department of Peace Studies, University of Bradford. “The 1925 Geneva Protocol/ Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous, or Other Gases, and of Bacteriological Methods of Warfare.” Genomics Gateway. <http://www.brad.ac.uk/acad/sbtwc/gateway/ARMS/GENEVA.HTM> (accessed 15 July 2007).
- Duncan, James C. “A Primer on the Employment of Non-Lethal Weapons.” *Naval Law Review* no. XLV (1998).
- European Court of Human Rights. “Gulec v. Turkey - 21593/93 [1998] ECHR 58 (27 July 1998).” <http://worldlii.org/eu/cases/ECHR/1998/58.html> (accessed 19 November 2006).
- Galula, David. *Counterinsurgency Warfare: Theory and Practice*, Pall Mall Press, 1964.
- Garwin, Richard L., and Winfield, W. Montague. *Non-Lethal Technologies: Progress and Prospects*. New York: Council on Foreign Relations, 1999.
- Gazecki, William. “Waco: Rules of Engagement.” *New York Video*, 2003.
- GlobalSecurity.Org. “Iraq: U.S. Expresses Regret Over Civilian Deaths.” Military. <http://www.globalsecurity.org/wmd/library/news/iraq/2003/iraq-030401-rfel-134446.htm> (accessed 27 July 2007).

- . “Where Are the Legions?” Military.
<http://www.globalsecurity.org/military/ops/global-deployments.htm> (accessed 3 August 2007).
- Government Executive. “Force without Fatalities.” Defense.
<http://www.govexec.com/features/0501/0501s4.htm> (accessed 15 July 2007).
- Hammes, Thomas X. *The Sling and the Stone*. First Edition ed. St. Paul, MN: Zenith Press, 2004.
- International Committee of the Red Cross. “Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts.” (Protocol I), 8 June 1977. International Humanitarian Law - Treaties & Documents.
<http://www.icrc.org/ihl.nsf/WebART/470-750050?OpenDocument> (accessed 2 September 2007).
- Lewarne, Stephen and Snelbecker, David. “Economic Governance in War Torn Economies: Lessons Learned from the Marshall Plan to the Reconstruction of Iraq.” Long Report, The Services Group, USAID.
http://www.dec.org/pdf_docs/PNADB572.pdf (accessed 7 September 2007).
- Lewer, Nick. “Research Report 2.” *Bradford Non-Lethal Weapons Research Project* (BNLWRP). June 1998.
http://www.bradford.ac.uk/acad/nlw/research_reports/researchreport2.php (accessed 27 July 2007).
- . *The Future of Non-Lethal Weapons: Technologies, Operations, Ethics, and Law*. London: Frank Cass, 2002.
- Lewer, Nick and Steven Schofield. *Non-Lethal Weapons--a Fatal Attraction?: Military Strategies and Technologies for 21st Century Conflict*. Atlantic Highlands, NJ: Zed Books, 1997.
- Library of Congress. “A Century of Lawmaking for a New Nation: U.S. Congressional Documents and Debates, 1774 – 1875.” *Journal of the House of Representatives of the United States*, Volume 1; 305. <http://memory.loc.gov/cgi-bin/ampage?collId=llhj&fileName=001/llhj001.db&recNum=302> (accessed 25 July 2007).
- Lind, William S., COL Nightengale, Keith, Capt Schmitt, John F., COL Sutton, Joseph W., LtCol Wilson, Gary I. “The Changing Face of War: Into the Fourth Generation,” *Marine Corps Gazette*, (October 1989).
- Lorenz, F.M. “Less Lethal Force in Operation United Shield.” *Marine Corps Gazette* 79, no. 9 (1995).

- . “Non-Lethal Force: The Slippery Slope to War?” *Parameters* 26, no. 3 (1996).
- Machiavelli, Niccolo. *The Prince*. Translated by Paul Sonnino. Atlantic Highlands, NJ: Humanities Press International, Inc., 1996.
- Military.com. “Troops in Iraq Get High Tech Noisemaker.” *Associated Press*. http://www.military.com/NewsContent/0,13319,FL_noise_030304,00.html?ESRC=e b.nl (accessed 5 September 2007).
- Military Matters. “Kansas Guard troops headed to Kosovo.” 49abcnews.com. http://www.49abcnews.com/blogs/military_matters/2007/apr/06/kansas_guard_troops/ (accessed 1 August 2007).
- Nagl, John A. *Learning to Eat Soup with a Knife: British and American Army Counterinsurgency Learning during the Malayan Emergency and the Vietnam War*. Westport, CT: Praeger, 2002.
- National Public Radio online. “Malcolm Davis discusses the non-lethal weapon used by the Israeli Army to disperse a Palestinian crowd using sound waves.” All Things Considered. <http://proquest.umi.com/pqdweb?did=853298511&Fmt=3&clientId=417&RQT=309&VName=PQD&cfc=1> (accessed 5 September 2007).
- North Atlantic Treaty Organization. “NATO Press Statement – October 13, 1999.” NATO. <http://www.nato.int/docu/pr/1999/p991013e.htm> (accessed 9 June 2007).
- Norton, Robert. Telephone conversation with the author, July 15, 2007.
- Nutley, Erik L. “Non-lethal Weapons: Setting Our Phasers to Stun? Potential Strategic Blessings and Curses of Non-Lethal Weapons on the Battlefield.” *Center for Strategy and Technology, Air War College, Air University* (Occasional Paper 34, August 2003, 2003). <http://www.au.af.mil/au/awc/awcgate/cst/csatsat34.pdf> (accessed 29 July 2007).
- Organization for African Unity. “Peace Support Operations: A Working Draft Manual for African Military Practitioners.” *DWM 1-2000*, February.
- PBS Online NewsHour. “Under Armored.” A NewsHour with Jim Lehrer Transcript. http://www.pbs.org/newshour/bb/military/july-dec04/armor_12-9.html (accessed 12 August 2007).
- PBS Online NewsHour Extra. “The Powell Doctrine: Background, Application and Critical Analysis.” A NewsHour with Jim Lehrer Special for Students. <http://www.pbs.org/newshour/extra/teachers/lessonplans/iraq/powelldoctrine.html> (accessed 2 August 2007).
- Perlez, Jane. “Unpalatable U.S. Options.” *New York Times*, 23 March 1999.

- Powell, Colin L. "U.S. Forces: Challenges Ahead." *Foreign Affairs*, Vol. 71, Issue 5 (1992): 32-54.
- Rappert, Brian. *Non-Lethal Weapons as Legitimizing Forces?* London: Frank Cass, 2003.
- Ricks, Thomas E. *Fiasco : The American Military Adventure in Iraq*. New York: Penguin Press, 2006.
- Sautenet, Vincent. "Legal Issues Concerning Military Use of Non-lethal Weapons." *Murdoch University Electronic Journal of Law*, Volume 7, Number 2, (June 2000). http://www.murdoch.edu.au/elaw/issues/v7n2/sautenet72_text.html (accessed 30 August 2007).
- Schindler, Dietrich and Toman, Jiri. *The Laws of Armed Conflicts: A Collection of Conventions, Resolutions and Other Documents*. Dordrecht, The Netherlands: Martinus Nijhoff, 1988.
- Siniscalchi, Joseph. "Non-Lethal Technologies Implications for Military Strategy." *Center for Strategy and Technology, Air War College, Air University* (Occasional Paper No. 3, 1998).
- Stars and Stripes*. "U.S. seeks to reduce civilian deaths at Iraq checkpoints." Stars and Stripes Mideast Edition. <http://stripes.com/article.asp?section=104&article=34944&archive=true> (accessed 5 September 2007).
- Swenson, Kevin. "Joint Non-Lethal Weapons Program Update to 2003 Joint Service Small Arms Systems Section." Presentation to the Annual Symposium. [http://www.dtic.mil/ndia/2003smallarms/swen.ppt#672,4,JNLWP Budget \(RDT&E Funding - PE 63851M\)](http://www.dtic.mil/ndia/2003smallarms/swen.ppt#672,4,JNLWP Budget (RDT&E Funding - PE 63851M)) (accessed 15 December 2006).
- The American Journal of Bioethics*. "Medical Ethics and Non-Lethal Weapons." Bioethics.net. http://bioethics.net/journal/j_articles.php?aid=622 (accessed 3 August 2007).
- The Boston Globe*, "Q&A with General David Petraeus," National News. http://www.boston.com/news/nation/washington/articles/2007/09/07/qa_with_general_david_petraeus/?page=4 (accessed 13 September 2007).
- The Christian Science Monitor*. "Who Counts the Casualties?" Global Issues. <http://www.csmonitor.com/2004/0331/p15s01-wogi.html> (accessed 3 August 2007).
- The Moscow News*. "Nord-Ost Tragedy Goes on." The Moscow News Weekly. <http://english.mn.ru/english/issue.php?2004-41-2> (accessed 21 November 2006).

- The New York Times*. "What 1.2 Trillion Dollars Can Buy." Business.
<http://www.nytimes.com/2007/01/17/business/17leonhardt.html?ex=1326690000&en=7f221bfce7a6408c&ei=5090%23secondParagraph> (accessed 7 September 2007).
- Tzu, Sun. *The Art of War*. Translated by Thomas Cleary. London: Shambhala Publications Inc, 2005.
- United States Army. *Field Manual 3-19.5, Civil Disturbance Operations*. Washington, D.C.: Department of the Army, April 2005.
- . *Field Manual 3-22.40, Tactical Employment of Nonlethal Weapons*. Washington, D.C.: Department of the Army, January 2003.
- . *Field Manual 19-15, Civil Disturbances*. Washington, D.C.: Department of the Army, 25 November 1985.
- . *Field Manual 3-24, Counterinsurgency*. Washington, D.C.: Department of the Army, 15 December 2006.
- . *Field Manual 90-40, Multiservice Procedures for the Tactical Employment of Nonlethal Weapons*. Washington, D.C.: Department of the Army, October 1998.
- . *Training and Doctrine Command Pamphlet 525-73, Concept For Nonlethal Capabilities in Army Operations, Vol. C1*. Fort Monroe, Virginia: Department of the Army, Training and Doctrine Command, 1 December 1996.
- United States Department of Defense News Release. "DoD Announces Policy on Blinding Lasers." DefenseLink.
<http://www.defenselink.mil/releases/release.aspx?releaseid=608> (accessed 1 August 2007).
- . "Rumsfeld Describes Changing Face of War." DefenseLink.
<http://www.defenselink.mil/news/newsarticle.aspx?id=31577> (accessed 2 August 2007).
- United States Federal News Service. "Royal Marines Teach Non-Lethal Crowd Control for 2007 World Cup of Cricket." Kingston, Jamaica.
<https://www.jnlwp.com/Resources/Articles/RoyalMarines.htm> (accessed 5 September, 2007).
- United States Joint Forces Command. "Doctrinal Implications of Low Collateral Damage Capabilities." *The Joint Warfighter Center Joint Doctrine Series, Pamphlet 2* (January 27, 2003). http://www.dtic.mil/doctrine/jel/other_pubs/jwfc pam2.pdf (accessed 16 June 2007).
- White House. *National Security Strategy of the United States of America*. Washington, D.C., White House, 2006.

White House. "Joint Statement by President Bush, Prime Minister Blair on Iraq's Future."
Press Release, 8 April 2003.
<http://www.whitehouse.gov/news/releases/2003/04/20030408-1.html> (accessed 7
July 2007).

Whitney, Craig R. and Schmitt, Eric. "NATO Had Signs Its Strategy Would Fail in
Kosovo." *New York Times*, 1 April 1999.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California
3. Professor Robert McNab
Naval Postgraduate School
Monterey, California
4. Professor Karen Guttieri
Naval Postgraduate School
Monterey, California
5. CAPT Timothy J. Doorey, USN
Naval Postgraduate School
Monterey, California
6. CAPT Scott Jasper, USN (Ret.)
Naval Postgraduate School
Monterey, California
7. Professor Sophal Ear
Naval Postgraduate School
Monterey, California
8. Professor Kalev Sepp
Naval Postgraduate School
Monterey, California