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U.S. Military Use of Non-Lethal Weapons: Reality vs Perceptions

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U.S. MILITARY USE OF NON-LETHAL WEAPONS: REALITY VS PERCEPTIONS

Susan D. LeVine¹ & Joseph A. Rutigliano, Jr.²

On 31 March 2003, U.S. warfighters manned a checkpoint near Najaf, Iraq, mindful that a suicide bomber had just killed four U.S. soldiers at another Iraqi checkpoint. When a van failed to heed verbal warnings to stop, they used their only other option. They fired on the van, killing seven women and children. While these actions may have been lawful, these types of situations present U.S. forces with horrific moral dilemmas. U.S. forces require alternatives to simply shouting or shooting. Non-lethal weapons fill gaps between verbal warnings and lethal force. They have been urgently needed and used by U.S. forces in Somalia, Kosovo, Iraq, Afghanistan, and Haiti. Non-lethal weapons have saved civilian lives, as one battalion commander in Iraq noted -- and also saved the lives of US warfighters. The need for non-lethal weapons grows as warfare and disasters increasingly occur in population centers, as well as, at sea, as small boats become the asymmetric weapon of choice.

Since 1996, the U.S. Department of Defense has developed and fielded non-lethal weapons. Non-lethal weapons are “developed and used with the intent to minimize the probability of producing fatalities, significant or permanent injuries.” This intent is supported by an unequalled effort focused on explicit user needs and a thorough understanding of the human effects of non-lethal weapons

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employment. DoD policy also states that non-lethal weapons, “are not intended to, eliminate risk of those actions entirely,” meaning that non-lethal weapons do not come with a 100% guarantee of no injury or death. Additionally, non-lethal weapons undergo extensive legal review to ensure compliance with U.S. domestic law and international legal obligations, including the law of war.

Yet, despite their need, underlying good intentions and lawfulness, and rigorous human effects analyses, non-lethal weapons – and associated technologies that are used to make them – continue to face objections and misperceptions, just like other transformative innovations. The reality, though, is that US warfighters, who repeatedly face life-and-death situations in a complex operating environment, want and need non-lethal weapons.

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“Getting a new idea adopted, even when it has obvious advantages, is difficult”

—*Everett M. Rogers, Diffusion of Innovations*³

3. EVERETT M. ROGERS, *DIFFUSION OF INNOVATIONS* 1 (2003).

I. INTRODUCTION

On 31 March 2003, U.S. warfighters manned a checkpoint near Najaf, Iraq, mindful that a suicide bomber had just killed four U.S. soldiers at another Iraqi checkpoint. When a van failed to heed verbal warnings to stop, they used their only other option. They fired on the van, killing seven women and children.⁴ Such incidents continued, with US warfighters unable to tell if an advancing driver was a suicide bomber, or an innocent civilian fleeing danger or unable to understand the signs. But, checkpoint casualties eventually declined with warfighters' use of non-lethal systems, like dazzling lasers for warning and vehicle stopping devices.⁵

Non-lethal weapons fill gaps between verbal warnings and lethal force. They are often urgently needed by U.S. forces, and since 1996, the U.S. Department of Defense (DoD) Non-Lethal Weapons program has helped meet those needs.⁶ According to DoD policy, these non-lethal weapons are “developed and used with the *intent* to minimize the probability of producing fatalities, significant or permanent injuries,” while recognizing they, “are not intended to, eliminate risk of those actions entirely.”⁷ Moreover, non-lethal weapons are developed and used in compliance with U.S. laws and treaties.⁸ Yet, despite their growing need, the good intentions behind their development, and their lawfulness, non-lethal weapons continue to face objections and misperceptions.

This article will address the growing operational necessity for non-lethal weapons, the specific intent behind their development, *e.g.*, the minimization of civilian casualties, and the legal review process to which all non-lethal weapons are subject. Finally, this article will address common misperceptions of the development and use of non-lethal weapons in the hope that these misperceptions may be corrected and allow interested readers to understand that the intent behind non-lethal weapons is to put more humane alternatives in the

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4. Athalie Matthews, *Civilians Killed by US Forces Amid Suicide Fears*, GUARDIAN (Mar. 31, 2003), <http://www.theguardian.com/world/2003/apr/01/iraq>.
 5. Greg Jaffe, *U.S. Curbs Iraqi Civilian Deaths In Checkpoint, Convoy Incidents*, WALL ST. J. (June 6, 2006 12:01 AM), <http://online.wsj.com/articles/SB114955863297172189>.
 6. *History*, JOINT NON-LETHAL WEAPONS PROGRAM, <http://jnlwp.defense.gov/About/History.aspx> (last visited Mar. 17, 2015).
 7. DoD Executive Agent for Non-Lethal Weapons (NLW), and NLW Policy, DoD Directive 3000.03E (Apr. 25, 2013).
 8. *Non-Lethal Weapons FAQs*, JOINT NON-LETHAL WEAPONS PROGRAM, <http://jnlwp.defense.gov/About/FrequentlyAskedQuestions/NonLethalWeaponsFAQs.aspx> (last visited Mar. 17, 2015).

hands of our warfighters rather than leaving them with the stark choice between “shouting and shooting.”

II. GROWING OPERATIONAL NECESSITY

A. Somalia—the Prologue

DoD’s nonlethal weapons program grew out of the tactical needs of the U.S. operations in Somalia, between 1992 and 1995. Here, conflict and chaos occurred amongst the people—a change in the operational experience for Cold War-equipped forces, and a harbinger of things to come. With only verbal warnings and lethal force, U.S. forces were unable to stop the people from throwing rocks and Molotov cocktails,⁹ openly looting military equipment,¹⁰ and storming food trucks.¹¹ Somalis knew U.S. forces only used lethal force for self-defense.

But, when self-defense was warranted, U.S. forces often faced horrific moral dilemmas. In the battle of Mogadishu, on 3–4 October 1993, Somali children walked down the street, pointing out U.S. Army Rangers’ positions to a hidden shooter.¹² U.S. forces also faced a Somali gunman completely covered by civilians; he lay prone between two kneeling women and had four children sitting on him.¹³ While these civilians forfeited their protection against direct attack under the law because of their willful actions, U.S. service members should have more alternatives available than resorting to lethal force.

It is legal to engage civilians who are directly participating in hostilities.¹⁴ However, “[k]illing these women and children did not

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9. ROBERT F. BAUMANN & LAWRENCE A. YATES WITH VERSALLE F. WASHINGTON, “MY CLAN AGAINST THE WORLD” US AND COALITION FORCES IN SOMALIA 1992-1994, 83 (2003). (“On 24 February, shortly after sunrise, Aided’s followers began demonstrating at the US embassy compound and at other locations within his sectors of Mogadishu. The crowds threw rocks and Molotov cocktails, burned tires, and established barricades at various locations.”).
 10. *Id.* at 208 (“[G]roups of Somalis, driven by poverty, might mob foreign soldiers, making off with anything of value.”).
 11. Edward Liszka & Dennis B. Herbert, *Non-Lethal Capabilities Are Now Viable Option in a Fast Changing Landscape*, NAT’L DEF., Dec. 1997, at 17–18 (“In Somalia, Marines were confronted by hostile warlords using women and children as shields. Hordes of Somalis stormed trucks loaded with food despite verbal warnings and armed presence.”).
 12. BAUMANN ET AL., *supra* note 7, at 209 (“During the battle of 3-4 October, for example, Aided’s militiamen used what was for them a traditional tactic of employing women and children to shield gunmen and to identify the position of US troops.”).
 13. MARK BOWDEN, *BLACKHAWK DOWN* 42–43, 46 (1999).
 14. PROGRAM ON HUMANITARIAN POL’Y & CONFLICT RES., *IHL AND CIVILIAN PARTICIPATION IN HOSTILITIES IN THE OPT 3* (2007).

come easily to American soldiers, but in the effort to stay alive, kill them they did, and at close range,” wrote Robert F. Baumann, Lawrence A. Yates, and Versalle F. Washington in the Army study, *“My Clan Against the World”—US and Coalition Forces in Somalia 1992-1994*.¹⁵

In preparing for the 1995 U.N. withdrawal from Somalia, U.S. Marines adopted non-lethal weapons. Marines saw them as helping minimize civilian casualties, while countering looters and rioters, who sought credit for “driving the Americans back into the sea.”¹⁶ Marine reservists, who used them in law enforcement, trained Marines to use **oleoresin capsicum “pepper” spray; non-lethal shotgun rounds; non-lethal grenades projecting small rubber balls; road spikes or “caltrops”;** and other devices. They were seen as force options, in addition to lethal force, but were not intended to replace the use of lethal force.¹⁷

These non-lethal weapons deterred hostile crowds. While they had limited use in the withdrawal, Marines communicated their capabilities to the Somali population in advance. The U.N. withdrew from Somalia smoothly and without casualties.¹⁸ Afterwards, task force commander, Lieutenant Gen. Anthony Zinni, USMC, reported, “Our experience in Somalia with non-lethal weapons offered ample testimony to the tremendous flexibility they offer to warriors on the field of battle.”¹⁹

Despite being well received by many users, non-lethal weapons were misperceived by others. Varying critics saw them as unworkable,

15. See BAUMANN ET AL., *supra* note 7, at 209.

16. Stanton Coerr, *For Those in Harm's Way*, PROCEEDINGS, April 2002, at 42-43.

17. NICK LEWER & STEPHEN SCHOFIELD, NONLETHAL WEAPONS: A FATAL ATTRACTION? 68-69 (1997).

18. See Lt. Col. James C. Duncan, *A Primer on the Employment of Non-Lethal Weapons*, 45 NAVAL L. REV. 1, 3 (1998).

19. RICHARD L. SCOTT, CONFLICT WITHOUT CASUALTIES: NONLETHAL WEAPONS IN IRREGULAR WARFARE 6-7 (2007) (“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. 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 shotguns that fired pepper sprays, stinger grenades, flash bangs, and sticky foam, as well as caltrops to supplement various barriers at night. In the end, not a single shot was fired and all troops and equipment were withdrawn without suffering a Task Force casualty.”).

unethical, and eroding the warrior ethos²⁰—the first of many misperceptions that were to follow.

But, the strongest supporters were warriors who knew war's moral dilemmas, particularly when lethal force was the only option. Referring to non-lethal weapons, then-Commandant of the Marine Corps, Gen. Charles Krulak, wrote in 1995, "[t]heir use better enables us to respond proportionately and with greater flexibility to the wide range of threats we can expect to face today and in the future."²¹

More emphatic was Gen. John J. Sheehan, USMC, then-Supreme Allied Commander Atlantic and Commander, U.S. Atlantic Command: "This nation should no longer tolerate dedicated, professional troops equipped with the wrong tools for new, more complex missions....Non-lethal weapons must be part of today's tool kit."²²

B. You Can't Kill Your Way to Victory—The Need for Non-Lethals Expands

In 1996, the Non-Lethal Weapons Program was established, with Gen. Krulak readily accepting executive agent responsibilities. DoD issued policy noting that non-lethal weapons, "should enhance the capability of U.S. Forces to...take military action in situations where use of lethal force is not the preferred option." Additionally, the policy stated that "The availability of non-lethal weapons shall not limit a commander's inherent authority and obligation to use all necessary means available and to take all appropriate action in self-defense."²³

It was fortuitous. In the world ahead, U.S. forces' need for non-lethal weapons would increase significantly and their use would expand in scope as illustrated below:

- Sevce, Kosovo: A small number of U.S. forces fired non-lethal munitions, sponge grenades and stinger rounds, to stop a much larger, rock-throwing crowd.²⁴
- Al Kut, Iraq: In a city of 300,000, a Marine infantry battalion used non-lethal weapons almost daily to control crowds, often angry due to late fuel trucks. Eventually, just the breakout of

20. NICK LEWER & STEPHEN SCHOFIELD, NONLETHAL WEAPONS: A FATAL ATTRACTION? 69-71 (1997).

21. *Id.* at 71.

22. LT. COL. ERIK L. NUTLEY, NON-LETHAL WEAPONS: SETTING OUR PHASERS ON STUN? POTENTIAL STRATEGIC BLESSINGS AND COURSES OF NON-LETHAL WEAPONS ON THE BATTLEFIELD 8 (2003).

23. Policy for Non-Lethal Weapons, DoD Directive 3000.3 (Jul. 9, 1996).

24. Eric Adams, *Shoot to Not Kill*, POPULAR SCIENCE, May 2003, at 90.

the OC, or pepper spray cylinder, caused crowds to disperse. “Many Iraqi lives were saved as a direct result of 2/8 [2d Battalion, 8th Marine Regiment] employment of NLW,” stated the battalion commander, Col. Royal Mortenson.²⁵

- Afghanistan: U.S. forces use dazzling lasers to deter rock throwing locals from damaging vehicles or injuring troops; military convoys used non-lethal lasers to alert civilian vehicles and prevent collisions and hazards, thus saving lives (See YouTube’s Non-lethal GLARE laser dazzler in Afghanistan).²⁶

- Haiti: At a checkpoint, U.S. forces used a vehicle-stopping net with spikes to stop a fleeing car. This vehicle stopping net also was used in Iraq and Afghanistan.²⁷

- Guantanamo, Cuba: U.S. forces used OC, or pepper spray, to control a detainee disturbance in 2006, as well as, non-lethal munitions, to disperse a rock-throwing crowd in 2013.²⁸

In 2011, then-Assistant Commandant of the Marine Corps, Gen. Joseph Dunford, stated, the “demand for non-lethal weapons exceeds the inventory.”²⁹ They had become critical in the counterinsurgency campaign in Afghanistan. “Counterinsurgents cannot succeed if they harm the people they are striving to protect,” stated International Security Assistance Force Commander General David Petraeus, who directed subordinates to identify their top ten non-lethal weapons.³⁰

25. See Interview with Col. Royal Mortenson, U.S. Marine Corps, in Quantico, Va. (Aug. 17, 2005) (on file with author).

26. Rotifers, *Non-Lethal GLARE Laser Dazzler in Afghanistan*, YOUTUBE (Apr. 2, 2008), https://www.youtube.com/watch?v=mD_ciCZJ7q0.

27. *Police, Camera, Zapper: A futuristic gadget which disables suspect vehicles with radio waves could soon be used by police in car chases. It's their latest weapon in safely ending pursuit*, BBC NEWS (Jul. 14, 2004), http://news.bbc.co.uk/2/hi/uk_news/magazine/3890127.stm.

28. Michael Isikoff, *'Non-lethal Round' Fired at Gitmo Detainees in Soccer Field Incident, US military Confirms*, NBC NEWS (Mar. 7, 2013), http://investigations.nbcnews.com/_news/2013/03/07/17228617-non-lethal-round-fired-at-gitmo-detainees-in-soccer-field-incident-us-military-confirms.

29. James K. Sanborn, *Dunford: Marines Will Continue to Be Needed*, MARINE CORPS TIMES (Apr. 14, 2011), <http://www.marinecorpstimes.com/article/20110414/NEWS/104140324/Dunford-Marines-will-continue-needed>.

30. Heather Maher, *U.S. General Cites 'Significant' Progress In Afghanistan, But Calls Gains 'Fragile'*, RADIO FREE EUR. RADIO LIBERTY (Oct. 25, 2014), http://www.rferl.org/content/petraeus_fragile_success_afghanistan/2339325.html; Sjeff Orbons, *Are Non-Lethal Weapons a Viable Military Option to Strengthen the Hearts and Minds Approach in Afghanistan?*, 28 DEF. & SEC. ANALYSIS 114, 115 (2008) (“There is a need, therefore, for

U.S. forces are not the only ones that seek to minimize casualties in operations. Coalition partners and allies seek to do the same. Increasingly, US forces have helped build non-lethal capabilities with the forces of such partner nations as Bulgaria, Czech Republic, Croatia, Mongolia, Philippines, Romania, and more.³¹

C. Future—The Needs Grow

In the aftermath of the 2010 Haiti earthquake, non-lethal weapons were used when riots occurred at food distribution sites.³² They are essential in dealing with a populace that becomes desperate after natural disasters, which occur five times as often as they did in the 1970s, according to a 2014 UN report, and predicted to increase in frequency and severity.³³

War among the people—irregular warfare—continues, with disturbing trends, demanding non-lethal weapons. U.S. forces have

adequate training and the means to stop a vehicle, without having to open fire. Petraeus called for novel and effective ways to neutralise such a threat without having to use lethal force. In doing so, he also encouraged the use of non-lethal weapons (NLWs) and asked US force planners to identify their top 10 NLWs.”).

31. See, Cpl. Erik Estrada, *NOLES 2014 Comes to a Close*, DEF. VIDEO & IMAGERY DISTRIBUTION SYS. (Aug. 19, 2014), http://www.dvidshub.net/news/139768/noles-2014-comes-close#.VExDY_nF-Sq; Donna Miles, *Marines Lead Multinational Nonlethal Weapons Training*, DEP'T DEF. NEWS (Aug. 27, 2013), <http://www.defense.gov/news/newsarticle.aspx?id=120680>; Charlie Coon, *Troops Learn Nonlethal Crowd Control Techniques*, STARS & STRIPES (Jun. 16, 2006), <http://www.stripes.com/news/troops-learn-nonlethal-crowd-control-techniques-1.50400>.
32. Lt. Col. John N. Ohlweiler, *Building the Airplane While in Flight: International and Military Law Challenges in Operation Unified Response*, ARMY LAW., Jan. 2011 at 17,18, 20; *Services Hold Integrated Concept Team Meetings*, JOINT NON-LETHAL WEAPONS PROGRAM NEWSLETTER (Joint Non-Lethal Weapons Directorate, Quantico, VA), Nov. 2010, at 7 (“The U.S. Army Integrated Concept Team met June 29-30 in St. Charles, Mo. Attendees received updates from the Sustainment Center of Excellence, which included a discussion of the non-lethal weapons that were successfully used during Haiti relief operations, as well as briefs on various non-lethal weapons programs and efforts”).
33. See, e.g., Suzanne Goldenberg, *Eight Ways Climate Change is Making the World More Dangerous*, GUARDIAN (Jul. 14, 2014), <http://www.theguardian.com/environment/blog/2014/jul/14/8-charts-climate-change-world-more-dangerous?commentpage=2>; *To the Brink: Climate Change Will Increase Frequency and Severity of Disasters, Stress Food and Energy Productions in South Asia*, WORLD BANK (Jul. 24, 2013), <http://www.worldbank.org/en/news/feature/2013/06/24/climate-change-natural-disasters-stress-food-energy-production-south-asia>.

faced human shields used by enemies in the World War II battle of Okinawa,³⁴ Vietnam, Beirut,³⁵ Afghanistan, and Iraq. In these instances innocent men, women, and children were killed—and U.S. veterans lived with their ghosts, some suffering Post Traumatic Stress.³⁶

Amnon Rubinstein and Yaniv Roznei recently wrote that “[t]he use of human shields has dramatically escalated.”³⁷ *Reportedly, human shields have been used in Libya,³⁸ Syria,³⁹ Ukraine,⁴⁰ Yemen,⁴¹ and elsewhere.* “...human shields during hostilities has become one of the major problems facing democracies in contemporary armed conflicts.”⁴²

Notably, the use of human shields escalated as media coverage and the media cycle increased. In World War II, nine reporters were with Marines at the 1943 Tarawa assault.⁴³ In the July-August 2014

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34. LAURA HOMAN LACEY, *STAY OFF THE SKYLINE: THE SIXTH MARINE DIVISION ON OKINAWA* 67-68 (2005).
 35. Maj. Robert T. Jordan (USMC (Ret.)), Letter to the Editor, *MARINE CORPS GAZ.*, Feb. 2008, at 6–7.
 36. Charlotte Tucker, *U.S. Veterans Struggle with Pain, Stigma of Post-Traumatic Stress: New Research Aimed at Mental Health*, NATION'S HEALTH (Apr. 2012), <http://thenationshealth.aphapublications.org/content/42/3/1.1.full> (“Iraq in 2003 was a nightmare C.J. Grisham could not wake up from. It was sustained, almost daily combat for months, and Grisham, a first sergeant in the Army, said he could feel the strain. Once, he said he was forced to shoot a person being used as a human shield.”).
 37. Amnon Rubinstein & Yaniv Roznai, *Symposium: Defense Policy: Human Shields in Modern Armed Conflicts: The Need for a Proportionate Proportionality*, 22 *STAN. L. & POL'Y REV.* 93, 94 (2011).
 38. Chris Stephen, *Gaddafi Forces Using Human Shields, Libya Rebels Claim*, *GUARDIAN* (Aug. 28, 2011), <http://www.theguardian.com/world/2011/aug/28/gaddafi-forces-human-shields-libya>.
 39. *U.N. Accuses Syria of Using Children as Human Shields*, *CBS NEWS* (Jun. 12, 2012, 9:28 AM) <http://www.cbsnews.com/news/un-accuses-syria-of-using-children-as-human-shields-kofi-annan-urges-nations-to-twist-arms/>.
 40. *See Civilians in Slovyansk, Ukraine, Allegedly Used as Human Shields*, *NBC NEWS* (May 5, 2014), <http://www.nbcnews.com/storyline/ukraine-crisis/civilians-slovyansk-ukraine-allegedly-used-human-shields-n97156>.
 41. *Yemen Government: Rebels Use Civilians as Human Shields*, *CNN* (Oct. 13, 2009, 7:30 AM), http://www.cnn.com/2009/WORLD/meast/10/13/yemen.human.shields/index.html?_s=PM:WORLD.
 42. Rubinstein & Roznai, *supra* note 35, at 94.
 43. SEAN J.A. EDWARDS, *MARS UNMASKED: THE CHANGING FACE OF URBAN OPERATIONS* 40 n.5 (2000), http://www.rand.org/pubs/monograph_reports/MR1173.html (“Charles Rick notes that only nine civilian war correspondents were present on the island of Tarlac in the South Pacific in 1943...”).

conflict in Gaza, nearly 600 media units were in Israel and Palestine.⁴⁴ Moreover, social media rapidly transmits globally. In such environments, warring groups seek to exploit civilian casualties to build support for their side and opposition against the other. These groups hide among the civilian population putting the entire population at risk. While those civilians who voluntarily act as human shields may be considered to be directly participating in the hostilities thereby losing their protection against direct attack, the use of involuntary human shields creates quite the quandary for the warfighter.⁴⁵

A solution was advocated by Maj. Robert T. Jordan, USMC(Ret), recounting his Vietnam and Beirut experiences in the *Marine Corps Gazette*:

“...impacting rockets drove the NVA (North Vietnamese Army) toward our position north of the Vu Gia River. Masking their movement were scores of civilians being driven in front of them. As the crowd neared our column along the river, artillery impacted to their rear, and our machine gunners launched bursts of fire over the civilians’ heads, hoping to impact among the NVA. Panicking civilians scattered, but some fell as the NVA opened up on their rear. Others ran into our machine gun fire...We made no friends that day. How different it might have been if we had non-lethal alternatives. I witnessed scores of similar incidents in Vietnam and later in Beirut where our options were either deadly force or to disengage. It is time that our military planners, logisticians, and tactical commanders add non-lethal alternatives to our war chests.”⁴⁶

The need for non-lethal weapons is not restricted to engagements on land; the need for non-lethal weapons is also increasing for the maritime environment. Small boats are the asymmetric weapon of choice, indistinguishable in heavily trafficked littorals. They previously have been used for:

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44. Nati Tucker, *Gaza War Proves Big Draw to World Media*, HAARETZ (Aug. 6, 2014), <http://www.haaretz.com/news/diplomacy-defense/israel-gaza-conflict-2014/.premium-1.609064> (“[c]lose to 600 foreign journalists covering Gaza conflict, two thirds of which don’t report from the Israeli side, says director of Israel’s Government Press Office.”).
45. See generally Michael N. Schmitt, *Human Shields In International Humanitarian Law*, 47 COLUM. J. TRANSNAT’L L. 292 (2009) (discussing different theories of voluntary and involuntary human shields and the issue it presents to humanitarian law).
46. See Jordan, *supra* note 33.

- Suicide bombings against ships, like the *USS Cole* in 2000 and French *Limburg* tanker in 2002⁴⁷
- Bombings/attacks against infrastructure, as done by fishing dhows on Iraqi oil terminals in 2004⁴⁸
- Terrorist landings as occurred in the 2008 Mumbai attack⁴⁹
- Pirating larger vessels, like the *MV Maersk Alabama* in 2009⁵⁰

In ambiguous situations, the intent of unknown small boat operators may be determined with the aid of non-lethal capabilities, ranging from long range acoustic devices that provide a means to transmit hailing and warning messages to “flash bang” munitions that provide visual effects. Such non-lethal capabilities can help determine whether the apparent threatening actions of small boat operators are actually intended to cause harm, or are being done for completely other reasons, and thereby prevent a situation from developing into one where lethal force is used.

Presently, U.S. vessels use acoustic hailers and dazzling lasers to warn and instruct approaching small boats. In the future, these capabilities could be augmented with systems that project heat-producing, millimeter wave energy to repel small boat operators posing a threat to U.S. forces as was demonstrated in 2013.⁵¹

These and other non-lethal capabilities could aid protection of shore-based facilities and infrastructure. Notably, unmanned surface vessels, equipped with acoustic hailers, dazzling lasers, and flash-bang

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47. Raphael Perl & Ronald O'Rourke, *Terrorist Attack on USS Cole: Background and Issues for Congress*, NAVY DEP'T LIB. (Jan. 30, 2001), http://www.history.navy.mil/library/online/usscole_crsreport.htm/; *Yemen Says Tanker Blast Was Terrorism*, BBC NEWS (Oct. 16, 2002), http://news.bbc.co.uk/2/hi/middle_east/2334865.stm.
48. *Two Sailors Killed in Arabian Gulf Oil Terminal Attacks*, NAVY NEWS SERV. (Apr. 24, 2004, 6:21 PM), http://www.navy.mil/submit/display.asp?story_id=12977.
49. Joseph Tenaglia, *TDC Security Alert: Maritime Aspects of Mumbai Terrorist Attacks*, MAR. EXEC. (Dec. 4, 2008), <http://www.maritime-executive.com/article/tdc-security-alert-maritime-aspects-mumbai-terror-attacks>.
50. Mark Mazzetti & Sharon Otterman, *U.S. Captain Is Hostage of Pirates; Navy Ship Arrives*, N.Y. TIMES (Apr. 9, 2009), <http://www.nytimes.com/2009/04/09/world/africa/09pirates.html>.
51. Staff Sgt. Wesley Farnsworth, *Fort Eustis Participates in Non-Lethal Operational Demonstration*, U.S. MARINE CORPS NEWS (Sept. 17, 2013), <http://www.hqmc.marines.mil/News/NewsArticleDisplay/tabid/3488/Article/150140/fort-eustis-participates-in-non-lethal-maritime-operational-demonstration.aspx>.

munitions, could operate forward and respond to intruder vessels. This capability was demonstrated in 2012.⁵²

There is also growing need to non-lethally stop, search, and seize suspect vessels. Today, U.S. Coast Guard vessels use non-lethal ammunition, as well as, propeller-entangling nets to stop high-speed vessels.⁵³ Navy boarding teams use non-lethal and lethal weapons when searching suspect vessels.⁵⁴ In the future, non-lethal capabilities will be needed to stop large, displacement hull vessels, suspected of illicit trafficking -- humans, drugs, and/or weapons -- as well as carrying weapons of mass destruction.

III. INTENT—AND UNEQUALLED EFFORT

DoD's non-lethal weapons are intended "to prevent the target from functioning" and "have relatively reversible effects on personnel or materiel," while also recognizing that the risk of fatalities and injuries cannot be eliminated entirely.⁵⁵ DoD's intent also is reflected in unequalled efforts to maximize the effectiveness of non-lethal weapons while minimizing their risk of significant injury or death. Central to these efforts are human effects studies, analysis, and independent reviews⁵⁶ and related efforts such as those in the following areas.

A. Determining the "Goalposts" for Effectiveness—Explicit User Needs

Non-lethal weapons "are explicitly designed and primarily employed to incapacitate targeted personnel or materiel immediately."⁵⁷ "Explicit design" is based on explicit user needs, defined by the tasks that users need to conduct the mission. For example, users may need a capability to non-lethally counter personnel, which could involve such tasks as denying access; moving or disabling personnel; or suppressing performance. Specific conditions

52. *Navy Equips Unmanned Boats with Non-Lethal Weapons for Fleet Experiment*, NAVY NEWS SERV. (Feb. 3, 2012), http://www.navy.mil/submit/display.asp?story_id=65164.

53. U.S. COAST GUARD, A HISTORY OF COAST GUARD AVIATION 14 (2008) https://www.uscg.mil/history/webaircraft/CGAviationHistory1994_2008.pdf.

54. NAVY NEWS SERV., *supra* note 50.

55. DoD Executive Agent for Non-Lethal Weapons (NLW), and NLW Policy, DoD Directive 3000.03E (Apr. 25, 2013).

56. Non-Lethal Weapons (NLW) Human Effects Characterization, DoD Directive 3200.19 (May 17, 2012).

57. *Id.*

and standards are also defined, for example, the range and duration of effects required.⁵⁸

Explicit needs are assessed against existing and emerging technologies and their human effects, and then evaluated for their potential to meet them. For example, the improved flash bang grenade may rate high for suppressing a specified behavior, while a blunt impact, shotgun round may have only medium potential.

B. Characterizing Human Effects—How Close They Get to the Goalposts

This characterization is needed to determine if a non-lethal weapon is likely to work as intended, both in terms of effectiveness and minimizing the risk of significant injury. Thus, human effects are characterized in non-lethal weapons development, as mandated by DoD policy.

Non-lethal weapons development progressively characterizes human effects, achieving prescribed “human effectiveness readiness levels.”⁵⁹ Generally, this progressive characterization occurs as outlined below:

- Cause-and-effect observed and postulated: These achieve human effects readiness levels 0-2. An example is the discovery and investigation of human effects associated with the Active Denial System, which repels individuals. In 1988, Air Force Research Lab personnel observed 94 GHz millimeter wave energy causing aversive responses. They postulated that the energy penetrated and heated skin, and stimulated nerve endings.⁶⁰

- Cause-and-effect confirmed; small animal models determined when effects do and do not occur; and risk of injury and effectiveness postulated for human population segments: These achieve human effects readiness levels 3-4. For example, in the 1990s, researchers found that rats avoided 94 GHz millimeter wave energy, and confirmed that energy was deposited in skin, rapidly heating and stimulating nerve endings. Researchers believed that by limiting exposures, thermal injuries could be avoided in humans.⁶¹

58. See generally SUSAN LEVINE, THE ACTIVE DENIAL SYSTEM: A REVOLUTIONARY, NON-LETHAL WEAPON FOR TODAY’S BATTLEFIELD (2009), <http://www.dtic.mil/dtic/tr/fulltext/u2/a501865.pdf> (advocating for further use of NLW in situations that present risk, whether or not they be combat situations).

59. See DoD Directive 3200.19, *supra* note 54.

60. LEVINE, *supra* note 56, at 6.

61. *Id.*

- Effects gradually assessed in humans or surrogates in lab and field: Achieves human effects readiness levels 5-7. In developing the Active Denial System in the late 1990s, volunteers were exposed to small spots of millimeter wave energy on their backs, in a lab, leading to larger exposures, under controlled conditions. In 2001, an Active Denial System prototype made back and frontal exposures on static volunteers at intended field ranges, repelling over 95 percent. In 2003, exposures were made on moving personnel in the field, repelling as well.⁶²

- Human or surrogate participation in realistic field or operational testing. This achieves human effects readiness levels 8-9. Since 2005, the Active Denial System has repelled volunteer personnel in field, urban, and maritime environments, totaling over 12,000 exposures.⁶³

C. Incorporating Human Effects Research into Systems Design

Characterizing a non-lethal weapon's human effects includes determining possible injuries, conditions of occurrence, and risk of injury margins. For example, research determined that Active Denial System exposures, longer than prescribed times, would cause thermal injuries, and specified those times, so they could be avoided. That information was incorporated into the system's design so that appropriate controls would minimize risk of overexposure. For the long range, large spot size capability developed under an Advanced Concept Technology Demonstration program,⁶⁴ the Active Denial System's risk of significant injury was determined to be 0.009-0.1 percent.

D. Conducting Independent Reviews

DoD guidance requires that non-lethal weapons human effects analysis be independently reviewed by a Human Effects Review Board "comprised of the DoD Health Effects Officer; members representing the Surgeon Generals of each Service (including the Medical Officer of the U.S. Marine Corps); and U.S. Special Operations Command, as applicable; and a safety representative from each Service and US Special Operations Command."⁶⁵

62. JOHN M. KENNY ET AL., A NARRATIVE SUMMARY AND INDEPENDENT ASSESSMENT OF THE ACTIVE DENIAL SYSTEM 21-22 (2008), http://jnlwp.defense.gov/Portals/50/Documents/Future_Non-Lethal_Weapons/HEAP.pdf.

63. LEVINE, *supra* note 56, at 6-7.

64. *Id.* at 3.

65. DoD Directive 3200.19, *supra* note 54.

IV. LEGAL AND NON-LETHAL

During Operation United Shield in Somalia, it was reported that as an armed mob of Somalis approached a U.S. Marine position, a Marine aimed a low-powered Saber 203 laser⁶⁶ at an individual in the center of the mob. Upon being “lit up” by the bright red light, the rest of the mob took notice and fled the area, leaving the man standing alone.⁶⁷

Subsequent to this incident, a nongovernmental organization claimed such lasers could blind, “were unnecessarily cruel...repugnant to the public conscience,” and should be banned.⁶⁸ This call supported the two-decade long effort by Sweden and the International Committee of the Red Cross to obtain a ban on blinding lasers. This effort culminated in the adoption by the States Parties to the Convention on Certain Conventional Weapons⁶⁹ of a blinding laser protocol in 1995.⁷⁰ The blinding laser protocol arguably banned a non-existent weapon,⁷¹ and would not have banned the Saber 203 laser used by the Marine in Somali. Notwithstanding, after dazzling lasers were deployed at checkpoints in Iraq and Afghanistan, other organizations claimed they too violated international law.⁷²

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66. U.S. AIR FORCE, FACT SHEET, PERSONNEL HALTING AND SIMULATION RESPONSE (PHASR) (Apr. 2006), <http://www.kirtland.af.mil/shared/media/document/AFD-070404-043.pdf> (“Lightweight, simple to operate, and easy to handle, Saber 203 could also be used as a laser designator. It could counter night vision devices. The system was used successfully in 1995 by U.S. Marines in Somalia during Operation United Shield.”).
67. JAMES ADAMS, THE NEXT WORLD WAR: COMPUTERS ARE THE WEAPONS AND THE FRONT LINE IS EVERYWHERE 142 (1998)
68. See HUM. RTS. WATCH, HUMAN RIGHTS WATCH ARMS PROJECT: U.S. BLINDING LASER WEAPONS REPORT (1995), <http://www.hrw.org/reports/1995/Us2.htm>.
69. 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, *opened for signature* April 10, 1981, 1342 U.N.T.S. 137 [hereinafter CCW Convention].
70. Protocol to the 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 of Oct. 10, 1980, *adopted* Oct. 13, 1995, T.I.A.S. No. 09-721.2 [hereinafter CCW Convention Protocol IV].
71. W. Hays Parks, *Conventional Weapons and Weapons Reviews*, 8 Y.B. INT’L HUMANITARIAN L. 55, 85 (2005).
72. *Military Under Fire for Planned Laser Purchase*, OTTAWA CITIZEN (Jul. 11, 2008), <http://www.canada.com/topics/news/national/story.html?id=677f248c-7329-4a9e-bb40-3117dda52169>.

Despite these claims of illegality, the use of dazzling lasers, as well as all DoD's non-lethal weapons, is lawful. This is ensured by an extensive legal review process that is required by DoD regulation,⁷³ and implementation by each Military Department.⁷⁴

These regulations require that all weapons, weapon systems, and ammunition undergo a legal review before procurement to ensure compliance with U.S. domestic law and our international legal obligations, including the law of war.⁷⁵ Program managers overseeing the development and procurement of all potential weapons or weapon systems are required to ensure that a legal review is conducted of such item before the award of the Engineering and Manufacturing Development contract and again before the award of the initial production contract. No weapon or weapon system may be acquired or fielded without this legal review.⁷⁶ The request for a legal review should include a description of the intended use of the weapon system, weapon specifications, and the results of any tests on the wounding effect, such as human effects testing.⁷⁷

The legal review must address three specific areas: whether the weapon or weapon system causes unnecessary suffering; whether the weapon or weapon system is discriminate in its effect; and whether a specific rule of law or treaty prohibits or otherwise restricts the use of the weapon or weapon system.⁷⁸ It is strongly recommended that in the early stages of development or procurement, potential weapons undergo a preliminary legal review to ensure its intended use is consistent with domestic and international law. Such reviews are

73. The Defense Acquisition System, DoD Directive 5000.01 (May 12, 2003).

74. See U.S. Army, Reg. 27-53, Review of Legality of Weapons Under International Law (1 Jan. 1979) [hereinafter AR 27-53]; U.S. Air Force, Instr. 51-402, Legal Reviews of Weapons and Cyber Capabilities (27 July 2011) [hereinafter AFI 51-402]; U.S. Navy, Sec'y of the Navy Instr. 5000.2E, Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System (1 Sept. 2011).

75. The "law of war" is defined as, "That part of international law that regulates the conduct of armed hostilities. It is often called the 'law of armed conflict.' The law of war encompasses all international law for the conduct of hostilities binding on the United States or its individual citizens, including treaties and international agreements to which the United States is a party, and applicable customary international law." See DoD Law of War Program, DoD Directive 2311.01E (Feb. 22, 2011).

76. Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System, SecNav Instruction 5000.2E 1 (Sept. 1, 2011).

77. *Id.*

78. *Id.*

intended to identify issues early, thus preventing costly remedies later.

Specific DoD policy on non-lethal weapons also requires non-lethal weapons to undergo the same legal review process.⁷⁹ Moreover, DoD policy notes the importance of the human effects testing in legal reviews, directing that “human effects assessment data is provided to the servicing legal office to support the legal review of non-lethal weapons required during the acquisition process.”⁸⁰

In addition to human effects testing, legal reviews take into account a non-lethal weapon’s technical functioning, operating parameters, and intended use. It is also understood that the term “non-lethal” is referring to the users’ intention, and that non-lethal weapons are not expected to have a zero probability of fatalities or permanent injuries.⁸¹

Additionally, legal reviews consider the differences between lethal and non-lethal weapons. Lethal weapons may lawfully destroy targets through blast, penetration, or fragmentation, or may kill or seriously injure enemy combatants or other persons posing a threat or potential threat to life or limb of U.S. forces. On the other hand, non-lethal weapons employ means other than gross physical destruction to prevent the target from functioning. Non-lethal weapons are intended to have relatively reversible effects on personnel or materiel.⁸² Non-lethal weapons are to be employed to, among other things, deter, discourage, delay, or prevent hostile actions; de-escalate situations to preclude lethal force;⁸³ and to reinforce deterrence and expand the range of options available to commanders.⁸⁴ As with lethal weapons, non-lethal weapons undergo the same analysis in the legal review process.⁸⁵

79. DoD Directive 3000.03E, *supra* note 53.

80. DoD Directive 3200.19, *supra* note 54.

81. DoD Directive 3000.3E, *supra* note 53.

82. *Id.*

83. *Id.*

84. *Id.*

85. SecNav Instruction 5000.2E, *supra* note 74 (defining “weapons” and “weapon systems” to include non-lethal weapons).

A. Unnecessary Suffering

Relevant treaty law for this principle is contained in the Hague Convention (IV) Respecting the Laws and Customs of War on Land of 18 October 1907, in particular, Article 23(e) of its Annexed Regulations.⁸⁶ Article 23(e) prohibits the employment of “arms, projectiles, or material calculated to cause unnecessary suffering.”⁸⁷

This prohibition against unnecessary suffering acknowledges that suffering to combatants is both lawful and expected, and may even include severe injury or death. While there is no accepted definition of the term, “unnecessary suffering,” the appropriate determination is whether the weapon’s employment in its normal expected use inevitably would cause injury, including death, that is manifestly disproportionate to the weapons stated purpose and the expected military advantage to be gained by the use.⁸⁸

“This balancing test cannot be conducted in isolation”⁸⁹ write US Army lawyers Richard B. Jackson and Jason Ray Hutchison in their article, *Lasers Are Lawful as Non-Lethal Weapons*.⁸⁹ “A weapon or munition’s effects must be weighed in light of comparable, lawful weapons or munitions in use on the modern battlefield.”⁹⁰

In weighing the need for stopping most vehicles at Iraqi and Afghan checkpoints, glare-producing lasers were seen as having more proportionate effects than lethal force, as indicated by U.S. Army Lt. Gen. Pete Chiarelli in a 19 May 2006, DoD news briefing:

[W]hen you consider the alternative, which is a bullet, I honestly believe we can use [lasers]; we can use them effectively. We can use them in ways that don’t necessarily even, quote, unquote, “light up” the individual, but provide a marker so individuals realize that they are approaching a danger point. And we will do everything possible to inform the Iraqi people of their use, so when they see them, they react appropriately.⁹¹

86. Hague Convention (IV), Respecting the Laws and Customs of War on Land, Oct. 18, 1907, 187 CTS 227, 1 Bevans 631 (hereinafter, for the Convention, “Hague IV,” for the Regulations, “Hague IV Regs”).

87. *Id.*, at art. 23(e).

88. Parks, *supra* note 69, at 140.

89. Richard B. Jackson & Jason Ray Hutchison, *Lasers Are Lawful as Non-Lethal Weapons*, ARMY LAW., Aug. 2006, at 17.

90. *Id.*

91. *Id.* at 12; *DoD News Briefing with Lt. Gen. Chiarelli from Iraq*, U.S. DEF. DEP’T (May 19, 2006), <http://www.defense.gov/Transcripts/Transcript.aspx?TranscriptID=252>.

By definition, most non-lethal weapons have no problem passing this part of the legal review test.

B. Discrimination

A fundamental principle of the law of war is that combatants and military objectives must be distinguished from noncombatants, civilians, and civilian objects. Only combatants and military objectives can be legitimately targeted.⁹² Indiscriminate or “blind” weapons are prohibited. Indiscriminate weapons are those that are as likely to hit innocent civilians and civilian objects, as well as, lawful military objectives.⁹³ “If a weapon cannot be controlled in such a manner that it is capable of being directed against a lawful target, then it fails the discriminate effects test,” wrote Jackson and Hutchison.⁹⁴ In the case of dazzling lasers at checkpoints, Jackson and Hutchison also wrote,

[U]se of the weapons facilitates discrimination of targets and prevention of unnecessary civilian casualties. Determining the potential threat of oncoming vehicles has proven extremely difficult, and current methods of arm waving and flare firing to warn approaching vehicle drivers have had limited success. The ... laser “dazzlers” will provide Soldiers the ability to communicate a visual signal to approaching vehicle driver’s to stay back while concurrently assisting in the Soldier’s determination of the driver’s intent.⁹⁵

Moreover, dazzling lasers are extremely discriminate in that they are “point-of-aim, point-of-impact” systems.

C. Specific Law or Treaty Prohibiting Use

All laws and treaties are reviewed for their applicability to non-lethal weapons. In the case of dazzling lasers, the relevant treaty is the *Convention on Certain Conventional Weapons Protocol IV on Blinding Laser Weapons*. Article 1 of Protocol IV, states, “[i]t is prohibited to employ laser weapons specifically designed, as their sole combat function or as one of their combat functions, to cause

92. Civilians who take a direct part in hostilities, or civilian objects used for a military purpose, may also be targeted. See Yoram Dinstein, *Distinction and Loss of Civilian Protection in International Armed Conflicts*, 84 INT’L LAW STUDS. 183 (2008).

93. See Parks, *supra* note 69, at 129; see also Hague IV Regs., *supra* note 84, at arts. 25-27; Geneva Convention Relative to the Protection of Civilian Persons in Time of War art. 27, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287.

94. Jackson & Hutchinson, *supra* note 87, at 17.

95. *Id.* at 18.

permanent blindness to unenhanced vision, that is to the naked eye or to the eye with corrective eyesight devices.”⁹⁶

Dazzling lasers are excluded from this definition because they cause at best, temporary blinding or a dazzling affect. They do not cause permanent blindness when used appropriately. According to Jackson and Hutchison, “None of the discussed laser systems were ‘specifically designed’ to cause permanent blindness, nor will standard circumstances of use inflict such injuries.”⁹⁷ Therefore, Protocol IV does not prohibit or restrict in any way the use of dazzling lasers for anti-personnel purposes.

This determination was supported by human effects testing and the intended uses of the dazzling lasers. Human effects were quantified in research and testing,⁹⁸ conducted by DoD laboratories. This included determining the conditions when these lasers were safe, and when they injured. The results informed the development of tactics and procedures for dazzling laser use at checkpoints, thus helping avoid eye injuries.⁹⁹

Once a legal review determines the legality of a non-lethal weapon, the weapon is then ready to be procured and fielded. It is important to note that the legal review does not address law of war issues related to targeting. These issues must be addressed at the time of employment, to be determined by the on-scene commander under the circumstances ruling at the time. Such issues are not determinative of the lawfulness of the weapon. The commander authorizing a weapon’s use must consider its characteristics, where civilians are present, in order to ensure consistency with mission rules of engagement and law of war proscriptions on directing attacks at civilians not taking a direct part in hostilities or who otherwise do not pose a threat to U.S. forces.¹⁰⁰

96. CCW Convention Protocol IV, *supra* note 68, art. 1.

97. Jackson & Hutchinson, *supra* note 87, at 18.

98. *Id.* at 15–16.

99. *Id.*

100. *See* Parks, *supra* note 69, at 141, n. 273; *see also id.* at 17.

V. MISPERCEPTIONS AND RESISTANCE—COMMON TO MANY INNOVATIONS

“If you got an innovative idea, and the majority does not pooh-poo it, then the odds are you must not have a very good idea,” said CNN founder Ted Turner.¹⁰¹ Many innovations go against conventional wisdom and existing order; non-lethal weapons are no exception. Despite demonstrated operational need, documented intent to minimize fatalities, unequalled effort to characterize human effects and risk of significant injury, and compliance with all applicable laws and treaties, DoD’s non-lethal weapons often face misperceptions as illustrated below:

• *The moniker “non-lethal” means zero percent chance of injury or death:* Defense Department policy explicitly states that non-lethal weapons are developed and used with the intent of minimizing the probability of producing fatalities or significant injuries. The policy also recognizes that non-lethal weapons are not intended to be risk free. The label “non-lethal” was chosen by the DoD to emphasize the intent of these capabilities. There are no guarantees with non-lethal weapons, rather they represent a dedicated effort to provide U.S. warfighters additional options when use of lethal force is not desired.¹⁰²

• *Non-lethal weapons can be used indiscriminately:* Although some may speculate on whether the principal of discrimination should not apply to the use of non-lethal weapons,¹⁰³ as the previous section in this article described, U.S. military use of non-lethal weapons must be in accordance with the law of war. Any non-lethal weapon fielded by the U.S. military will have completed legal review to ensure the

101. HAROLD EVANS ET AL., *THEY MADE AMERICA* 465 (2004).

102. See Joseph Siniscalchi, *Non-Lethal Technologies: Implications for Military Strategy* 2 (Ctr. for Strat. & Tech., Air War Coll., Occasional Paper No. 3, 1998) (clarifying that the term non-lethal does not mean there is no risk of death or permanent injury).

103. See Michael L. Gross, *The Second Lebanon War: The Question of Proportionality and the Prospect of Non-Lethal Warfare*, 7 J. MIL. ETHICS 1, 15-16 (2008) (“Unlike the use of ordinary weapons, non-lethal weapons deliberately target civilian noncombatants so that the harm they suffer is no longer incidental but intentional. Targeting civilians in this way requires that one subject the principle of noncombatant immunity to a ‘lesser evils’ test that compares a small amount of intentional harm with a greater level of non-intentional harm that comes from using high explosives. If the former is significantly less than the latter, then there are moral grounds to targeting civilian noncombatants with non-lethal weapons.”)

associated tactics, techniques, and procedures of its use will adhere to the principles of discrimination and proportionality.¹⁰⁴

•*Slippery slope to war*: Some have offered the opinion that the availability of non-lethal capabilities may increase the likelihood of war,¹⁰⁵ a hypothesis unsupported by data or real world events. In a 2013 speech to the National Defense University, President Obama stated a sentiment that has been expressed by many of his predecessors and other world leaders: “Alongside the decision to put our men and women in uniform in harm’s way, the decision to use force against individuals or groups—even against a sworn enemy of the United States—is the hardest thing I do as President.”¹⁰⁶ Rather, when use of U.S. military force is necessary, the availability of non-lethal capabilities in the warfighter’s toolkit provides additional options to support accomplishment of mission objectives while minimizing the probability of producing fatalities, significant or permanent injuries, or undesired damage to materiel or critical infrastructure.

•*Eroding warrior ethos and softening of U.S. forces*: The idea that non-lethal weapons will make U.S. forces “soft” or create a kinder, gentler force is also unsubstantiated. The trademark of the US military will always be a force trained and equipped with overwhelming firepower. The biggest users of non-lethal force—special operators, U.S. Army units, and Marines—have transitioned to lethal force when needed. Commenting on the Marines experience in Somalia, Colonel Mike Stanton said non-lethal weapons showed the United States was willing “to go the extra mile” to avoid killing; were not at odds with the Marines’ warrior ethos; concerns they would

104. The rule of proportionality requires that before conducting an attack on a lawful military objective in which civilians will be impacted, commanders analyze whether the expected incidental injury to civilians, including death, and/or damage to civilian objects is excessive in relation to the definite military advantage anticipated by the attack. See Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Additional Protocol I), art. 51(5)(b), 8 June 1977, 1125 U.N.T.S. 3. The United States is not a party to Additional Protocol I, but acknowledges this particular provision is consistent with U.S. military practice. See *Practice Related to Rule 97. Human Shields*, INT’L COMM. RED. CROSS, https://www.icrc.org/customary-ihl/eng/docs/v2_rul_rule97 (last visited Mar. 27, 2015).

105. COUNCIL ON FOR. REL., NON-LETHAL TECHNOLOGIES, MILITARY OPTIONS AND IMPLICATIONS 8 (1995).

106. Barak Obama, President of the United States, Remarks by the President at the National Defense University (May 23, 2013) (transcript available at <http://www.whitehouse.gov/the-press-office/2013/05/23/remarks-president-national-defense-university>).

make troops “soft” proved unfounded; and that Marines still readily used lethal force when needed.¹⁰⁷

• *Making warfare more lethal*: Some have opined that non-lethal weapons could make warfare more lethal, for example, by using an incapacitating agent to render the enemy unconscious, and then engaging them with lethal force.¹⁰⁸ But, this would be a violation of the Chemical Weapons Convention,¹⁰⁹ and the law of war prohibition against attacking personnel who have been rendered *hors de combat*, that is, persons who have been rendered unconscious or otherwise incapacitated by wounds, sickness, or shipwreck, such that they are no longer capable of fighting.¹¹⁰ Moreover, the reality is that non-lethal weapons are “explicitly designed and primarily employed to incapacitate targeted personnel or materiel immediately, while minimizing fatalities, permanent injury to personnel, and undesired damage to property in the target area or environment” with predictable and intended reversible effects, allowing the affected target to return to pre-engagement functionality.¹¹¹ Non-lethal weapons not only meet tactical and operational needs, but they also support our national interests, which includes “respect for universal

107. CHRISTOPHER COOK, *ETHICS AND WAR IN THE 21ST CENTURY* 129 (2008).

108. Victor Wallace opined that non-lethal weapons could make warfare more lethal. *See, e.g., THE FUTURE OF NON-LETHAL WEAPONS: TECHNOLOGIES, OPERATIONS, ETHICS AND LAW* 142 (Nick Lewer ed. 2002); Pauline Kaurin, *With Fear and Trembling: An Ethical Framework for Non-Lethal Weapons*, 9 J. MIL. ETHICS 100, 106 (2010).

109. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Jan. 13, 1993.

110. *See, e.g., Geneva Convention for the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of Armed Forces at Sea* art. 12 Aug. 12, 1949, (“Members of the armed forces...who are at sea and who are wounded, sick or shipwrecked, shall be respected and protected in all circumstances.”); Jean S. Pictet, Commentary, *The Geneva Conventions of 12 August 1949*, at 86-87 (“In the first place, it must be pointed out that the purpose of this provision (art. 12), and indeed of the whole Convention, is to protect wounded, sick and shipwrecked persons who, if they were not in this helpless state, could rightfully be attacked”); FRANCIS LIEBER, *INSTRUCTIONS FOR THE GOVERNMENT OF ARMIES OF THE UNITED STATES IN THE FIELD* 23 (1898), (“Whoever intentionally inflicts additional wounds on an enemy already wholly disabled, or kills such an enemy, or who orders or encourages soldiers to do so, shall suffer death, if duly convicted, whether he belongs to the Army of the United States, or is an enemy captured after having committed his misdeed.”).

111. DoD Directive 3000.03E, *supra* note 53.

values at home and around the world,” as stated in the *2014 Quadrennial Defense Review*.¹¹²

• *Media bias against non-lethal weapons:* While non-lethal weapons have had their share of sensationalist headlines,¹¹³ many notable print and broadcast media outlets have provided balanced and unbiased reporting on a wide range of non-lethal capabilities and the expanded range of options they provide the U.S. military.¹¹⁴ In addition, the U.S. Congress continues to be supportive as reflected in specific references to non-lethal weapons operational utility in numerous National Defense Authorization Acts.¹¹⁵

112. U.S. Def. DEP'T., QUADRENNIAL DEFENSE REVIEW 2014 11 (2014), http://www.defense.gov/pubs/2014_Quadrennial_Defense_Review.pdf

113. See, e.g., *US Military May Unleash Microwave Weapon in Afghanistan*, MO GREEN (Jul. 24, 2010, 10:30 pm),

<http://mogreen88.wordpress.com/2010/07/24/us-may-unleash-microwave-weapon-in-afghanistan/>; James Rainey, *US Troops to Use Banned Laser in Iraq*, L.A. TIMES (May 18, 2006), <http://truth-out.org/archive/component/k2/item/62903:us-troops-to-use-banned-laser-weapon-in-iraq>.

114. See, e.g., Dan Parsons, *Nonlethal Weapons Could Gain Ground in Future Missions*, NAT. DEF. MAG. (Jul. 2014), <http://www.nationaldefensemagazine.org/archive/2014/July/Pages/NonlethalWeaponsCouldGainGroundinFutureMissions.aspx?PF=1>; Tom Zeller, Jr., *Pentagon Debuts a Non-Lethal Ray Gun*, N.Y. TIMES NEWS BLOG (Jan. 26, 2007, 4:57 pm), <http://thelede.blogs.nytimes.com/2007/01/26/pentagon-debuts-a-non-lethal-ray-gun/>.

115. See, e.g. H.R. 3304, 113th Congress (2013), available at <http://www.gpo.gov/fdsys/pkg/CPRT-113HPRT86280/pdf/CPRT-113HPRT86280.pdf> (providing for non-lethal weapons applied research, development and testing).

VI. NOT EASY, NOT ALWAYS SEEN...BUT NEEDED

The pursuit of non-lethal capabilities by the U.S. military is a necessity in a complex world. Non-lethal weapons, by their very nature, must use new technologies or existing technologies in an innovative way, in order to provide the desired effects. As Everett M. Rogers wrote in *Diffusion of Innovations*, “Many innovations require a lengthy period of many years from the time when they become available to the time when they are widely adopted.¹¹⁶ Historical examples include opposition to the introduction of electricity in homes¹¹⁷, the inclusion of radios in automobiles¹¹⁸, and the use of Magnetic Resonance Imaging in medicine¹¹⁹. Additionally, between 1975 and 1994, the Department of Defense canceled at least nine unmanned aerial vehicle, or UAV, programs.¹²⁰ Only after the Predator UAV was demonstrated in the mid-90s were UAVs widely used in defense. And, the Global Positioning System, which is ubiquitous today, survived numerous attempts to terminate it.¹²¹

The reality is that non-lethal weapons already see greater use than most realize. Blunt trauma munitions are used to ward off intruders in restricted areas around bases in Afghanistan.¹²² For over ten years, Air Force Security personnel have used Tasers to patrol and protect bases and sensitive areas.¹²³ And technological advances,

116. EVERET M. ROGERS, *DIFFUSION OF INNOVATIONS* 1 (5th ed. 2003).

117. See EVANS, *supra* note 99, at 165.

118. Bill DeMain, *When the Car Radio Was Introduced People Freaked Out*, MENTAL FLOSS (Sept. 3, 2013), <http://mentalfloss.com/article/29631/when-car-radio-was-introduced-people-freaked-out>.

119. See EVANS, *supra* note 99, at 465.

120. The canceled programs were Compass Cope, Compass Dwell, Aquila, Amber, Condor, Hunter, Raptor, a classified program, and the Medium Range UAV. U.S. GEN. ACC. OFF., UNMANNED AERIAL VEHICLES: DOD'S DEMONSTRATION APPROACH HAS IMPROVED PROJECTED OUTCOMES 1 (1999), available at <http://www.gao.gov/assets/230/227915.pdf>.

121. See Matthew E. Skeen, *The Global Positioning System: A Case Study in the Challenges of Transformation*, 51 JOINT FORCE Q. 88, 88–93 (2008).

122. See e.g., Video, *Assignment Afghanistan: Non-lethal Weapons Training*, KBTX-TV CHANNEL 3 (Mar. 13, 2014), available at <http://www.kbtx.com/news/assignmentafghanistan>.

123. Oriana Pawlyk, *Security Forces Using More Electroshock Weapons*, AIR FORCE TIMES (Feb. 7, 2013, 10:57 AM), <http://www.airforcetimes.com/article/20130207/NEWS/302070323/Security-forces-using-more-electroshock-weapons>.

particularly in directed energy, promise more applications in the future.¹²⁴

For US forces, non-lethal weapons are not an esoteric issue. For them, they are intended to provide an option to lethal force, in a world in which military engagements continue to be characterized by environments where combatants and civilians are closely intermingled. They also save lives—those of U.S. military personnel, as well as, those of innocent civilians, caught in the midst of irregular warfare and disasters. And their use also says something about the United States, best stated by former Marine Corps Commandant, Gen. James F. Amos: “... our use of non-lethal weapons coupled with building partner capacity missions and (military-to-military) exchanges, strategically communicates our commitment to protect innocence and reassures our strategic friends and our allies.”¹²⁵

124. See MARK GUNZINGER AND CHRIS DOUGHERTY, CENTER FOR STRATEGIC AND BUDGETARY ASSESSMENTS, *CHANGING THE GAME, THE PROMISE OF DIRECTED-ENERGY WEAPONS* (2012).

125. JOINT NON-LETHAL WEAPONS PROGRAM, *NON-LETHAL WEAPONS ANNUAL REVIEW 2* (2013), available at http://jnlwp.defense.gov/Portals/50/Documents/Press_Room/Annual_Reviews_Reports/2013/DoD_Non-Lethal_Weapons_Program_Annual_Review_11.19.2012_HTML_format_v1.pdf.