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Non-Lethal Weapons: The Lock and Key to Pandora's Box

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ABSTRACT

In operations other than war (OOTW) the use of force continuum is marred by many variables. “Enemy combatants with light weapons can merge with the population, protected in their knowledge that . . . forces are inhibited by the presence of innocent civilians from responding with lethal force”¹ This lack of resolve combined with restrictive engagement rules creates risk for both military and local populations. The hearts and minds policy of governments and militaries combined with the omnipresent CNN factor² makes the use of lethal force, even in self defence, a difficult choice. Given current capabilities and limitations for use of force, the options seem limited.

Deterrence through presence is often the expectation for many military troops deployed in places like Afghanistan, Iraq, Haiti and other failed and fragile states. There is, however, a capability gap between the deterrence effect with only a show of force and the need for lethal force to maintain peace and security. Non-lethal weapons (NLWs) are poised to assist in filling this gap. Research indicates that it can be bridged through the effective and timely presence and layered deployment of non-lethal weapons and systems that are designed to determine intent, enable distinction and create critical time and space to allow for follow-on actions. The risks can be reduced, our forces personnel can feel safer and the enemy can be defeated without killing him on the evening news.

¹ Graham T. Allison and Paul X. Kelley, Co-Chairs and Richard L. Garwin, Project Director, “*Nonlethal Weapons and Capabilities*,” Report sponsored by the United States Council on Foreign Relations (USA: Council on Foreign Relations, 2004), 10.

² CNN Factor is a common term used in military circles to indicate that the media is omnipresent and are creating newsreels that are sent home for immediate airing. This can include tape footage of actual engagements and battles as they occur. Somalia was one of the first conflicts where US Marines were confronted with press and reporters on the beach where they landed to do an evacuation. This becomes even more complicated for Commanders on the ground when confronted with media that is not a part of their troop formation and who may have ulterior motives for observing armed forces actions. Christopher Deliso further amplifies this in “The CNN Factor and Kosovo: Eason Jordan’s True Failings.” Details in the anti-war.com website <http://www.antiwar.com/deliso/?articleid=5140>; Internet, accessed 12 February 2006.

The paper will contend that without non-lethal weapons, this capability gap may result in increased fatality rates during operations. Without non-lethal means, militaries will have no choice but to implement measures and apply levels of lethal force that will eventually undermine the very hearts and minds campaigns necessary to achieve the desired end state of peace of stability. Laws limiting research and development, procurement and use of non-lethal systems must be reviewed and amended to enable technology to advance the cause of peace and security without death and destruction. Governments must adopt innovative and forward thinking policies that will enable us to maintain the advantage in this asymmetric and dangerous transnational world filled with failed and fragile states where combatants and non-combatants are indistinguishable.

INTRODUCTION:

Carl Von Clausewitz would certainly stir in his grave at the prospect of a great war without casualties, a battle without blood and destruction. An advocate that “war is an act of force to compel our enemy to do our will”³ he was a proponent of decisive and determined offensives that strike at the heart of men and machine. Supportive of political will being the driving force for national power through military action, he articulated that the only way to truly force nations to comply or acquiesce was to defeat their forces in battle.⁴ Sun Tzu clearly had percipient views when he said that “the best victory is when the opponent surrenders of its own accord before there are any actual hostilities . . . it is best to win without fighting.”⁵ This is not to suggest that Sun Tzu was less intent on winning or that battles should never be fought. Rather, he advocated means other than destructive offensive actions to succeed in conflicts. Sun Tzu was not the catalyst for non-lethal weapons as we understand them but he can be credited with pursuing non-lethal means of diplomacy, psychological operations and information operations that achieved acquiescence without the need for death and destruction.

Man is the only animal that deals in that atrocity of atrocities, War. He is the only one that gathers his brethren about him and goes forth in cold blood and calm pulse to exterminate his kind. He is the only animal that for sordid wages will march out . . . and help to slaughter strangers of his own species who have done him no harm and with whom he has no quarrel . . . and in the intervals between campaigns he washes the blood off his hands and works for "the universal brotherhood of man" with his mouth.⁶ Mark Twain, What Is Man? (1906)

³ Wikipedia Wikiquote website, Karl von Clausewitz, http://en.wikiquote.org/wiki/Karl_von_Clausewitz; Internet; accessed 21 February 2006.

⁴ Ibid., Internet; accessed 21 February 2006.

⁵ Sun Tzu, The Art of War, http://en.wikiquote.org/wiki/Sun_Tzu; Internet; accessed 21 February 2006.

⁶ Mark Twain, What is Man?, available at <http://en.wikiquote.org/wiki/War>; Internet; accessed 17 December, 2005.

War is achieved through the use of force and is characterised by lethal violence between combatants on a scale large enough to cause the death of thousands of people, military and civilian alike. Although the name changes and war is now replaced by “State of Armed Conflict, Police Action or Operation Other Than War (OOTW),”⁷ the resultant levels of lethal violence remain the same. Imagine if an international law or a nation could impose a caveat that limited the contention by force construct with one that is more aligned with a logical and systematic progression through levels of force, including a non-lethal option, and still achieve the same end-state? Is this what Sun Tzu foresaw centuries ago? A war or battle without fatalities? To some this sounds like science fiction while to others, militaries around the world for example, this is exactly the vision for the foreseeable future in the new urban battlespace. The problem, there is a capability gap⁸ between currently available arsenals with associated doctrine and the ability to impose behavioural change using potentially available non-lethal systems and means.

Is there truly a capability gap between current military presence and the need to use lethal force to ensure safety and security? Is this just perception generated from unrealistic expectations that wars and battles can be fought without hurting anyone? If the wars are half a world away and of no consequence to our nation, does Canada need to invest time and money into some Hollywood based, science fictional, non-lethal nonsense to deal with other government’s problems? Is there even a capability or technology that

⁷ Wikipedia, War, available at; <http://en.wikipedia.org/wiki/War>; Internet, accessed 17 February 2006.

⁸ Capability gap refers to those synergistic resources unavailable, but potentially attainable to the operational user for effective task execution. There are other more detailed definitions when referring to technical equipment or capabilities, but this definition deals with aspects of warfare or conflict that are the focus of this paper. The premise is that if the gap is not filled, then the task or mission could be in jeopardy. One US DOD definition and application of a capability gap is found at <http://www.dtic.mil/whs/directives/corres/html2/i46308x.htm#ce2>; Internet, accessed 11 February 2006.

can bridge the gap in the short, near and long term? The answer to all of these questions is an emphatic yes and if ignored may result in further loss of lives during operations abroad and at home.

Canada must do its part to contribute to a more peaceful world and try to assist struggling nations establish the necessary governments and infrastructure to keep them safe and secure so that they do not provide the means or ways for organizations to establish the capability and infrastructure to attack other nations. This means forces must operate in the urban confines and rural settings of distant nations to assist in securing these fragile states from within. Military personnel must insert themselves into the core of the deadly and unpredictable cities, towns and waterways to provide presence and deter criminal organizations and terrorist groups from forming and training and to provide the environment for innocent civilians to feel safe and part of a free society.

Recent events in many of the nations where Canada and other militaries are trying to make a difference demonstrate a significant capability gap for forces that are looking for a balanced and effective level of force continuum. A recent Canadian example reinforces this capability gap as “. . . a Canadian officer was reported to be in critical condition after he was attacked with an ax [sic] during a meeting with tribal elders.”⁹ The response, after the attack was to kill the assailant. Some have commented that the military teams were hesitant to use lethal force, their only available recourse when faced with this type of surprise attack, when initially confronted with the situation. Investigations will determine exactly what occurred, but the question arises . . . had a

⁹ Ismail Sameem, *French and Canadian Forces Attacked in Afghanistan: One officer killed; another is critical*, Boston.com News at http://www.boston.com/news/world/middleeast/articles/2006/03/05/french_canadian_forces_attacked_in_afghanistan/?rss_id=Boston+Globe+--+World+News; Internet; accessed 6 March 2006.

non-lethal alternative been available, a blunt bullet or taser-type weapon, would they have hesitated and would they have had to kill the assailant?

This and other tragic deaths and/or serious injuries of soldiers, abhorred and apparently indiscriminate shootings of innocent and defenceless civilians and suicidal attempts on military targets take place daily and are often provided real-time by medias as they occur.¹⁰ Real world situations will be used throughout this paper to assist in determining if the gap is real and whether means, other than lethal force, could have been used to achieve more acceptable outcomes. The details surrounding some of the scenarios will be discussed only briefly in the body of the paper. Greater detail will be available through links in the footnotes. Classification of reports and releaseability issues prevent availability of detailed information needed to make a full and complete assessment on what occurred in recent events. Therefore, open source reports from news agencies and government websites were used to establish the facts needed to permit analysis as to whether a capability gap exists between warnings and lethal force. As the various situations unfold and are discussed, the reader should be asking, what would I do in this same situation? This is the ultimate question that should be at the forefront of the reader's thoughts as they read this paper and make assessments as to whether things would have been different if they had been there and had to make the decisions as to what to do next given current capabilities and doctrine.

These are many recent examples from current situations that can be used to argue for and against the use of non-lethal weapons and systems. Both sides of arguments will

¹⁰ In the week of 9-16 April, there were hundreds of newspaper articles and television news segments on the tragedies that have befallen the nations of Iraq and Afghanistan. There is sufficient saturation that people are becoming desensitized and programmed to believe that this is OK and just a part of the world today. Previous CNN Factor details can be found at footnote 2 above.

be used throughout the paper. Comparisons will be made between current restrictive procedures and potential capabilities and outcomes using non-lethal means. As restraining as our policies are, our enemies are limited only by their imagination and have no restrictions on what they can use, when and where and they have no conscience about the innocent lives that may be lost in their selfish pursuits. Although the primary focus of the analysis will be on military uses overseas during operations, there will be examples that relate to domestic issues and situations.

This paper will critically assess the validity of non-lethal weapons in this modern era when society is more focused on peaceful, non-lethal alternatives for ensuring security and resolution to crisis. It will begin by describing and defining what non-lethal weapons are and will provide a brief historical perspective on their development and use. Further discussion will focus on the changing nature of war as it has evolved from one of mass killing and annihilation to one of surgical engagements and modest physical destruction. Within the changing nature of war, the paper will propose that NLW technology and capability are evolutionary. It will establish that NLWs can have a direct and lasting influence in the pursuit for less death and destruction during operations and that with the proper level of funding and support from military and government leadership, will form part of the next Evolution in Military Affairs (EMA).¹¹

¹¹ Evolution in Military Affairs is spoken of throughout militaries and is a particular focus within the US DOD. Several articles refer to evolutionary changes in policies, force structures and capabilities that are not necessarily revolutionary but are evolving as the situation and requirements change. This paper focuses on evolutionary vice revolutionary as it reflects the evolving change in perspectives for governments that seek less lethal and destructive means to resolve crisis. Links that can further explain evolutionary concepts include, Donna L. Hopkins, Joint “*Reserve Forces: An Evolution in Military Affairs*” at http://www.dtic.mil/doctrine/jel/jfq_pubs/2118.pdf#search='Evolution%20in%20Military%20Affairs'; and Douglas C. Lovelace Junior’s, “,”1997, available at; <http://www.au.af.mil/au/awc/awcgate/ssi/ema.pdf#search='Evolution%20in%20Military%20Affairs'>; Internet, accessed 17 April 2006.

The International Policy Statement (IPS) and Defence Policy Statement (DPS) form the foundation for Canadian Forces (CF) missions and objectives. This paper will analyze NLWs technologies to determine if they have a role in the military as it supports these policies. It will make assessment as to whether future procurement should include NLWs and whether the military culture is ready and able to accept this evolutionary tool as part of their military arsenal. The paper will analyze general military and government policy regarding NLWs and determine what refinements are required and what policies for research and development, training and legal doctrine are needed.

Specific capabilities and functions needed in support of the 3-Block War, Force Protection and transformation will be assessed using NLW technology. Force Protection will receive added focus as it affects overseas operations and homeland security requirements for military and civilian personnel and infrastructure alike. Legal issues will be argued from proponent and opponent views. Although several customary laws and treaty laws are applicable to non-lethal weapons, only those that are assessed as impacting on or are hindering progression towards NLWs will be discussed in detail. These include the laws that, I contend, created part of the capability gap that exists and limit initiatives to fill this gap. This includes the legal hurdles surrounding the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and Their Destruction¹² and the Chemical Weapons Convention (CWC).¹³

¹² Office of the Judge Advocate General, "Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and Their Destruction," in Collection of Documents on the Law of Armed Conflict, 2005 ed., ed. Directorate of Law Training (Ottawa: DND, 2001), 297-302.

¹³ Office of the Judge Advocate General, "Paris Convention on the Prohibition of the Development, Production, Stockpiling and Use Of Chemical Weapons and Their Destruction - 1993," in

Recommendations for policy, research, development and procurement of NLWs will focus on what is needed in the near term in order to establish a viable and functional non-lethal directorate responsible across all elements and with strong inter-departmental coordination. Recommendations for procurement will be limited to those systems and weapons available immediately and that would allow the gap to close somewhat while research and procurement issues progress. Throughout the paper, two primary themes will permeate arguments. The first, and most prevalent, is that NLWs are needed to fill the capability gap that unnecessarily risks lives and materiel. The second is the legal obstacles that prevent the necessary support from government in developing a robust and determined non-lethal weapons program and policy. The paper will create the foundation needed for government and senior military leadership to recognize that non-lethal weapon technology is an EMA that, if properly pursued and supported, will create the foundations for success and fill capability gaps. Non-lethal weapons are vital “when killing just won’t do”¹⁴ for a military and government insistent on reaching the “. . . hearts and minds . . .”¹⁵ of nations we are committed to protect.

WHAT ARE NON-LETHAL WEAPONS?

Canada defines non-lethal weapons as “. . . weapons, munitions and devices that are explicitly designed and primarily employed so as to incapacitate personnel or materiel, while minimizing fatalities, permanent injury to personnel and undesired

Collection of Documents on the Law of Armed Conflict, 2005 ed., ed. Directorate of Law Training (Ottawa: DND, 2001), 228-241.

¹⁴ Harper’s Magazine, *Nonlethal Weapons: Terms and References*, Report prepared for US Air Force Institute for National Security Studies, available at www.harpers.org/WhenKillingJustWontDo.html; Internet accessed 2 March 2006.

¹⁵ Department of Foreign Affairs and International Trade, *Canada’s International Policy Statement, A Role of Pride and Influence in the World* (Ottawa: Foreign Affairs Canada, 2005), 6.

damage to property and the environment.”¹⁶ The North Atlantic Treaty Organization (NATO) definition states that they are “weapons which are explicitly designed and developed to incapacitate or repel personnel, with a low probability of fatality or permanent injury, or to disable equipment, with minimal undesired damage or impact on the environment.”¹⁷ The United States, arguably the leading nation in the research and development of non-lethal technologies, further defines non-lethal systems as those “. . . 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.”¹⁸

Surprisingly similar definitions and descriptions of non-lethal weapons might lead one to assume that these nations and NATO have similar plans and policies and visions for non-lethal research, development and procurement and use. This is not the case. Part of the reason for disparity is that the understanding of what constitutes a non-lethal is not universally understood nor shared. Defining a NLW seems simple enough, but dissecting the definition to determine what constitutes a non-lethal weapon can be complicated and is a contentious issue. Regardless of which wording or definition from above is chosen, there remains uncertainty in two key areas that require discussion in order to truly understand what it all really means. This uncertainty sits squarely on the words themselves; ‘non-lethal’ and ‘weapon.’

¹⁶ Department of National Defence, *Firepower* (Ottawa: DND Canada, 1999), 5.

¹⁷ NATO Press Statement on Non-Lethal Weapons, October 13, 1999. The Acronym Institute website on Disarmament Diplomacy, Issue No. 40, September - October 1999.

¹⁸ United States, Department of Defense, *Policy for Non-Lethal Weapons*, Policy Directive 3000.3 (Washington, D.C.: US Government Printing Office, 9 July 1996), 3.1.

Non-lethal appears self-explanatory as it implies that no fatalities will result from the use of a non-lethal system. This is certainly not the case nor is it the expectation for any nation that intends using a non-lethal system. Regardless of which publication, article or presentation that is analyzed, there is a universal understanding that non-lethal refers more to the probability that fatalities will not occur rather than the assumption that they never will.¹⁹

Colonel Fenton, the Director of the US Defence Department Joint Non-Lethal Weapons Directorate (JNLWD) commented that “any weapon that uses force to make you change your behavior [sic] as non lethal systems do, can injure, even kill you unintentionally . . . I can hurt you with water.”²⁰ According to Julian Perry Robinson of the Harvard Sussex Program, the fatality factor is a key determinant for classification and continued research. “Britain abandoned its program at the Porton Down research center . . . to seek a usable calmativ agent related to fentanyl.”²¹ One reason was that scientists

¹⁹ NATO describes non-lethal weapons, riot control agents in particular, as being weapons that are not designed to kill, but rather to incapacitate. There is an understanding in the political, scientific and military realms that use of non-lethals in certain circumstances when people with ailments or weaknesses not planned for or on older or younger people, that there is a possibility that lethal results may occur. The important factor is in the intent on use. Further information, is available at the Sunshine Project website at www.sunshine.com; at the Centre for Conflict Resolution Department at the University of Bradford website at www.bradford.ac.uk; and within the JNLWD website at www.jnlwd.usmil.com; Internet, accessed 11 February 2006.

²⁰ Harold Kennedy, *National Defense* (Arlington: Mar 2002, Vol 86, Iss.580), 26

²¹ Fentanyl is an opioid analgesic, first synthesized in Belgium in the late 1950s, with an analgesic potency of about 80 times that of morphine. It was introduced into medical practice in the 1960s as an intravenous anesthetic under the trade name of Sublimaze. Today, fentanyls are extensively used for anesthesia and analgesia. Fentanyl gained significant notoriety in the Moscow crisis where a calmativ Fentanyl based opioid was used to incapacitate rebels in a Moscow theater before the Special Forces could enter the building. The resultant fatality rate (128 of 800) was 16%, well above the 2% desired rate. Further details on Fentanyl is available on the Wikipedia website at <http://en.wikipedia.org/wiki/Fentanyl>; Internet, accessed 22 February 2006.

could not find an agent that would come close to the 2 percent lethality limit required of non-lethal agents.”²²

Weapon is defined as “. . . a thing designed or used for inflicting bodily harm or physical damage.”²³ Similar to the description of war above, weapons are inherently designed to exert a destructive force in a manner that seeks to gain acquiescence. It is important to remember however that when used in the context of non-lethal, the word weapon changes from a mechanism seeking death, permanent injury or destruction to one which embraces a peaceful compliance, behaviour change or impediment with the implicit ability and intent to reverse the effects caused when using the weapon. This paradigm is indicative of a significant evolution in the word weapon in an era that expects maximum effects with minimal damage and death. For this reason, selection of the word weapon may in itself require further consideration and deliberation in the non-lethal construct as this may assist in reducing overall scepticism surround non-lethals as weapons.

The element not clearly evident when referring to non-lethal weapons but clearly emphasized in the definitions above is the aspect of destructiveness of a weapon. As per the definitions provided above, this paper will assume that when referring to NLWs, it includes the connotation that preservation of materiel, buildings, equipment and the environment is one part of the desired effects. It is equally important to realize that the

²² David Isenberg, US Chemical ‘Non-Lethal Weapons in Iraq: A Violation of the Chemical Weapons Convention?, Basic Publications, available at <http://www.basicint.org/pubs/Papers/BP44.htm>; Internet, accessed 2 March 2006.

²³ Oxford English Dictionary, online definitions available on the AskOxford website at http://www.askoxford.com/concise_oed/weapon?view=uk; Internet; accessed 15 December 2005.

pursuit of a non-destructive weapon does not necessarily mean that a nation or organization is pursuing a non-lethal weapon.

For the purpose of analysis, the paper will use the Canadian definition for non-lethal weapons. The desired effects of non-lethal weapons fall into two general categories and associated sub-categories as follows:

1. Counter Personnel

- a. Establish intentions of belligerents;
- b. Determine intent of non-friendly forces in hostile areas
- c. Ensure low probability of fatalities or permanent injury;
- d. Achieve government policy when there exists and overwhelming unwillingness to accept casualties on either side of a conflict;
- e. Ensure effects can be reversed when safe to do so;
- f. Repel and deny access;
- g. Control crowds; and
- h. Set the conditions that allow for distinction.

2. Counter Materiel.

- a. Limit destructive effects;
- b. Repel and deny access;
- c. Disable and neutralize objects without causing casualties; and
- d. Environmentally responsible.

Non-lethal weapons can be further described based on their field of employment and the desired method of implementation. These technological categories where research, development and procurement occur include:

1. Electrical;
2. Directed Energy;
3. Optical;
4. Acoustic;
5. Chemicals;
6. Biological;
7. Kinetic Energy;
8. Mechanical, such as barriers and entanglements;
9. Electromagnetic; and
10. Miscellaneous systems which include technologies designed for Networkcentric Warfare (NCW), Information and Psychological Operations (IO and PO respectively), Carbon Fibre systems and tracking systems.

The purpose of this paper is not to provide details for all the non-lethal weapons above or to describe each desired effect. Some systems and some effects will be discussed as they relate to the scenarios. Overall focus will be on systems that are currently available or will soon be available that will aide in bridging the existing capability gap while remaining within the expectations of government and the CNN programmed public. Some future possibilities will be mentioned within the paper, but will not dominate the proposed direction that Canada should follow in pursuit of a non-lethal weapon program. There is a lot of hype surrounding futuristic capabilities and

these will be pursued in follow-on research. Excellent proponent and opposition view points, are detailed in the Non-Lethal Weapons Research Project from the Centre for Conflict Resolution at University of Bradford²⁴ and the US Department of Justice Report on Non-Lethal Weapons.²⁵

HISTORICAL PERSPECTIVE

Some believe that the concept of non-lethal weapons was generated through the imagination and vision of science fiction movie makers and novelists. These highly creative and imaginative people introduced stun guns and laser systems as the ultimate means to achieve a peaceful resolution of any crisis regardless of race, creed or interstellar organization that people belonged to. One can never forget the weekly words of James T. Kirk, Captain of the USS Enterprise in the futuristic television and movie series Star Trek, when he orders his crew to “set your phasers on Stun.”²⁶

Folklore takes us back even further. The story of Archimedes in 213 BC is interesting when you consider that he designed an energy beam to defend Syracuse, his home town on the south-eastern shore of Sicily, from an attack by Marcus Marcellus of Rome. Simple in design, this weapon “. . . employed mirrors . . . [and] . . . reflected and focused sunlight . . .”²⁷ in such a manner that it repelled the attack by burning the sails of

²⁴ Neil Davison and Nick Lewer, *Bradford Non-Lethal Weapons Research Project*, Research Report No.4 prepared for the Centre for Conflict Resolution, Department of Peace Studies (Bradford, U.K.: University of Bradford, December 2003), pages i to vii and 1-43.

²⁵ National Security Research Inc., *Department of Defense Nonlethal Weapons and Equipment Review: A Research Guide for Civil Law Enforcement and Corrections*, Report prepared for the National Institute of Justice and US Department of Justice (Washington, D.C.: Office of Justice Programs, October, 2004), pages 1-65.

²⁶ Star Trek is a science fiction television series that began in the 70s and has extended to the modern day. Many science fictional initiatives and potential innovations come from science fiction television series and movies similar to Star Trek.

²⁷ Major-General Donald L. Lamberson, Colonel Edward Duff, Lieutenant Colonel Courtney Holmberg and Don Washburn, “Whither High Energy Lasers?” *Air and Space Power Journal* (Spring

the assailants placing them “in irons.”²⁸ Although considered by many to be mere myth, the concept is not dissimilar to the desire for non-lethal systems that disable boats, cars or other vehicles before they can become a threat to forces or infrastructure.

Non-lethal effects have been imagined and sought after since the early days when nations and men engaged in wars and battles. Information operations, psychological effects and public relations focused campaigns all existed throughout wars of the past and they had the purpose and effect of causing the enemy to question the need to fight or wage war. Some were more successful than others, but the true intent behind these efforts was to achieve a non-lethal resolution to crisis. NLWs have been used extensively over the past fifty years. They were used to some effect in the Vietnam War when the US under General Westmoreland, Commander in Chief of Operations in Vietnam, began to use CS Gas as early as 1965 and deployed millions of pounds of CS gas.²⁹ During the Battle of the Bogside,³⁰ police and some military forces of the United Kingdom used non-lethals such as CS gas, rubber bullets and water cannons to quell rioters. Although

2004) [journal online]; available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj04/spr04/lamberson.html>; Internet; accessed 7 October 2005.

²⁸ In irons is a naval term used to describe a ship, usually a sailing ship, that is unable to capture the wind or use power available to counter the effects of wind and current. The net effect is that the ship is no longer under control of the crew and at the mercy of Mother Nature for what will befall it. Personal experience in this is very unnerving as it usually occurs when in close proximity to other vessels and/or land and the results can be catastrophic as the ship may collide or run aground as a result of being in irons. Other maritime terminology and maritime history can be found at www.readyayeready.com/jackspeak; Internet; accessed October 2005.

²⁹ Totse.com website, The Human Aversion to Killing and the Lie of Non-Lethal weapons, available at; <http://www.totse.com/en/politics/police/163061.html>; Internet; accessed 11 February 2006.

³⁰ The Battle of the Bogside was made famous due to the use of non-lethal means and the fact that it was used against a younger crowd. In the end, the crowds were dispersed, but the net effect of the non-lethals created more discontent and determination on the part of the rioters than had originally been expected. Overall, the police and military support won the battle but not the public relations war. There still exists famous murals on walls in the Bogside area of Northern Ireland that show young boys wearing gas masks. Further detail can be found at the wikipedia website at, http://en.wikipedia.org/wiki/Battle_of_the_Bogside; Internet; accessed 17 March 2006.

successful in restoring peace in the location of use, the overall effect was to invoke further riots that necessitated the military being called out for the first time since partition.

1992 to present has seen the greatest increase in the use of NLWs to meet the changing demands that military forces are confronted with around the world. The evacuation plan for Somalia was one of the principal catalysts for US NLW efforts and the springboard for aggressive pursuit of the capability that it brings to the new urban front lines.³¹ Under the direction of Lieutenant-General Zinni of the US Marines, non-lethal options were aggressively pursued and resulted in landing and evacuation forces having RCAs, chemical non-traction and slippery systems available for use. Although many of these systems were not used, the ones that were proved very effective. Traction systems were used during the final stages of the withdrawal preventing any potential threats from interfering with the extraction. NLWs have proved their capability during recent conflicts. “This value was demonstrated in an April 2000 incident in Kosovo in which an impromptu crowd situation turned violent. The use of NLWs during this incident saved the lives of both soldiers and civilians.”³²

This quick historical perspective demonstrates the increased performance and capability of forces resulting from the imagination and vision associated with the pursuit for NLWs. The needs for NLWs to meet military needs becomes evident nearly every day in current events around the world as we observe attacks on military personnel and civilians alike in the streets of Baghdad, Kabul and other failed nations. There remains a

³¹ The US JNLW Directorate (JNLWD) was stood up soon after Somalia to bring together the USMC, Army and US Air Forces who each believed in the future of NLWs in the new urban battlespace. This began the efforts for extensive research in the non-lethal technological realm. Further information and current initiatives can be found in the JNLWD website at <https://www.jnlwp.com/>; Internet; accessed 11 December 2005.

³² Ibid.

need for weapons and systems that can protect our men and women, defend the innocent and still achieve the necessary hearts and minds campaign at the core of mission success.

WAR AND THE EVOLUTION IN MILITARY AFFAIRS (EMA)

Is the evolution of war captured in the imaginative television programs and movies previously described? Simulated war and conflict, could this be the future? This was certainly the theme in one Star Trek episode that emphasized a civilization so advanced and humane that they fought all wars and battles through computers and simulations and no people were required to actually engage in conflict.³³ This is pure fantasy and is not even a vision in the distant millennium, but it does make people and nations imagine the potential for resolution of conflict without the need for bloodshed or destructiveness.

War is, according to many, inevitable and casualties in war are expected and generally accepted. In peacekeeping roles, however, the thought of casualties, on either side of a crisis, can turn people against governments and the military. This is especially true when we are seen to be the peacekeepers that are ultimately responsible for the safety and security of innocent civilians. Things can and will go wrong as was evident in the “. . . brutal 1993 beating death of a Somali teenager, Shidane Arone, at the hands of two Canadian soldiers.”³⁴ This caused outrage within the Canadian populace and embarrassed the government in such a manner as to have an entire history and tradition of an Army group eradicated as the Airborne Regiment was disbanded forever. Canada cannot afford

³³ Star Trek Episode 23, A Taste of Armageddon , Stardate 3192.1, Aired February 23, 1967.

³⁴ A Somali teenager was killed by Canadian troops during operations in 1993. More detail can be found at http://en.wikipedia.org/wiki/Somalia_Affair; Internet accessed 11 February 2005.

to have another incident that breaches government and societal trust while deployed overseas ‘protecting’ innocent people in failed and failing states.

War itself has undergone a form of metamorphosis. Gone, for now perhaps, are the large-scale bloody battles that were conceived in the Great War and Cold War days. This position does not pre-suppose that conflicts are no longer needed, they are. My contention is that there is, and will exist for the foreseeable future, a strong desire on the part of governments to pursue conflict and war on a much smaller scale with minimal casualties and destructive effects. The new wars are battles between coalitions of the willing against inadequately prepared and sometimes defenceless adversaries that rarely stand-up to the rigors of all-out battle. They are relatively quick and decisive campaigns with few casualties compared to the great wars of the past.

During OPERATION Enduring Freedom, Afghanistan was captured in just over one month with few coalition casualties.³⁵ Much the same was seen for Iraq in Gulf War II, OPERATION Iraqi Freedom saw US and Allied forces take Iraq, marching through to Baghdad in what seemed like days as they, like a hot knife through butter, advanced without apparent resistance. Again, casualties were limited, overall destruction, although impressive on television, was limited to strategic targets and the government, including Saddam Hussein, was toppled without decimating the infrastructure necessary to support the people post-conflict.

The CNN effect was impressive as we witnessed allied forces peacefully interact with the population once the conflict was done and the victors and the newly freed

³⁵ Wikipedia website, available at http://en.wikipedia.org/wiki/U.S._invasion_of_Afghanistan; Internet; accessed 13 February 2006.

populace seemed to join in their pursuits and begin the rebuilding process.³⁶ Finally, a less destructive war that was won without atrocious levels of casualties or destruction of population centers . . . or were there? Many of the troops that were involved in OPERATION Iraqi Freedom had a different perspective when they returned home and spoke of their experiences. They frequently spoke of the need to use lethal force and a lack of non-lethal means to progress the battle when it transitioned into the urban confines. Every street corner became a potential war zone and the ones that most often paid the ultimate price with their lives were the innocent civilians who just wanted freedom and peace. Just one soldier's story says it all:

It's not like two armies went out there on a battlefield. This war was fought in an urban environment amongst the civilian population, and ultimately it is that civilian population that has paid the heaviest toll. It's difficult as a husband and as a father to reconcile who I was over there with some of the things that I saw. I mean, a dead child on the side of the road in Nasiriyah, about the same age as my son right now. And how unfeeling I was at the time about it, with who I am now, how I feel about it now.³⁷

This emphasizes how in modern times, the true challenges come after battles are waged and that there is a need for something other than lethal force to meet the challenges in this new battle space. It is in the streets and urban confines of failed and fragile states, in the littoral waters of poorly controlled nations where crime and terrorism fester. It is in our own backyard where fanatical organizations intent on disrupting government or, worse, imposing their will through terror reside, waiting for their moment to achieve

³⁶ News agencies worldwide showed the toppling of one of /Saddam Hussein's bronze statues by local populations. Working with them were some uniformed soldiers of the US Army who assisted by having their Humvee actually pull the statue over. Further information in this and other similar acts is available at http://news.bbc.co.uk/1/hi/world/middle_east/4192189.stm; Internet; accessed 11 February 2006.

³⁷ Terrence McNally, "Battlefield Iraq," from the AlterNet website at <http://www.alternet.org/waroniraq/31053/>; Internet; accessed 5 March 2006.

martyrdom.³⁸ Canada must be prepared for this new battle space and must be prepared for battle both in an offensive and defensive environment. We must be prepared to implement the “Three-Block War”³⁹ concept while adhering to government and Canadian society requirements and expectations.

Our duties are not merely abroad in ravaged nations requiring security as they rebuild. Our first and most important requirement is to defend Canada and Canadians at home.⁴⁰ We must be prepared, along with other government departments (OGDs) and the United States (US) to preserve security within the country and North America and to prevent any insurgents from planning for or generating attacks on our allies from within our borders.

THE NEW OPERATIONAL ENVIRONMENT

Sun Tzu would not necessarily be classified a philanthropist, but some of his ideals of winning a war without casualties seem to fit the humanity perspectives of a modern culture having a certain benevolence toward the whole of humankind. With the advent of non-lethals, philanthropists can imagine a day when wars and battles may be possible without the need to shed blood. Are military cultures of the world prepared for an EMA that seeks to merely stun, disorient, incapacitate and restrain an enemy? The

³⁸ Martyrdom is predicated on the belief that a man must give of himself to do what is believed to be right in order for him to be accepted in the after life. “It is not the monopoly of Islam though it is the monopoly of spiritual, religious, and divine systems, and cannot be claimed by followers of materialistic schools.” There is significant focus on the concept of personal responsibility for one's own salvation. A. Ezzati provides a perspective in his article “The Concept of Martyrdom in Islam,” located on the Tehran University website at <http://www.al-islam.org/al-serat/Concept-Ezzati.htm>; Internet; accessed 11 March 2006.

³⁹ Department of Foreign Affairs and International Trade, *Canada's International Policy Statement, A Role of Pride and Influence in the World, Canada's Defence Policy Statement* (Ottawa: Foreign Affairs Canada, 2005), 12.

⁴⁰ Privy Council Officer, *Securing an Open Society: Canada's National Security Policy*, (Ottawa: April 2004), foreword.

warfighter's perceptions and beliefs may not be positive, but societal and government expectations demand that the answer be yes. Clausewitzian warfare that required bloodshed and destruction is a thing of the past. This is a challenge for both the government that seeks to re-program warriors to believe in something less than lethal and a military that fears using less force will dispel the fear factor for potential belligerents thereby creating increased threats for military forces. This will be addressed in more detail later as the cultural effects of using non-lethal means requires dedicated focus to dispel rumours and assure confidence and capability are retained. In a world that focuses on the hearts and minds of both the states where forces operate and the people at home, we must evolve and pursue means for combating enemies that are forced to adapt because of our own innovations and advancements.

Urbanization of the battlespace is a reality that Canada's armed forces will have to deal with for the foreseeable future and our military culture must adapt to this new battlespace. Combat operations for all militaries are being forced closer and closer to the population centers. Current Canadian operations in Afghanistan are in the major cities and surrounding towns, the US is policing the streets of Baghdad and other Iraq cities, airfields are located very near to urban environments necessitating defensive measures for nearly every take-off and landing. Canadian Navy ships operating in the Arabian Sea frequently patrol in the Strait of Hormuz with daily traffic including thousands of vessels, many involved in illegal activity, going between the various nation states in the region.

Complicating things further, the pursuit of the technological advantage has forced the enemy deep under cover such that they blend seamlessly with the very citizens whom nations seek to protect. This significant gap between western militaries and immediate enemies has caused new patterns to emerge for insurgent operations, training and attacks

against western targets. We have to re-adapt, and perhaps re-consider how we will need to do things and what systems are best able to meet our multi-dimensional needs in the new engagement zones. There is a general sense, both within the military and general public, of insecurity as we try and identify who our enemy is and, more importantly, how to deal with the threat he poses without risking our lives and innocent civilian lives.

This paradigmatic reality for our enemies has caused us to rethink strategy and procedures for the foreseeable future. It is clear that soldiers, airmen and sailors are now confronted with a cultural revolution that sees warfighters being less likely to use lethal force in situations that are much more dangerous and risky. The incident of the attack on the Canadian Army officer previously mentioned is a case in point. The inclusion of advanced and more capable non-lethal weapons and systems combined with the training and doctrine will assist in maintaining the warrior mentality and will permit offensive actions that can supplant lethal means. Our culture is affected by our very setting and tradition, by our training and experiences and most important by the very people, including leadership, within our various elements. History has proven that warfighters, especially Canadians, are very resilient and adaptable to new technologies and impacts on our procedures. This past decade has seen significant change in our culture as we have introduced, usually at the last minute, new systems for our military members to use, in preparation for operations overseas. This includes but is not limited to new communication systems, new command and control systems, new regulations concerning actions and use of force procedures.

The Canadian Navy, as an example, has experienced significant change and some of this change deals directly with the use and employment of non-lethal systems. Naval Boarding Party (NBP) personnel have been recently introduced to weapons such as

batons, protective equipment and pepper spray as part of their daily arsenal needed when conducting Maritime Interdiction Operations (MIO).⁴¹ Training is provided, rules and regulations including use of force and level of force limitations are briefed at all levels in command and the team deploys with the equipment necessary to achieve mission objectives. The non-lethal aspect is still contentious as the teams that conduct boardings may not, due to policy and legal restrictions, be able to employ all non-lethal means at their disposal. In fact, we often send our teams to other vessels for inspections without pepper spray due to CWC limitations that neither the military nor government has been able, or willing, to change. Further legal aspects will be discussed in more detail later. The key consideration is that the military as a whole is able and willing to accept change and new systems to meet the changing needs in warfare. This includes the ability to use, albeit relatively simple, non-lethal systems as part of their arsenal.

CANADA'S INTERNATIONAL AND DEFENCE POLICIES

Canada issued the International Policy Statement (IPS) and Defence Policy Statement (DPS) in April 2005. These documents outlined the direction that the government was seeking for international affairs and security both at home and abroad. Key in the IPS is the determination that Canada's responsibility to protect Canadians ". . . has been complicated by the emergence of new threats: rogue states, failed and fragile

⁴¹ It is interesting to note that there was very little in the way of boarding training and the use of non-lethal systems such as batons and sprays prior to the first Gulf War. The Navy has adjusted quickly and moved in the direction necessary to meet the changing roles in the new theatre of operations. Key to this new philosophy was that training for all Boarding Party members must be done by the Fleet Schools on either coast. Once trained, the team goes through a systematic and structured training and evaluation program that ensures functionality, leadership, understanding of rules and regulations and use of force constructs. This training goes from basic level protective measures to more advanced and complicated training scenarios by Fleet Commander designated Sea Training Staffs who will present live scenarios for the boarding team to have to resolve. By the time a boarding team is deployed on an operation, they will have the training, assessment and most importantly, the confidence to properly and effectively employ all means of force from presence, through non-lethal and up to deadly force if the situation warrants.

states, international criminal syndicates, weapons proliferation, and terrorists prepared to act with no concern for the cost of human lives”⁴²

Does the current military arsenal have the systems necessary to meet the needs of the IPS and DPS in the new environment? Is there the flexibility to adjust between traditional war roles and requirements for newer less lethal roles in urban confines? Do non-lethal weapons provide the flexibility and effects necessary to achieve the full spectrum of conflict? All out war and non-lethal weapons are certainly divergent considerations. For the purpose of this paper, I will focus on events other than a full scale war between nation states that would necessitate the full effect of a nation’s military might to affect the desired effects. This is not to say that some non-lethal technologies could not be part of the warrior’s arsenals in larger scale battles, but this is not the ends nor means that the paper is going to argue. Rather, the focus will fall on matters relating to the requirements within the DPS and IPS in a post-conflict situation where we are required to protect Canada and Canadians, assist failed and fragile states and support allies in the efforts towards “building a more secure world.”⁴³

Concurrently with the issue of new policy, Canada’s military has been undergoing a significant transformation to meet short and long term requirements within the DPS. The new CDS has provided the impetus and leadership necessary to transform the military in its entirety so that it remains “relevant and responsive.”⁴⁴ To ensure the military can achieve strategic aims and objectives, it is transforming and adapting as necessary to achieve the DPS requirements and ensure the protection of Canada and

⁴² Canada’s International Policy Statement, Foreword by the Prime Minister

⁴³ Canada’s International Policy Statement, 11.

⁴⁴ Canada’s Defence Policy Statement, Capabilities of the CF as identified in web portal at http://www.forces.gc.ca/site/reports/dps/main/02_e.asp; Internet; accessed 17 March 2006.

Canadians. This was made clear by the former Minister of National defence when he stated that “. . . the Canadian Forces will be reorganized to more effectively and quickly respond to domestic crises, as well as support other government departments (OGDs) as required.”⁴⁵

The ability to achieve operational effectiveness in a 3-Block war is the CDS’s vision for how the military can achieve the Minister’s demands and to support initiatives overseas. Specifically, it outlines how “our military could be engaged in combat against well-armed militia in one city block, stabilization operations in the next block, and humanitarian relief and reconstruction two blocks over.”⁴⁶ The difficulty is that in one block, lethal force is prevalent and necessary to ensure peace and security and safety of our troops. In the next block, lethal force would completely undermine the hearts and minds campaign and could impact the overall success of the mission. In the third and final block, humanitarian efforts may be ongoing with a vast array of potential threats including but not limited to public riots and insurgents trying to enter restricted zones to steal food and other supplies. Here in lies the key capability gap that does not allow for alternate weapons and means to deal with the variety of circumstances that could confront a soldier in a relatively short period of time.

The most intensive ‘block’ expectations will require troops to be involved in close-quarters battles with insurgents. This is inevitable. However as the line between the various conflict blocks blurs and become a slightly different shade of grey, it becomes more difficult to determine if lethal force or some other non-lethal means is best. An

⁴⁵ Canada’s Defence Policy Statement, Ministers Forward.

⁴⁶ Canada’s International Policy Statement, 11.

example based on an incident captured on news tape demonstrates the particular difficulties in the 3-Block war environment. In November 2004 the world witnessed US soldiers killing seemingly defenceless and already injured people in a building in Iraq.⁴⁷ The world was shocked to see such a flagrant disregard for the laws of armed conflict and the apparent disregard for life by soldiers that engaged men who, by virtue of their wounds, were “. . . combatants hors de combat . . . [and] . . . shall not be attacked.”⁴⁸ What if these very soldiers could have used a weapon or system that would have disabled these non-combatants such that they did not pose an immediate threat while they continued to search the building for real combatants? What if they could have disabled all occupants and all potential combatants, prior to even entering the building? Then, the news reel would have painted a very different picture where the soldiers achieved their objectives, prisoners could have been taken into custody for interrogation and the challenges against the government and military would have subsided or never been raised. NLW technology would have prevented this from even becoming an issue and would certainly have resulted in more favourable press in an already tenuous campaign.

The DPS and IPS demand a lot of the military and defence department as a whole. Canada has not gained the strong reputation for peacekeeping and international crisis

⁴⁷ The pictures cannot possibly portray what really happened and the soldiers that were in the firefight may have been perfectly within their rights to continue the engagement. The pictures and footage certainly do not reflect this! The perceptions at home and around the world were not positive and caused the US Government to have to respond accordingly. Graphic description and pictures and footage is available at <http://sabbah.biz/mt/archives/2004/11/16/us-marine-filmed-killing-unarmed-iraqi>; Internet; accessed 17 December 2005. Is Canada prepared for this? How much bad press would it take before public opinion based on such an event would cause our Government to recall our troops from abroad?

⁴⁸ Office of the Judge Advocate General, “The Law of Armed Conflict at the Operational and Tactical Level,” Directorate of Law Training (Ottawa: DND, September 2001), 4-6, and “1945 Charter of the United Nations, Chapter VII - Action With Respect to Threats to the Peace, Breaches of the Peace, and Acts of Aggression, Article 51,” in Collection of Documents on the Law of Armed Conflict, 2005 ed., ed. Directorate of Law Training (Ottawa: DND, 2001), 66.

resolution by using lethal force and means to make others acquiesce. We are unlikely to do so in the near or distant future. We must adapt to the new threat environment where our troops will have to operate and provide them the tools and policy and government support needed to achieve success. Non-lethal weapons are just one of many excellent opportunities that will provide direct and lasting effect to the IPS and DPS requirements.

FORCE PROTECTION AND HOMELAND SECURITY

The DPS is clear, Canada must be protected and the military is resolved to do this both at home and abroad. The problem lies in how to protect large numbers of people, installations and infrastructure while adhering to a strict and sometimes intolerant less-than-lethal construct. This is not to suggest that lethal force is not an option. It is, and must be, in order to maintain the ultimate deterrence that is still necessary for security and safety of our troops. This paper contends that lethal force need not be the primary means for prevention when non-lethal systems are available as a complimentary enabler prior to using final decisive lethal effect. This is particularly important when dealing with the matters of force protection, both abroad and at home, and for overall homeland security.

The asymmetric enemy who is intent on inflicting death and damage is not easily recognized nor deterred. Canada must be able to clearly assess the difference between random acts of recklessness, imprudence or indifference by unsuspecting but innocent civilians and a true attack and threat to security and safety. Barriers and warnings using sound and light apparatus are insufficient in certain circumstances thereby necessitating lethal levels of force to be employed. Imagine, a young driver in a car in a strange town approaching a naval installation. It is dark and raining, she is lost and trying to read a map, lights are on inside the vehicle making it difficult to see outside and she is weaving all over the road. She is approaching a military access point but has been unable, due to

her disorientation, to see the warning signs posted. She is unable to hear the verbal warnings from guards as her windows are rolled up and her music is on. The flashing lights catch her attention just as she passes through the first gate but now it is too late. Bullets riddle the van and she crashes into a series of parked cars.

Unrealistic? This was the very situation that I was faced with as Battle Watch Director in the United States Navy's Third Fleet Operations Center⁴⁹ three days after the tragic events of 11 September. The initial report of an attempted incursion came into the operations center soon after 0200 on a Sunday morning. The results were extreme and the injuries, although not life threatening, were significant as the young lady was scarred for life and will never walk again without a limp. The media, sympathetic to military levels of cautiousness and actions due to the recent attacks, still did not let-up on military commanders and government. Why was an innocent person shot rather than subdued? Why did the military not use effective warnings that could not be misinterpreted? Why was there not an intermediate level of warning or protection that could have stopped this from being an extreme event necessitating lethal force? Why does the most technologically advanced and powerful nation in the world lack a technological solution that uses non-lethal weapons or systems as a part of layered defence around military installations?⁵⁰

⁴⁹ Battle Watch Director is the title for the officer in overall charge of the San Diego Operations Center that was stood-up as a result of the attacks of September 11th. As the lead, I was responsible for all land, sea and air protection in the area and was responsible for instituting readiness levels in the region of the harbours that the USN used for berthing and re-supply.

⁵⁰ San Diego nightly news challenged the US military for not being more prepared for situations such as the one with the lady who inadvertently crashed a security point. The military public affairs and senior leadership teams did not do well to explain away what happened and how it was being addressed for future incidents.

Unfortunately, the military had few answers to these queries and relied solely on the self-defence criteria which permitted, possibly encouraged, the use of deadly force. Hindsight being 20/20, it is clear that this could have been avoided if the military had employed non-lethal systems already within their arsenal. Although the JNLWD⁵¹ was not officially stood-up when this occurred, the USMC had a robust and highly effective NLW program in place with proven capabilities that could have allowed for a more graduated use of force continuum. This includes systems such as chemicals that create either a sticky or aqueous slippery state which a vehicle cannot pass through⁵² and dazzle light systems that temporarily blind the driver so that they cannot proceed further than the first access point.⁵³ Contentious but effective calmativive gases or RCAs could have been fired through the window of the vehicle knocking out the driver until such time as a true assessment of intent could be made. Although the possibility of a collision increases with such use, the less-than-lethal procedures would decrease the likelihood of long term injury. Regrettably, these systems, although available or near production, were not a part

⁵¹ The Joint Non-lethal Weapons Directorate was established in 1996 as a result of the gap that existed between presence and show of force and the need for lethal means to deter an assailant or perceived aggressor. It was initially an Air force and Coast Guard initiative and became joint when the various elements were duplicating effort and expenditures. It allowed for a centrally controlled process that also involved research in the human effects factors that are so contentious and that confront international legal statutes. More information available in the book.

⁵² These systems are designed to create a state of either traction or slippery coating that will not allow a vehicle to pass easily. There are limitations for range and effectiveness over a longer timeframe. The method of use must reflect clear choke points using barriers that prevent passing that section of the security perimeter other than through the barriers. Then the chemical reactant could be dispersed into the pre-formed barrier location to prevent any further movement. This type of system is considered ineffective for large scale protection of buildings and infrastructure unless barrier systems that force vehicles through narrow points are in place. A perfect example is in Ottawa around the United States Embassy. New road barriers have been erected around the entire structure and limit the approach to only a few narrow paths that now have systems in place to prevent further passing of unwanted or suspect vehicles.

⁵³ Dazzle systems create an environment that prevents a person from being able to see clearly. This could still cause a vehicle such as the one in this example, to crash, but this would ensure that lethal rounds would not have to be used and the location of the dazzle light system would ensure that no other people are put at risk.

of the force protection arsenal and the military guards were left with no choice but to use lethal force to stop an innocent person who was merely lost and disoriented.

Could this happen in Canada? Absolutely! Canada's level of force protection around installations and bases is very similar to what existed in the US shortly after 9/11. We have guards, usually retired forces members who are now Commissionaires, who man access points. Some bases, very few based on my research of several Base Standing Orders around Canada, have armed sentries.⁵⁴ There exists, however, no intermediate capability available to supplant the capability gap between a verbal, audible or visual warning and an armed sentry firing lethal rounds into a suspect vehicle or person approaching an access point.

Some would argue that sufficient warning through intelligence would ensure that security and manning would increase if the threat warrants. Security teams advocate that other forms of protection including barriers and obstructions such as the waterborne and roadside barriers in Esquimalt and Halifax, will provide protection.⁵⁵ This I do not dispute. However, it is irrelevant how many people and how many conventional weapons or barrier systems that you use to establish security at a controlled access point if you do not have the ability to warn-off or determine intent after fallible warning systems are used to no avail. The expectation that security teams will transition from a less than effectual

⁵⁴ CFB Esquimalt Naval Provost Marshall duties and responsibilities. Classification prevented posting details of actual watches and location of sentries. Some basic security information is available at http://www.navy.dnd.ca/marpac/cfb-e/marpac_cfb-e_e.asp?category=53&title=305; Internet; accessed 12 March 2006.

⁵⁵ The Navy has procured waterside barriers designed to prevent the ingress of small to medium size boats. These barriers are designed to be anchored off the approaches to warship berths and jetties to allow for a physical separation that would prevent an alongside detonation that could cause irreparable damage. These waterside barriers are designed to replace temporary wooden systems that are easily defeated by small boats and watercraft. Details of the system cannot be provided due to security related concerns. Access to DWAN will be necessary to obtain more information for design and employment of these barrier systems.

warning system to lethal force is unsatisfactory in this day and age when technology can provide solutions that can, when properly used by trained personnel, add significantly to the overall safety and security of bases and personnel while ensuring the safety of those that do not have ill-intent.

It is not a question of ‘if’ something will occur to test our resolve and procedures; it is a matter of ‘when.’ Can we afford the negative press that will surely follow if we get it wrong and inadvertently kill an innocent person on our own soil? I contend that neither government nor the general public will be tolerant of such an incident. Canada must be proactive and procure non-lethal weapons and systems that are designed and used as part of an overall use of force continuum that ensures security and safety and protects against unnecessary use of force. The presence and warning to lethal force continuum remains useful in the most extreme circumstances and must remain an integral part of security at home. Non-lethal weapons are needed as an enabler for safety and security and must be further developed to ensure that resorting to lethal force is reserved for the necessary decisive level of force within the continuum.

NLWs AND EXPEDITIONARY WARFARE

Central to the new DPS and at the core of the transformation that is currently embracing the Canadian military, is the requirement for a Standing Contingency Task Force (SCTF) that would be ready at short notice for operations anywhere in the world. If you break down the SCTF into core capabilities you will discover a clear message from the CDS. Canada shall be able to conduct expeditionary operations, including the landing of military forces in a nation other than our own, with the expressed intent of gaining and

holding ground.⁵⁶ Canada has not been involved in amphibious operations since the Second World War. Much has changed and one need only look south of the border at the US Marine Corps (USMC) to see just how difficult this task can be in this new asymmetric world.

The USMC is central to Non-lethal initiatives in the US armed forces. Similar to the expected Canadian Expeditionary force, the specialized missions and objectives that the USMC pursues necessitates the requirement for additional capabilities that allows the Marine Corp to project force across the entire spectrum of conflict. When the primary aim is to conduct operations where mission success is based on hearts and minds, minimal destruction, reduced casualties and political will, the options become somewhat limited. “When killing just won’t do,”⁵⁷ other options must be pursued and non-lethal weapons must be a part of the arsenal to ensure the CF remains relevant and capable in this new role.

A significant expectation associated with the SCTF and expanded expeditionary role is that the military will develop new procedures and doctrine and will pursue new technology for our future force requirements. Donald Rumsfeld put it succinctly when he spoke of transformation as he indicated that “a revolution in military affairs is about more than building new high tech weapons, though that is certainly part of it. It’s also about new ways of thinking and new ways of fighting.”⁵⁸ Although he was not necessarily

⁵⁶ CDS Vision and response to questions as to the exact expectations he had of the SCTF when deployed. June 2005 in CFB Esquimalt.

⁵⁷ Harper’s Magazine, Capabilities and systems that are non-lethal based available at: <http://www.harpers.org/WhenKillingJustWontDo.html>; Internet accessed 3 February 2006.

⁵⁸ Donald Rumsfeld speech at the US National Defence University, January 31, 2002. Obtained from Peter Haydon’s “Canada’s New Defence and Naval Policies: Déjà vu all over again?” prepared for the Centre for Foreign Studies, Dalhousie University.

speaking of NLWs, he was advocating that there must be a balance between new technology using innovative concepts and the need to limit change and development due to old constructs that stifle creativity and transformational advances. Non-lethal weapons are just such a concept that, combined with innovative technological advances over the past decade, are quickly filling the fissure that creates unnecessary risks troops and citizens at home and abroad.

THE CAPABILITY GAP

Key to the expectations within the NSP and 3-Block War construct is the requirement for escalation of force to protect soldiers, civilians and infrastructure. Without advanced non-lethal capabilities to bridge the gap between presence and warnings to the use of lethal force, there will be increased civilian casualties such as the one in Kandahar recently. In this incident, a Canadian soldier engaged a three wheeled vehicle being used as a taxi. “After the driver failed to respond to spotlights, verbal warnings and hand gestures to stay away from the Canadians, a soldier fired shots at the front of the vehicle.”⁵⁹ The passenger, a man with six children and a wife, was hit and later died. Canada’s government and military were left to answer questions and explain how an unarmed and innocent civilian could be killed when our very reason for being in the country was to protect them. The soldier did exactly what he was trained and required to do. He had no other option as his arsenal was limited to verbal and visual warnings prior to implementing the final and decisive act resulting in death.

This example, and many similar, demonstrates that mere presence with weapons, basic barriers and verbal warnings are insufficient to meet the needs of deployed forces in

⁵⁹ CNN webnews; located at http://www.cnn.com/2006/WORLD/asiapcf/03/15/canada.afghan/index.html?section=cnn_latest ; Internet; accessed 27 March 2006

hostile areas. Greater civilian security and safety comes at the expense of CF personnel safety. A study on risks to forces compared to safety of people in an urban environment with mixed threats demonstrates that as greater emphasis is placed on protecting a civilian population, with current capabilities and procedures, there is a significant decrease to the safety factor (by an equal percentage) for military personnel. For example, in an operation that necessitates crowd control of known combatants interspaced and indistinguishable from non-combatants, the ability to ensure safety of the innocents comes at a cost to our own security. This is untenable and will, if not properly addressed, result in an inadvertent engagement of non-combatants due to the increased threat level and risk to troops. Acceptable risk is difficult to assess and becomes more complicated if government or our military leadership wants to decrease the likelihood of injuring or killing civilians.

The same study determined that if you introduce an intermediate non-lethal system for warnings and deterrence/preventative engagements, you can increase safety probabilities for both troop and civilian percentages and still achieve mission requirements.⁶⁰ Current lack of non-lethal means and inefficient warnings, combined with generally restrictive engagement criteria, creates a capability gap that is inherently dangerous to members of the armed forces. Some declare that warning shots are sufficient to fill this gap. Warning shots⁶¹ are part of the currently permitted non-lethal

⁶¹ Warning shots are considered a non-lethal means of warning off people or vehicles that close forces personnel or positions. They involve all manner of force presentation including pointing of weapons and discharge of a weapon in the general direction of a perceived threat. The problem lies in the time factor, normally very short, and in the permissives in close confines where a warning shot will likely impact someone or something and therefore is not allowed to be used. Warning shots are also significant cause for concern as it may send the wrong intent message from the person or force using the warning shot and could,

continuum, but are inherently ineffective in the confines of the urban environment when risk of collateral damage is high and the potential for escalation is possible. Impressive and effective in the generation of fear and uncertainty for those that the warning shots are directed at, this method does not sufficiently allow for safety of innocent people in the immediate proximity or beyond visual range in the direction the shots are fired.

Warnings are still required and remain instrumental in the criteria needed for escalations in force, but they must be managed and shall be sequential to provide sufficient notice to a perceived threat to allow that threat to turn away, stop or otherwise make intentions known.⁶² This sequencing of events within the continuum includes presence, barriers, show of force with a weapon both in a benign and an aggressive posture, audible and visual warnings, warning shots and then lethal force. Some of the problems with warnings as we currently use them are as follows:

- a. Warnings can be difficult to understand by unaware citizens who may not know the language, may not see or understand the visual warnings or they may not perceive a threat if they do not respond to a warning;
- b. Warnings using visual and audible systems are inherently ineffective and slow in implementing;
- c. Warnings can give away our intent as they demonstrate clearly how far an organization can press military forces before lethal force is used; and
- d. Warnings can be ineffectual due to speeds of vehicles, vessels and aircraft, which compress the time between warning and engagements.

inadvertently, be cause for increased escalation as the person or vehicle being warned off may take the warning shot as a hostile act and respond in kind.

⁶² Canadian Forces, Use of Force in CF Operations, 2001, 1-7/10

To alleviate the problems above, a new, more robust and non-lethal intermediate warning system is needed to fill the warning capability gap. What NLWs provide is the ability to use a level of force that still achieves the critical requirement of determining intent, but also ensures that if the intent is not a friendly one, then action has already been implemented to prevent damage to Canadian systems and/or death for our personnel. Considering the escalation continuum previously indicated above, by adding the additional non-lethal layer, commanders and members of the armed forces are provided critical options. The non-lethal use of force continuum permits layered employment of defences that assures security in intermediate and high risk zones. Most importantly, the introduction of a non-lethal system, as part of the continuum, provides the most critical information needed by commanders to determine follow-on courses of action; this is the determination of hostile intent.⁶³

Hostile Intent is defined as “the threat of an attack or other use of force where there is reasonable apprehension that death or serious injury will be the likely result.”⁶⁴ Commander’s will be intimately involved in the determination criteria, classified and not permitted to be placed in this unclassified paper, and will ensure that this is passed down to the lowest level possible to ensure safety of personnel and or special status equipment. It is one of the most contentious and difficult areas of assessment for commanders and military personnel at all levels. When does it apply, where does it apply, who may authorize what actions based on the intent demonstrated? All these questions and more

⁶³ Intent is the critical criteria necessary to transition from presence to lethal force. How intent is determined is the ultimate challenge of armed forces members and in most cases this determination must be done in a very short period of time. Intent is also the critical requirement to implement the legal rights for self defense which is always inherent for all people.

⁶⁴ NATO unclassified extract, 2003. Classified information is not available that is used to further define and describe what Hostile intent consists of. This is also included in Commander’s messages of intent or guidance for operations.

make intent one of the critical challenges that may be made somewhat easier through the use of non-lethal weapons or systems.

NLWs provide three distinct advantages for use of force criteria as it relates to the determination of hostile intent from perceived threats and requisite responses forces to defend themselves. First, the use of a NLW will determine the intentions of a perceived assailant in the vicinity of an outer warning zone. Attempts to negotiate through a restricted area where warnings are posted and NLWs are being employed will, after the weapon is used, determine the intentions of a person or vehicle. It may not determine that the intention is actually hostile, but it provides an indicator needed to carry out the next level of warning. People or vehicles able to manoeuvre, without hindrance, around barriers and past warnings and are able to defeat basic level non-lethals are clearly indicating intention and allows for an immediate escalation in force to deter further penetration by these threats.

The NL warning system, having established intent, permits a logical and sequential escalation to more determined non-lethal means or possible lethal intervention. An example of this would be a person in a vehicle who passes through a checkpoint that has used RCAs to prevent penetration in the past. If the individual is wearing a gas mask, in order to defeat this type of deterrence systems, he is giving indication and the next level of non-lethals designed to stop the vehicle vice the person should then be implemented before resorting to the most lethal forms of force to seek compliance. By intervening in a manner that does not kill this person, the military forces maintain control, ensure security, save a life and now have a person of interest whom they can interrogate to find out how he knew to use protective equipment and determine what his true intentions are and if there are any follow-on penetrations or attacks planned.

The second advantage of NLWs in relation to intent determination is to provide an effective and layered level of defence to protect forces or key infrastructure. As indicated above, this involves more focused and disruptive non-lethals that would require a dedicated effort to be defeated by someone with hostile intent. The use of layered non-lethal protective measures creates an environment where force is being applied in a sequential and graduated manner so that unnecessary death and destruction can be avoided. This is especially crucial in areas where the hearts and minds of the people, government will and public support are critical to continued operations.

The third purpose for NLWs deals more with our political and military leadership indication of intent to use the minimum force necessary to achieve the desired end state. This has potentially unintended consequences as it may indicate weakness and lack of fortitude and aversion to using lethal means that could be exploited by belligerent forces. More on this later in the paper. In a world with the CNN Factor prevalent during all operations, the government must strike a balance between having a military force capable of conducting operations using lethal force and the need to win the hearts and minds of the governments and people in the nations where we operate and the voting public back home. Technological supremacy has created the expectation that hostilities will be carried out with specific emphasis on fewer casualties and less destruction. Anything less will cause significant turmoil for governments at home and will cause operations to lose favour within the international community. Non-lethal weapons are an excellent system that will assist in portraying the right intention and image for our forces deployed overseas.

NLW research and development, procurement, implementation and deployment is critical to meeting the needs of government and the military in order to bridge the

capability gap currently experienced at the front lines. Although some training will be necessary to ensure proper utilization of new technologies, it can and will become an integral part of a Commander's arsenal in pursuit of the IPS and DPS requirements and expectations. Policy will need to be established to clearly identify government intent and support for further research in contentious areas and procurement of currently proven NLW systems. This policy must be translated down to military leadership who must apply this new technology and associated doctrine to operational orders and rules of engagement in order to best achieve their missions.

CANADIAN NLW POLICY

Canada requires significant effort to develop specific policy and doctrine for the research, development, procurement and/or employment for non-lethal weapons. Without a policy, there is no direction and certainly no appropriate levels of funding. Non-lethal initiatives receive token attention in military directives and policy and in writings and briefings through Defence Research and Development Canada (DRDC). The only doctrinal document that speaks directly regarding employment of non-lethal weapons capabilities is the Army's Firepower publication issued in 1999.⁶⁵ This lack of reference material and guidance translates into lack of effort and general unwillingness to pursue a viable solution to the capability gap in the use of force continuum. Some of this unwillingness of government is the military's fault as it fails to properly indicate needs and requirements in a manner that government can respond to. Even internal to the military there is a bottom-up pull from end-users rather than a top-down push from leadership to get NLWs into the arsenal. This has allowed for the introduction of systems such as pepper spray for naval boarding operations, but it still does not project beyond

⁶⁵ Department of National Defence, *Firepower* (Ottawa: 1999), .

current operational requirements into future needs. This type of approach rarely results in long term dedicated support and does not lend itself to positive policy initiatives that include the necessary guidelines for research, development, procurement, training and employment of new technologies.

Examination of recent R&D Canada technology conference minutes, research papers, presentations and initiatives reveals little interest in NLWs or systems. A clear example is the Technologies Symposium sponsored by R&D Canada in the fall of 2005 that had several very interesting presentations regarding security related initiatives but only one, of the 22 briefings, that even remotely mentioned the NLW possibility. In contrast to the apparent lack policy and doctrine, Dr. Ross Graham, Director General of DRDC, provided me great belief and hope as he outlined various research programs being pursued.⁶⁶ This included further development on zap technology similar to tasers used to fire electrical impulses to temporarily incapacitate people. Other initiatives include some “. . . activity on high-power microwaves as a tool for stopping small engines.”⁶⁷ He also indicated that R&D Canada was directed to focus attention on non-lethal weapons initiatives in preparation for the 2010 Olympics in Vancouver. This was later confirmed by LCol Johnston in his briefing on Canadian Forces Transformation, Impact on Research

⁶⁶ Meeting with Dr Ross at the CFC after a briefing he gave to the Maritime component of Term three. In this meeting, we discussed the way ahead and he agreed that non-lethal weapons showed great promise and that R&D Canada was interested in the zap system and many other initiatives. He did not have specific details of other programs and due to limited space available, no further research will be done until a follow-on paper on future non-lethal systems.

⁶⁷ Dr. Ross Graham provided follow-on information by email that outlined some newer systems that DRDC is working on. In this follow-on email he indicated that DRDS maintains good liaison with other contributing nations, the US in particular, and they do keep abreast of general research happening around the world. He agreed that there still exists difficulties in legal matters, reliability of systems and that the critical factor needed and that NLWs provides is the ability to determine intent of a potential adversary.

and Development where he addressed focus areas for the near term.⁶⁸ Clearly the research community is engaged, even if there is not clear policy and doctrine on NLWs.

These research efforts aside, there still exists a gap in policy and direction from government and senior military leadership on where Canada should focus efforts and limited resources. What is missing is a shift in focus within the department, both military and civilian, and a commitment by Government to pursue this EMA and provide the military with a viable and effective NLW policy that is properly funded. As a starting point, Canada should review the policies and procedures of our allies. Several nations and organizations, including NATO, have policies and programs specifically designed to enable NLW research and development, but none are as advanced or focused as the U.S. programs. Funding is certainly a stumbling block, but if the military presents the government a solid foundation for why this type of research and development is important to meet short and long term foreign and military policy statements, then financial backing will materialize. Canada is not alone in providing inadequate research funding as even the US, with a NLW directorate, individual element programs and a general acceptance that NLWs are critical to operations in failed and fragile states, committed only 30 million dollars to research in 2002 and just last year the estimate is that only 42 million dollars was expended.⁶⁹ The recommended funding envelope for the US is set at 300-400 million dollars but is unlikely to be approved by their Department of

⁶⁸ Transformation impact briefing 26 March 2006. Link available at; http://www.st.drdc-rddc.gc.ca/file_download.php?URL_ID=6528&filename=11431359101Johnston_-_Canadian_Forces_Transformation_Impact_on_Research_and_Development.pdf&filetype=application%2Fpdf&filesize=77445&name=Johnston+-+Canadian+Forces+Transformation+Impact+on+Research+and+Development.pdf&location=user-S/; Internet; accessed 29 March 2006

⁶⁹ Keay Davidson, "Nonlethal Weapons Pushed by Research Group," from the Common Dreams News Center website at www.commondreams.org/headlines/02/1105-05.htm; Internet; accessed 2 March 2006.

Defence. Canada certainly cannot afford this higher cost estimate, but dedicated assets and resources are needed. Because we do not have a clear formulation for where non-lethal policy fits into our overall organization, it is recommended that we focus in three key policy areas. These are Research and Development, Training and Legal Implications.

NLW POLICY AND RESEARCH

As indicated earlier, research is underway and should continue. What is needed is a more robust program that accounts for the variables that will inevitably slow new initiatives. With the upcoming Olympics in 2010, the need for non-lethal weapons is clear and the priorities should focus on the near term objective of providing military support personnel, JTF2 in particular, with the necessary systems needed for security during the Games. This would mean current technology would get the immediate funding and research, but this is just the beginning and is deemed acceptable as a starting point.

The next defence research priority, for timing and funding, should focus in the area of human effects. This is likely the most contentious issue as it will confront directly many opponent viewpoints that proclaim that NLWs should not be pursued because they may cause irreparable and long term damage and suffering. Human factor legal ramifications and restrictions could, if not addressed early on, stop all further initiatives for non-lethal development and procurement. Although it is agreed that non-lethal human effects are difficult to fully predict, lethal effects are certainly discernible and are clearly not the ideal solution considering the finality of this option. Dedicated research is the only means to counter the sceptics and lay to rest the uneasiness that permeates critics of systems that they consider unproven.⁷⁰ Canada must, like the US with their Human

⁷⁰ Bradford Non-Lethal Weapons Research Project, 28.

Effects Process Action Team (HEPAT), and Human Effects Review Board (HERB) adopt a system that ensures analysis includes the human effects dimensions.⁷¹

Human effects receive less than adequate attention compared to the hype of the non-lethal potential. Far-fetched and dreamy stun guns are sexier and capture the attention of those that desire new capabilities. This is why, when you Google non-lethal weapons you get thousands of hits that point the reader towards futuristic and dream-like systems. If you Google human effects, you get very few sites that relate to non-lethal weapons. It is a self-fulfilling prophecy as the major impediment to human factor assessment is the lack of quality literature for review. In a 2003 paper presented to the 2nd European Symposium on Non-Lethal Weapons, the report determined that “. . . empirically speaking, most of the studies were of a particularly non-scientific nature, including those sources which portray themselves as being objective”⁷² Canadian policy on research must address this shortcoming and provide for detailed and critical assessment of non-lethal systems to ensure that priority for development and procurement within a limited budget allows specific focus on achievable goals.

NLW POLICY AND TRAINING

The next area of focus for policy that is considered of primary importance is in the area of training. Canada, in order to maintain compatibility and survivability, pursues new technology in order to fill the capability gap for weapons systems, command and control systems and for communications requirements. Often these are purchased at short notice and without sufficient training. A clear example is the installation of the Close-In

⁷¹ Ibid., 28.

⁷² Ibid, 28.

Weapon System (CIWS) in ships proceeding to the Arabian Sea during Gulf War I. The defensive weapons systems were designated for the new Halifax Class ships but, because it was too risky to go to the gulf without self-defensive capability, they were installed in all units that deployed. Few people had the training to use the CIWS and even fewer in how to maintain it. During the recent Gulf deployments in support of OPERATION Apollo, communication and IT systems were installed that operators had to train on during the transit to the theatre of operations. Policy must be clear and must be definitive. New technologies, especially ones that deal with engaging directly people or objects in the vicinity of innocent people, as non-lethals well inevitably require, must have the requisite training. This is necessary to ensure confidence for the individuals that will use the systems and, more importantly, to ensure the new system is not used incorrectly causing unpredictable lethal results that could jeopardize mission objectives.

NLW POLICY AND LEGAL ISSUES

The final area of policy that requires dedicated focus is in the realm of legal permissions and doctrine. No amount of initiative or development will proceed if there are legal restrictions that prevent research, prohibit procurement or limit possibilities. New technology is vital to the capability advantage we currently enjoy over our enemies and the need and desire to maintain this advantage through future conflicts. Non-lethal weapons could be another such advantage as they will allow for engagements without the associated negative influences caused by lethal and destructive natures. You rarely see any negative press that shows military forces overseas subduing a rowdy crowd or taking down belligerents in a less-than-lethal manner. However, one soldier killing gone local Afghan or Iraqi citizen sparks outrage and confrontation in the country where it occurred and depletes world opinion and support for missions abroad.

These three critical policy focus areas, Research and development, Training and Legal, regarding non-lethal weapons must be the initial focus if Canada is expected to be successful in future advances and capabilities in the modern urban battlespace. NLWs need to be recognized as an evolutionary enabler that should be pursued as a compliment to conventional systems. In Canada, some capabilities and effects exist that are not commonly recognized as non-lethal. Current “non-lethal integration with conventional warfare ranges from . . . human intelligence . . . signal interception, signal exploitation, electronic countermeasures and electronic surveillance measures.”⁷³ Success in these areas of non-lethality will aide in the development and acceptance of current and future systems as new and more effective policy is developed and implemented.

THE LEGAL HURDLES

NLWs are viewed by many sceptics as being a significant threat to current international and customary laws. This is especially true of non-lethal chemical and biological innovations that many fear risk the intention behind the CWC that was ratified in 1997. Some of the opposition is based on lack of understanding and some on actual analysis of research in certain non-lethal categories. The paper will now discuss legal aspects of new and old technologies alike and determine if legal constraints will pose an insurmountable opposition to research, development, procurement and employment of non-lethal weapons by the Canadian Forces.

⁷³ Dr. Karl P. Magyar, *Challenge and Response: Anticipating US Military Security Concerns* (Alabama: Air University Press, August 1994), 338.

There are several conventions and principles that affect weapons research, development, procurement, disposition and use. The ones deemed most affected by or restrictive of NLWs include:⁷⁴

- The Hague Declaration Concerning Asphyxiating Gases of 1899;
- The Hague Regulations of 1907 that seek to limit development of destructive weapons;
- Protocol I to the 1949 Geneva Convention, Article 35. This article prohibits weapons, munitions, means and methods that cause superfluous injury or unnecessary suffering and also deals with environmental concerns;
- Protocol I to the 1949 Geneva Convention, Article 36. This article seeks to limit the development, acquisition or adoption of new weapons and means of warfare that might be prohibited by this protocol or other rules of international law;
- Protocol I to the 1949 Geneva Convention, Article 51. This article deals with indiscriminate effects of weapons or methods of warfare that demands that we must be able, in times of conflict, be able to distinguish between combatants and non-combatants;
- Biological Weapons Convention (BWC) of 1972;
- The 1976 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques;
- The 1980 UN Convention on Conventional Weapons and its protocols;
- The 1993 Chemical Weapons Convention (CWC);

⁷⁴ Office of the Judge Advocate General, Collection of Documents on the Law of Armed Conflict, 2005 ed., ed. Directorate of Law Training (Ottawa: DND, 2001).

- The 1995 Geneva Protocol on Blinding Laser Weapons, Protocol IV; and
- The 1997 Convention on the Prohibition of Anti-Personnel Mines.

Although this list is not exhaustive, it is still beyond the scope of this paper to discuss the NLW implications of each. I will narrow my assessment and analysis to the legal statutes that I have determined are the most significant, and perhaps most contentious. This includes the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and their Destruction - 1997, and the CWC. The final discussion area considers the applicability of the law with emphasis on the reasoning for limiting initiatives for weapons and systems “implicitly designed and primarily employed” to prevent fatal injury.

The Hague Regulations of 1907 that sought to impose limitations on the destructive power of weapons and the Article 36 of Additional Protocol I to the 1949 Geneva Conventions are interesting and will receive a cursory viewpoint. These legal efforts were intended to limit technological advancements and destructiveness even as they left the responsibility for compliance in the hands of the respective nations. It is interesting to note that even with these in effect, the world’s superpowers continued to pursue and create ever more powerful and advanced systems that could, if not properly controlled by responsible and peaceful nations, catapult the world into nuclear self-annihilation. So, why has mutual destruction not occurred? Is it because there were laws against it? I contend that the world was not, and is not prepared for a cataclysmic event such as what could occur. Lessons are learned the hard way sometimes and during World War II, the use of atomic weapons on Japan certainly demonstrated the need for controls for these massively destructive weapons and associated attempts to gain technological advantage.

LEGAL DISCUSSIONS

The Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and their Destruction - 1997 was a great achievement for Canada and much of the world ratified this convention soon after it was declared. To date, “147 State Parties have ratified the treaty, seven countries have signed (but not yet ratified) and forty States have not yet signed.”⁷⁵ Notable exceptions include China, Iran, Iraq, Israel, Russia, and the USA. Generally, land mines are designed for lethal effects and have a significant destructive kinetic intention against people, vehicles and structures in the vicinity of the detonation. They also cause significant numbers of non-lethal but inhumane and indiscriminate injury for many who lost arms and legs and are forever dismembered and unable to fully contribute to society. So, why is this important to non-lethal weapons discussions and arguments if it relates specifically to a lethal system?

When the Ottawa Treaty⁷⁶ was ratified and accepted, it effectively removed a very important capability in military arsenals. Mining, albeit dangerous and hazardous, provides an excellent level of protection within the layered defence construct. It ensures protection of forces and key infrastructure from an enemy who manages to breach outer sentry and defensive barriers. Without the mines, the enemy is more able to close a vital target or camp and inflict potentially irreparable damage that will affect the overall mission. Limiting the level of protection of forces has a direct impact on security and confidence for deployed troops conducting operations. A capability gap has been created

⁷⁵ Wikipedia, website at; http://en.wikipedia.org/wiki/Ottawa_Convention_on_Landmines; Internet; accessed 17 February 2006.

⁷⁶ This convention is referred to as the Ottawa Treaty or Mine Ban Treaty for easier discussion and written works. Formal recognition is still as per the full Convention name when referring to it in legal documents and international agreements. Further information is available on the Wikipedia, website at; http://en.wikipedia.org/wiki/Ottawa_Convention_on_Landmines; Internet, accessed 17 February 2006.

and nations that rely on land mines for protection have to resort to alternate means to ensure security. The further limitations caused by the Ottawa Treaty force nations to innovate and adapt; NLWs have emerged as just one of the evolutionary weapons poised to fill the protective capability gap.

One of the key issues with this convention is the lack of flexibility permitted for follow-on development of mines that are not necessarily lethal. The US is developing a non-lethal mine derivative that acts in a way similar to conventional mine systems.⁷⁷ The Ottawa Treaty, however, did not allow for or anticipate any future technologies that would potentially replace a landmine and the wording within the convention is unnecessarily limiting. Current wording of Article 2 - Definitions, is as follows:

1. "Anti-personnel mine" means a mine designed to be exploded by the presence, proximity or contact of a person and that will incapacitate injure or kill one or more persons.⁷⁸

I contend that this wording was short-sighted and can be corrected with a protocol addition to the convention. It is recommended that Article 2 paragraph one add a caveat to the 1997 Convention definition as follows:

1. *"Anti-personnel mine" means a kinetic device designed to be exploded by the presence, proximity or contact of a person and that will incapacitate injure or kill one or more persons. Proximity devices used solely for self-defence are not considered anti-personnel mines if the mechanism for incapacitation is deemed non-lethal by design and does not to cause irreversible injury or death."*
Remainder would remain unchanged.

⁷⁷ Incapacitating mines are being developed by the United States uses electrical impulses similar to a taser used by police forces around the world. It has a multiple prong discharge system that flies out and stuns anyone or anything (including equipment which would shut down due to the shock) in the immediate impact area. People would be incapacitated for a period of time such that conventional military forces could reverse the effects and then capture individuals. More information available http://www.acfnewsourc.org/science/non_lethal_landmines.html; Internet; accessed 15 February 2006.

⁷⁸ Office of the Judge Advocate General, "Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and Their Destruction," in Collection of Documents on the Law of Armed Conflict, 2005 ed., ed. Directorate of Law Training (Ottawa: DND, 2001), 297.

Article 1 of the convention would require an exemption be placed to permit the use of certain types of non-lethal systems that are designed specifically for incapacitation similar to that of a taser.⁷⁹ Opponents to these proposals provide two arguments to prevent further development or procurement and use. First, the non-lethal terminology is arguably contentious as it makes suppositions that no person would ever die. As commented earlier in the paper, there is no guarantee that any weapon or system that is designed and intended to be non-lethal will not cause death. The counter to this argument remains that nearly anything can cause death if used in the right, or perhaps wrong, way. It is the intent that is important in this regard and only with cooperative arrangements between nations with good sound legal advice can these seemingly simple opponent views be overcome and the protocols agreed to.

The second issue surrounds the issue of reversible effects. Again, there is no guarantee that effects can be reversed for all people. Only with thorough testing and evaluation could this be properly researched and proven or dismissed as fantasy. Limiting testing, as per the current convention, would not permit this and makes little sense when the intention is to pursue less lethal alternatives to conflicts. The way ahead should include an aggressive pursuit for change including a protocol amendment to the convention. It is possible that many of the nations that have not, as yet, ratified this convention would then be more amenable to doing so. Additionally, by not demonstrating some flexibility and willingness to adjust the wording the nations may pursue development of systems that “look like a mine . . . smell like a mine and

⁷⁹ Tasers are an electrical based non-lethal system that are used to incapacitate by supplanting a significant electrical charge into a person. Up to 20,000 volts, these are usually immediate effects that few that are not under the influence of drugs or alcohol, can absorb without effect. Designed to be non-lethal, tasers have been associated with some lethal results, but the net number of deaths compared to the number of uses is considered within the 2% tolerance level. Tasers are currently limited to police forces in Canada and the military does not, as yet, use them for operations overseas or domestically.

detonate like a mine”⁸⁰ What they are called or declared to be however will be something completely different in order to permit nations to develop what they consider as non-lethal defensive systems necessary to assure safety and security.

The most contentious legal issue considers laws and conventions surrounding the use of biological and chemical agents. Understandable! The foundation for the CWC was predicated on the atrocities even prior to the First World War. Further atrocities in WW I led to the world proclaiming ‘never again’ and actively pursuing, through the League of Nations⁸¹ international laws that prohibited chemical weapons from being used in combat. These laws and conventions proved successful as demonstrated in the Second World War:

At the beginning of the Second World War, the experience of the First World War gave most of the combatants the expectation that CW would be used to an even greater extent. Newspapers articles and popular fiction predicted that poison gases would turn entire regions of Europe into lifeless wastelands. To almost everyone's surprise, it didn't happen. A fragile stalemate kept poison gas out of action during World War II.⁸²

Does this mean that current laws are absolute, correct beyond the need for change or update, that they require no further review or adjustment as the world evolves? Nothing can remain sacrosanct in a world that is changing and having to adapt as quickly as the transnational environment we are currently experiencing. This past two decades

⁸⁰ This is my extrapolation from the age-old adage from the duck sayings that proclaim that “if it looks like a duck . . . if it smells like a duck . . . if it quacks like a duck . . . it is a duck.” More duck and other similar extrapolations can be found at; http://uncyclopedia.org/wiki/Duck_proverbs, Internet, accessed 17 March 2006.

⁸¹ The League of Nations was an international organization founded after the Paris Peace Conference of 1919. The League's goals included disarmament; preventing war through collective security; settling disputes between countries through negotiation diplomacy; and improving global welfare. The diplomatic philosophy behind the League represented a fundamental shift in thought from the preceding hundred years. More details on the League is available at http://en.wikipedia.org/wiki/League_of_Nations; Internet; accessed 22 February 2006.

⁸² Public Domain website, “Chemical Weapons History,” at; <http://www.vectorsite.net/twgas2.html>; Internet; accessed 17 February 2005.

has seen amazing change, most for the better, as nations previously considered peer competitors merge into cohesive unions. Changes that are not necessarily positive deal with the asymmetric threat posed by non-state actors. The terrorist organizations of the world have waged a war and their enemies, the western culture in particular, have been targeted from within. How do you apply old laws and conventions to these new constructs? I will leave this to the lawyers for they clearly are more aware and capable than I to debate the intricacies of the detailed wording and meaning behind the words. However, I contend that the laws are fatally flawed as they do not allow nations, intent on peace and overall world security, to explore non-lethal means for resolving conflicts using technological and innovative developments.

There will never be a good time to open “. . . Pandora’s box . . .”⁸³ on the issue of chemical and biological weapons development. To leave it closed forever, I contend, is not the best solution. Canada needs to pursue initiatives that will allow some CWC laws to be reviewed and changed to better reflect technological advances. Due to unproven experiences in real world events such as that in Moscow in 2002,⁸⁴ I do not currently support pursuing efforts involving non-lethal weapons focused on using chemical and biological incapacitants. Generally, “the requirement for immediate effect will require higher doses (causing more deaths) and that in enclosed spaces where the agent cannot disperse, victims exposed will receive a higher cumulative dose over time (causing more

⁸³ Christian Enemark, “Protection Pending: Changing the Lock on Pandora’s Box,” from <http://www.acdis.uiuc.edu/Research/OPs/Enemark/EnemarkOP.pdf#search='Chemical%20Weapons%20and%20Opening%20Pandora%27s%20Box'>; Internet; accessed 21 February 2006.

⁸⁴ Several articles exist and newspapers and stations around the world watched this event unfold. General consensus is that the gas used by special forces caused several of the deaths of innocent people as they took the theatre back by force. More information is available at <http://www.cbsnews.com/stories/2002/10/26/world/main527052.shtml>; and http://en.wikipedia.org/wiki/Moscow_Theatre_Siege; Internet; accessed 17 February 2006.

deaths).”⁸⁵ I fully support further research in these areas as they do show great promise if the human effects can be certified and determinable across a broader range of use.

Chemical based systems that I do advocate include RCAs and some counter-materiel non-lethal systems. RCAs remain a contentious issue as some nations, the US in particular, have determined that they are permitted to use them in conflicts such as in Iraq. Nations worldwide, Israel being the most prolific user with the greatest amount of experience, have been using RCAs with great effect at home and in operations that they do not consider states of armed conflict. Canada does not make such a decree and does not use RCAs in similar situations regardless of how effective they might be. RCAs work, they are cost effective, they allow for control by a smaller number of personnel of a larger and less cooperative crowd and they clearly determine intent if someone facing an RCA defensive effort still pursues and attempts to close forces or infrastructure. Do they really work? Personal experience during an exercise resulted in me receiving a very small vapour droplet on my mouth. I was amazed at the immediate and definitive effect as I felt an instant burn and tingling even though the amount I was subjected to was minuscule. I did not sustain any long term effects other than the psychological realization that I never want that to occur again. Based on this experience, I am convinced that it would have an impact in crowd control requirements for military forces confronted with unruly people in an urban environment and to control people that are not cooperating when sailors board a ship.

Significant developments in RCAs have resulted in a variety of off-the-shelf systems being available for public consumption. Canada’s Navy purchased these for self

⁸⁵ Bradford Non-Lethal Weapons Research Project, Research Project No.4, December 2003.

protection and control requirements when involved in MIO overseas or at home as part of homeland security initiatives. Interesting to note however, is that when on deployment, teams are not permitted to use or carry pepper spray when involved in an interdiction designated against Al Qaeda or Taliban leadership. Canada is in a state of armed conflict with these organizations, even though they are non-state actors, and the CWC Article states that “no person shall use a riot control agent as a method of warfare.”⁸⁶

This particular portion of the convention is not responsive to the needs of nations that send forces into the urban environments with seamless mixing of combatants and non-combatants. It is unreasonable and illogical to intentionally risk lives when the capability exists to provide self-defence and crowd control when in harms way. For this reason, nations are establishing national policy that allows them to use RCAs in deployed operations involving peacekeeping and policing duties.

Other NLWs that I support further research and development on include anti-traction and sticky foam systems. These are designed to determine intent and eliminate threats at the same time. If Canada had these types of systems in their arsenals, events such as the vehicle attack on a Canadian LAV may have been avoided. In this situation, a vehicle was able to close on the LAV, make impact and set off the explosive. An anti-traction or sticky foam system would have prevented control of the vehicle or would have stopped it from progressing further. These systems, using a chemical reaction, are currently available and are deemed to be non-toxic, non-destructive and environmentally friendly. There still exists some issue concerning the use of these types of systems around people as they could, if within the substance, suffocate. This necessitates

⁸⁶ LOAC Collection, Chemical Weapons Convention Implementation Act - 1995, 286.

restrictions on where and when it can be used, but it remains more effective than allowing a vehicle laden with explosives to pass through unabated to its intended target.

The chemical weapons conventions are well established and well understood. They were in place and, using US interpretations, adhered to by the US in previous wars and the current crisis in Iraq. The US often uses legal loopholes to allow manoeuvring around the wording of the conventions to allow them to have RCAs in areas such as Iraq. There is every indication that the US has allowed or soon will allow troops in Iraq to use RCAs for crowd and prisoner control:

The USMC confirmed that CS Gas and Pepper Spray had already been shipped to the Gulf . . . [and] . . . US Secretary of Defense, Donald Rumsfeld testified to Congress on February 5 that Pentagon officials are fashioning rules of engagement that could allow the US military to use non-lethal agents . . .⁸⁷

Conventions, in general, have shortcomings if they are not flexible and adaptable as the very circumstances that was their genesis change. They are designed to ensure that States will comply with international and customary laws. They do not, however, apply to non-state actors who are free from prosecutions. More importantly, these non-state actors are normally fanatics with no regard for distinction between combatants and non-combatants, willingly killing one and all along with themselves. Also, these combatants are now, due to technological advantages of Western states, blending and melding into the common public so that they are virtually indistinguishable. Engaging a hostile in the urban environment is extremely difficult and will, without a non-lethal option, result in unnecessary death of civilians and destruction of property.

⁸⁷ David Isenberg, 'US Chemical 'Non-Lethal' Weapons in Iraq: A Violation of the Chemical Weapons Convention?', Basic Publications website at <http://search.yahoo.com/search?ei=utf-8&fr=slv1-&p=Riot+Control+Agents+in+Iraq>; Internet, accessed 2 March 2006.

The legal issue that is not clearly addressed in any of the above concerns the application of laws and whether they make sense. “You can do a whole lot with common sense and precious little with none.”⁸⁸ Precious little common-sense is exactly what many sceptics of non-lethal weapons have. I fully support legal initiatives to limit merciless, lethal and highly destructive weapons and systems such as chemical, biological and nuclear weapons of mass destruction. The problem is that few sceptics that are aligned with the negative barriers in the Halls of Justice around the world, have connected the dots in this new asymmetric world filled with non-state actors who could not care less about international or customary laws. The antiquated legal barriers lack common-sense and must, like the changing world in which we live, adjust with the times. Nations must be permitted to pursue alternate means of challenging and defeating adaptive creatures that have magically blended into the very environments which we desire to protect at home and abroad. Nations must listen to their troops and apply common sense. A US Marine put it succinctly when he stated that troops are “. . . prohibited from using systems to restrain and inhibit our assailants, but we are perfectly within our legal rights to put a bullet in their heads.”⁸⁹

Insurmountable and contentious as it may appear, all conventions and laws that limit the development of non-lethal weapons, including the CWCs must be reviewed and new amendments and exemptions must be proposed, debated and even beaten into

⁸⁸ Charles Nordhoff and James Norman Hall, *Mutiny on the Bounty*, pg 7. The phrase regarding common-sense was made popular by the writings of Nordhoff and Norman as they were eloquently spoken and well timed by the then captain of the ship, Lieutenant Bligh. This piece of fiction was based on a true story from 1787 when a mutiny aboard a Royal Navy ship resulted in Lieutenant Fletcher Christian illegally taking command. More details may be found at; [http://en.wikipedia.org/wiki/Mutiny_on_the_Bounty_\(history\)](http://en.wikipedia.org/wiki/Mutiny_on_the_Bounty_(history)); Internet accessed 9 February 2006.

⁸⁹ Article with an interview of a US Marine who was disappointed in a system that let him kill indiscriminately if he felt threatened but would not allow him to use things like RCAs and incapacitates on aggressors. Website >>>>>>>

submission. Then, and only then can the realistic and vital laws of the world reflect today's reality where the intent of nations, that of a non-lethal resolution to a crisis or event, can be implemented. Only with visionary laws, including restrictions and limitations, can new world research, development and procurement proceed in pursuit of modern systems intended to save lives and protect property, infrastructure and the environment. Looking back at the definitions of non-lethal weapons, is this not what the desired end state is?

DISPELLING THE NLW MYTHS

Proponents of non-lethal weapons and systems face multitudes of criticism from sceptics regarding the effectiveness, true intent, impact on military cultures, legality and effects on humans. These critical viewpoints are compelling, but are, in my opinion insufficient to warrant closing the door on current initiatives and future possibilities. Many counterarguments have already been incorporated previously within the paper. Although there are several critical viewpoints regarding non-lethal initiatives and systems, I will only address those that I have determined, through research to be the most contentious. These include the claims that:

1. NLWs are easily defeated;
2. That NLWs are used as pre-lethal enabler vice a non-lethal compliment to conventional weapons and that they will be used as a method of torture;
3. That NLWs are a catalyst to additional escalations due to confusion and uncertainty when they are employed; and
4. That forces members who are culturally programmed will have difficulty adjusting to the use of NLWs compared to traditional systems and that

they are limited by the time and space where they are required to be employed thereby making NLWs ineffective.

Any weapon or system can be defeated by an enemy with the right amount of resources and determination. As advanced as the US military arsenal is, there are several high-technology capabilities that are now being rendered inconsequential. A significant one is the ability to now defeat some stealth systems that were intended to allow penetration into enemy territory without being seen. New radars and processing allows these stealth aircraft to be seen, locked-up and engaged. Non-lethal weapons are no different. Eventually, others will counter their effectiveness. RCAs are already less effective if the person that they are directed at uses protective masks and equipment similar to our own. Pulse weapons relying on directed energy, although not fully developed, can have their energy beams diverted and are less effective in bad weather. This does not mean that nations should stop pursuing new and more innovative ways of achieving non-lethal effects. In fact this lends to the argument that a dedicated program, with specified goals and objectives and committed funding is needed to maintain the technological advantage.

The argument that NLWs will be used for pre-lethal purposes or torture is hard to counter when considering how some non-lethal systems were used in the past. The US used CS Gas in Vietnam for one purpose only; roust the enemy from his caves and underground hiding locations so that they could be engaged with conventional weapons.⁹⁰

This could happen again and likely will in nations that do not have proper controls over

⁹⁰ Viet Cong were evasive and stealthy and could not be taken using conventional means. The US adopted a massive bombing campaign that saw upwards of 15 million pounds of CS gas dumped into the fields, forests and hills of Vietnam to roust out the combatants so that they could be engaged. The CS also rumoured to be mixed with Agent Orange to increase the effects and ensure successful dissemination of Viet Cong soldiers. More information can be found at; http://en.wikipedia.org/wiki/CS_gas; Internet; accessed 22 February 2006.

their militaries and which do not follow ethical and legal training regimes to ensure their leaders do not stray from the international laws that limit such acts. Canada has, as is evidenced in the limitations placed on NBPs during interdiction operations, ensured that such atrocities will not be generated from our nation and that we will not participate nor support other nations that do not comply with customary and international requirements. Torture is another difficult issue to counter. The situation at Abu Ghraib clearly demonstrates that torture is always a possibility.⁹¹ The argument, I propose, is that non-lethals are not a catalyst to torture and there is no indication that they would become a preferred means of torture. Anything, including a basic car battery, can be used to great effect for torture. History has shown that when considering torture, it is rarely the means of torture that matters, but rather the ends desired. It is these very ends, I contend that are at the heart of torture and these can only be addressed through the leadership and ethical training provided by nations such as Canada. The contention remains that NLWs are an excellent enabler to fill capability gaps without risk of unnecessary death and destruction.

Sceptics argue that non-lethal weapons can easily cause confusion and could be a catalyst to escalation and further assaults from belligerent forces. Although this could be true in some circumstances and with certain weapons, the general purpose and method of delivery of most non-lethals are not nearly as aggressive nor definitive as the firing of lethal weapons. Stun grenades, electric taser guns, audible systems and defensive weapons are short range, non-lethal means to adjust behaviour in a manner that should not invoke added hostilities.

⁹¹ Abu Ghraib is the prison in Iraw where US forces are alleged to have tortured Iraqi prisoners in a manner that was contrary to the UN Convention for the treatment of prisoners of war. The forms of torture that were used included humiliation techniques, sleep deprivation, fear of animals, sexual assault etc. Further information can be found at the smh.com website at <http://www.smh.com.au/articles/2004/05/02/1083436475631.html>; Internet; accessed 19 March 2006.

The final argument against non-lethal weapons that will be addressed is the issue that proclaims that they create an environment that portrays military forces as being weak and unwilling to use lethal force and are therefore exploitable. Added to this criticism is the fact that they create a significant impediment as forces personnel must allow for increased time and space to fully implement effective layers of non-lethal defence.

General Douglas MacArthur would agree with these sceptics as he stated that:

Blank cartridges should never be fired against a mob, nor should a volley be fired over the heads of the mob even if there is little danger of hurting persons in the rear. Such things will be regarded as an admission of weakness, or an attempt to bluff, and may do much more harm than good.⁹²

General MacArthur, and sceptics of the effects and intentions of non-lethal weapons, fail to understand the changing nature of war. Firing live rounds into or near belligerents has more negative than positive effect. Yes, it is highly effective in creating fear, but it is also a significant catalyst to follow-on escalation and possible attacks against forces. Just as we use force in a manner necessary to counter a threat to us, belligerents will use similar lethal means to counter our actions. This will eventually turn into a lethal engagement that will result in injury and/or death. The encumbrance issue is significant but easily discounted. In all protective measures, you make allowances for time and space. Ships do this as they do warnings for approaching aircraft and ships and sentries and checkpoint guards do the same for approaching people and vehicles. The more important the area being protected or the higher the areas of risk, the further out you establish your initial warnings. The non-lethal layered defence mechanism is capable of adjusting to unlimited situations and will, if properly implemented with trained personnel, result in less lethal force being applied sequentially.

⁹² Totse.com website, The Human Aversion to Killing and the Lie of Non-Lethal weapons, available at: <http://www.totse.com/en/politics/police/163061.html>; Internet; accessed 11 February 2006.

RECOMMENDATIONS

Following is a list of recommendations that I propose be investigated by the military and pursued with government in the near future. It is my contention that if these recommendations are not realized then Canada will continue to send troops into harms way with increased risk to themselves as they try to decrease the risk to civilians. The time is ripe with transformation and non-lethal initiatives such as those described by LCol Thompson earlier as he described the R&D implications of transformation. The following recommendations are not necessarily in any order of precedence:

1. Recommendation 1 - Develop a Joint and Combined Canadian Policy directly related to NLW research and development. This should include increased expenditure for NLW research and development and procurement of existing systems that can be used immediately for overseas forces and at home for protection of military personnel and infrastructure. As an interim solution, it is recommended that Canada adopt the NATO policy for NLWs with caveats that directly relate to IPS and DPS initiatives. Additionally, the policy must contain priority focus on the key areas of Research and development, training and legal issues.
2. Recommendation 2 - Establish a joint Canadian Non-Lethal Weapons Agency similar to the JNLWD in the US that reports directly to the Director General Strategic Planning (DGSP) whose mission is to:

To assist the VCDS by providing objective analysis and sound advice on strategic planning options and resource allocations, coordinating the management of the Defence Services Program and measuring and

reporting on Departmental performance in executing the overall defence mission.⁹³

3. Recommendation 2A - The NLW directorate would respond accordingly to meet DGSPs strategy which includes:
 - a. the process of connecting strategic ends, ways and means;
 - b. the unique and sustainable ways by which organizations create value;
 - c. about connecting the organization's outside to the inside; and
 - d. Creating effective and affordable capabilities for an unpredictable future.

4. Recommendation 2B - The proposed mission statement for the non-lethal directorate is as follows:

The Canadian Non-Lethal Weapons Directorate (CNLWD) will coordinate NLW research and development and procurement to ensure that the Canadian military enjoys a non-lethal capability advantage across the full spectrum of threats and crisis. The CNLWD is responsible for the centralized coordination and integration of NLW technologies and systems that will support all elements and Operational Commanders including the procedures for introduction into the military arsenal, education and training for end-users and coordination with Other Government Departments and International and Domestic legal agencies concerned with the development and employment of non-lethals.

5. Recommendation 3 - Establish a Combined Military and OGD Coordination Cell (CMOCC) program that enables the military and OGDs, including national and local police forces, to share NLW technologies, initiatives, experiences and procedures. This will ensure continuity of effort and will allow for the government as a whole to control contentious pursuits in the NLW technology realm. This clearly aligns with government policy and

⁹³ DGSP Mission statement from the DWAN website. Not available through normal internet access.

direction within the IPS and DPS where interdepartmental coordination is critical to overall security within Canada.

6. Recommendation 4 - Propose legal changes to the UN that would permit further R&D and procurement and use of NLW systems both at home and abroad. Initial focus should be directed to anti-material systems that can be used to defend forces and infrastructure. This would include venturing into the tumultuous world of the chemical weapons conventions, but should narrowly focus on chemical based systems such as sticky and aqueous NLWs that are environmentally friendly and are used for self-defence and protection of forces and key Canadian infrastructures. Anti-personnel chemical and biological systems provide great promise for the future but are not considered sufficiently evaluated and therefore not currently recommended for legal change proposals.
7. Recommendation 5 - Establish a training and education program that ensures clear understanding of how and when to use non-lethals. This training regimes must be adopted at all rank levels and must emphasize the need for balance and understanding in consideration for where NLWs fit in the use of force continuum.
8. Recommendation 6 - Research and Development recommendations were included in earlier comments but some are important enough to re-state. The human effects issue is deemed the most critical to overall success as it will provide the necessary factual information that will be needed to establish further priorities for follow-on research and eventual procurement. All research initiatives should be aligned with the initiatives at recommendation

two above. As indicated earlier, the primary focus must be on the human effects aspects of non-lethal research and development.

9. Recommendation 7 - Procurement recommendations will focus on systems for the Navy. Army and Air Force specific recommendations are not within my area of expertise to recommend, but as a minimum, any system designed for self-defence and protection of forces overseas should be given the highest priority. The following systems are considered the most relevant to short term needs to fill existing capability gaps:

- a. Manually deployable entanglement systems that can be used from boats or ships of any size and from a helicopter that will stop a vessel from proceeding any further. These could be used to slow a vessel that is being pursued, stop a vessel which is acting in a manner that is considered threatening towards a naval unit or vital infrastructure;
- b. RCAs, including CS Gas for NBPs involved in operations both overseas and at home. This is a necessary addition to current non-lethal systems, pepper spray for example, employed for MIO and is deemed necessary to allow for an extraction from a vessel that turns belligerent after the team is embarked. The team would also require additional gas masks to be added to their equipment baseline;
- c. 12-gauge fin stabilised projectile rounds for material and vehicle deterrence and control;
- d. 12-gauge stingball rounds for personnel deterrence and control;

10. Recommendation 8 - Future procurement priority should focus in the following areas:

- a. All elements should have Active Denial systems including portable mobility denial capabilities that use directed energy technology to disable vessels and vehicles and incapacitate people;
- b. All elements will require microwave pulse systems that are used to deter people from approaching critical infrastructure or personnel. The focus should be on making this a portable and discreet system that cannot necessarily be seen as this will allow for belligerents to defeat the effect;
- c. Force Protection of bases and stations should focus on advanced chemical traction and slippery foam systems that have longer endurance and potential for re-seeding in larger areas and area denial systems that allow for layered non-lethal defence. Mechanical barriers, including portable vehicle arresting barriers (PVAB)⁹⁴ should remain a high priority;
- d. Army focus should be in the areas of clearing facilities, preventing access and incapacitating individuals;
- e. Air Force should be focused in the deployment systems of non-lethal systems by UAVs, directed energy systems from aircraft, and airborne disabling systems similar to the US cruise missiles that drop carbon fibre filaments to interrupt power grids and electronic systems.

⁹⁴ Council on Foreign Relations, Nonlethal Weapons and Capabilities, 18.

SETTING THE PHASERS ON STUN

Throughout the paper, examples have been used that demonstrate the impact of not having non-lethal weapons in the military arsenal. Some of the scenarios have already had the NLW alternative proposed and therefore will not be discussed further. This section will now address some of the remaining scenarios and one other tragic event using NLWs as an alternative. By making the assumption that the military forces in the scenarios will be armed with non-lethal alternatives, that they will have the necessary training and that the legal permissions are in place for employment of these weapons, the paper will assess whether the outcome could have been different.

Scenario 1 - Breach of Overseas Perimeter by Somali Teenager. As indicated in the paper, Shidane Arone was brutally beaten and eventually killed by Canadian soldiers when he infiltrated the security perimeter to steal food and supplies. The beatings had been done before, but to little effect on the general population who soldiers were trying to deter without having to kill them. The rules of engagement at the time were limiting and restricted lethal force for stealing of non-essential equipment and/or food supplies. If the forces in Somalia had been provided non-lethal means for engaging the Somali citizens that breached their compound, then they would not have had to resort to such deadly physical force. Examples of systems currently available that would have assisted include tasers, blunt technology system that fires bean bags or round pellets or an Active denial systems that could have caused sufficient pain that it would have repelled Shidane before he breached the perimeter. Would they have worked? The problem in Somalia was that the military forces could not sufficiently warn off Somalis. Regardless of what efforts had been used in the past, the hungry and determined youth knew they could not really be harmed and they continued to enter Canadian and other coalition security areas. The use

of the NLWs proposed above would have sent a clear signal that they would be engaged, that it would cause significant pain and discomfort and that the soldiers had the resolve and permissions to use these systems. The message would have been clear and I contend that Somali teenagers like Shidane would have gone elsewhere to get food and supplies.

Scenario 2 - Injured combatants being engaged by soldiers. This scenario was played out on the evening news as the world watched US soldiers enter a building after being in a firefight with combatants within. On entering the building, they were confronted with injured people who, because of these injuries and inability to continue to fight, should have been treated as non-combatants in accordance with the LOAC. Instead, they are engaged with rifles and killed. We were not there and we do not know how threatened the soldiers felt in the given situation. The investigation is ongoing and further information is not available. However, the alternative using non-lethal means can be assessed. Had these soldiers used other than lethal means at the outset, by sending an RCA canister combined with stun grenades, they could have entered the building without fear of attack. On entering and finding some people injured, they could have used taser or blunt weapons to further incapacitate the perceived threat and/or a light dazzle system to blind assailants while they restrained them. Only if the threat continued to materialize would the soldiers involved have needed to resort to the lethal force seen in televisions across the world.

Scenario 3 - Breach of safety and security perimeter by local taxi with passenger. In this situation, the three wheeled taxi with his passenger closed Canadian forces to a distance considered unsafe. The soldiers provided some warnings, but these proved insufficient and lethal force was applied and the passenger killed. This occurred in a relatively open area where limiting access is more difficult. If the soldiers had alternate

non-lethal systems such as engine disablers, portable barriers and entanglement systems or chemically based foam that denies approach by causing excessive stickyness or conditions that prevent traction, the vehicle could have been diverted without the need for lethal force. These systems can be more difficult to deploy and time may not permit their full deployment prior to escalation. However, to use this as an excuse not to explore non-lethal options makes little sense as this would leave the only option remaining as that of lethal force; this is untenable in OOTW where hearts and minds are critical to mission success.

Scenario 4 - Van full of passengers approaching a checkpoint and failing to acknowledge warnings and warning shots. This scenario is provided from a US experience that had devastating results for the people involved and for the public relations campaign being pursued. Rumours were quick to surface after the incident and some incorrect assessments indicated that when the van in question approached the checkpoint, it was sufficiently warned before a barrier system was employed which resulted in the vehicle being stopped with no further injuries. The facts that surfaced soon after reported that on “March 31, 2003 . . . the officer in charge ordered his troops to open fire when faced with no alternative means to force the car to stop.”⁹⁵ Seven Iraqi women and children were killed. This is a tough scenario for the soldiers who were inadequately prepared and insufficiently armed with appropriate alternatives to lethal force. Had they actually had barrier systems, sticky or slippery foam, engine disabler capability or light dazzler systems, the outcome would have been significantly different. The outcome, using NLWs in a layered system for defence, that I propose should have occurred is as follows:

⁹⁵ Council on Foreign Relations, Non-lethal Weapons and Capabilities, 54.

1. Warning signs posted in all potential languages that a checkpoint is ahead and that vehicles will be required to stop for search;
2. Larger signs and small numbers of military presence established between the first warning area and the next warning zone to indicate presence and show of force;
3. If the vehicle does not slow and abide by direction of outer-perimeter sentries, a smoke grenade or stun weapon would be fired in the path of the vehicle to warn it that actions are not understood;
4. If the vehicle continues, it would approach permanent barriers designed to route traffic and slow vehicles down so that follow-on action is possible;
5. If these barriers are entered and no indication of slowing down is done, chemical foam would be used inside the barrier system to prevent passing;
6. If the vehicle still manages to pass through, then the vehicle itself becomes engageable with engine disablers that will stop the motor from running;
7. Continued attempt to breach security perimeters is indicative of hostile intentions and more determined non-lethal means are used to incapacitate the driver by blinding him or her so that they cannot manoeuvre the vehicle; and
8. finally, once all other warnings and non-lethal attempts are made to stop the vehicle, lethal force is applied prior to breaching the inner security perimeter

Many of the examples above appear cumbersome and may not be effective due to the time and space available to act. The important thing to remember is that non-lethal weapons are not perfect and cannot be considered effective in all situations. They do provide an important decision aide for troops and more importantly, they do provide options other than lethal force to be used to mitigate threats. Non-lethal weapons create

time to make decisions and based on the scenarios above, the outcomes would have been different if they had been available and employable.

CONCLUSION

Nonlethality's allure is simple: between the moment when diplomacy fails and conventional military force is considered . . . [militaries need] . . . more options to either sending in a totally lethal force or accepting the status quo. Technology now offers such options, and they are life-conserving, environmentally friendly, and fiscally responsible.⁹⁶

The time to pursue NLW initiatives is now. Canada's military is transforming and a non-lethal option is critical to achieve many objectives within this transformation. Current NLW technologies allow for low cost, rapid procurement, quick training and significant value as a force multiplier that fills the capability gap between presence and the use of lethal force. We must protect our forces both overseas and at home. NLWs are an enabler in a time when hearts and minds are critical to government and military reputations and public support for operations overseas.

NLWs do not supplant the lethal systems needed on the front lines and are not a replacement for conventional systems. They are an enabler to be used prior to and/or during the transition to lethal force engagements. There will always be the need for deadly force. NLWs will help bridge the current gap between mere presence as a deterrent and the use of deadly force when the difference between enemy and civilians is obscured and uncertain. Technology and RMAs have forced our enemies to adapt and blend into society. NLWs will greatly aide in determining exactly where the threat is coming from, clearly identify intent and will be a systematic contributor for when lethal force is necessary. Cultural change for our military members will necessitate training and education. Demonstrations will be critical to ensure confidence and identify limitations.

⁹⁶ Marine Pub pg 381, quote from another source...

The Moscow theatre events created more questions than answers on the use of non-lethal weapons to incapacitate and render enemy forces unable to act. Although it was a tragedy that many lives were lost, the reality is that more lives were saved. Better understanding and procedures could very well have resulted in fewer deaths, but the fact remains that without the calmativ gases, 800+ people would have likely lost their lives that fateful day. After the incidents, criticism was abound, but general consensus was that the Russian government and military forces should be praised for saving as many people as they did. Public opinion ways heavy on government policy and if this same situation was to occur again, I suspect the same actions would be taken knowing that you may have to risk some innocent lives in order to save the majority.

Political will is necessary to pursue new technologies that may run up against international and customary laws. Policy will need to be defined and clearly articulated from Government through military leadership to the operational and tactical commanders. All this is easily achievable once the decision to pursue NLWs is made. In the CNN world of today, the adage that “the object of warfare . . . [is] . . . to exact casualties and impose physical destruction, with the express purpose of driving an opponent to capitulation”⁹⁷ is no longer palatable. The IPS is clear; we need to make a difference all the while keeping government policy and public expectation at the forefront.

This is the very Evolution in Military Affairs that sees Canada and the world intent on making a difference. Securing open societies, assisting failed and fragile states, protecting Canadians and our interests both at home and abroad are not just political buzzwords. Three-block-wars, effects based operations, hearts and minds are not just a military problem. Canada must manage both the perceptions and realities of what is

⁹⁷ Marine Pub, 377.

expected of our military as it seeks to do the governments biddings on the asymmetric fronts of the world. The military cannot, without unnecessary risk to troops and civilians alike, achieve all objectives within the IPS and DPS in this insecure transnational world. Non-lethal weapons are a critical capability that is needed to fill the void that exists between presence and lethal force. Government must pursue this capability with vigour; the military must embrace this new technology and adopt the cultural and educational changes necessary to make it an enabler to operations across the entire spectrum of conflicts.

Time and history have demonstrated a propensity to spend inordinate amounts of money, time and effort in pursuit of faster, stronger, more resilient and more lethal weapons designed with no other purpose than to eliminate lives and immeasurable destruction of buildings and infrastructure. This paper has demonstrated that a paradigm exists that sees the acceptance of lethal and destructive weapons waning. Precise weapons are now the norm as they limit damage and death. With continued pursuit and investment in non-lethal weapons research, development, procurement and employment, the day may come when the expectations of the world will demand a non-lethal response as the customary law with lethal and destructive measures being made unlawful and inhumane.

The adage that “guns don’t kill people . . . people kill people” can be applied to non-lethal initiatives that advocate that “non-lethal weapons do not save lives . . . people save lives.” All you need is the intent, the desire and the support of government to pursue this means to the ends. Government and military must be aligned in the pursuit of this evolutionary technology that will gain more and more acceptance as the fight is dragged into the homes of innocents around the world. Government and military leadership must

remain focused on the end-state of peace and security and that to be fully accepted by nations who we desire to support, we must remember that “Hearts and Minds” are not won over by putting bullets or shrapnel through them.

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