The Nonlethal Weapons Debate

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THE PURPOSE OF THIS STUDY IS to examine the issues currently being debated about the development and employment of nonlethal weapons (NLWs)—the official Department of Defense term for a category of weapons often referred to as "less than lethal," "pre-lethal," "disabling," "low end," or other such appellations.[1] This article first briefly establishes its own position in the debate—by listing the advantages that nonlethal weapons represent—and sets forth necessary background: what the term "nonlethal weapons" actually embraces, and the concept's status in the U.S. Defense Department. It then discusses legal, ethical, and policy issues concerning their use; the missions envisioned for NLWs; and their implications for rules of engagement. It concludes that nonlethal weapons have much potential value for the U.S. armed forces and national security policy makers.

Succinctly stated, the debate goes like this. On the one hand, those who urge the development of nonlethal weapons point to them as evidence of the capacity of the United States for civility and restraint. From a humanitarian perspective, they argue, the development of such weapons demonstrates a high moral position: reverence for life, and commitment to containing violence at a minimum level.[2] On the other hand, critics of the development of nonlethal weapons contend that the anarchic post–Cold War era has produced irrational actors, bent on atrocities and for whom treachery is a way of life. Nonlethal weapons, they argue, not only fail to strengthen the nation's position when dealing with such adversaries but convey that it is too squeamish to inflict serious harm on enemies or to accept casualties. Reflecting neither strength nor resolve, in this view, nonlethal weapons open up the user to hostile propaganda and to legal challenges over the use of force. These critics take the stand that one must stalwartly declare to the world that one will not tolerate unacceptable behavior but will resort to overwhelming force to restore order and peace.[3]

Both arguments contain valid points. The role of law and the right to self-defense must prevail, and deadly force cannot be ruled out for situations that demand more than verbal warnings. However, along the force continuum, nonlethal weapons can provide a means for escalation short of the use of deadly force or of weapons of mass destruction. The participants in this debate should keep in mind the entire spectrum of conflict and the whole range of weapons the nation has at its disposal to counteract bellicose behavior at the lowest level of intensity commensurate with the perceived threat.

Some critics of nonlethal weapons are products of the Cold War mentality or have been influenced by media coverage that focuses on the use of nonlethal weapons to the exclusion of the potential use of deadly force, as was reported of Operation UNITED SHIELD.[4] During UNITED SHIELD, the mission to evacuate the United Nations peacekeeping forces from Somalia in the spring of 1995, the U.S. Marines used nonlethal options in an attempt to accomplish military objectives without destroying the enemy.[5] Nonlethal devices had been used in other peacekeeping and peace enforcement applications; what set UNITED SHIELD apart was that they were now thoroughly integrated into the planning process and were used in a deeper portion of the spectrum of conflict. At the tactical level, the Marines employed NLWs to deny access and to protect troops; at the operational level, nonlethal weapons accomplished critical objectives; at the strategic level, the effective use of NLWs focused world attention on the restraint demonstrated by UN peacekeeping forces.[6] The success of nonlethal weapons in Somalia provided a model for future contingency operations, as in Haiti and Bosnia.[7]

The "Supreme Excellence"

The concept of achieving military objectives without the use of lethal force is not a new one. Some 2,500 years ago Sun Tzu wrote, "Hence to fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting."[8] Like Leonardo da Vinci's drawings of what would become the helicopter, Sun Tzu's idea has found embodiment in modern technology, which makes it possible to achieve this "supreme excellence" on an unprecedented scale.

Notwithstanding the positive aspects of NLWs, however, uncertainty and confusion abound, and many analysts view them with anxiety and foreboding. This apprehension might be allayed by full knowledge of the role nonlethal weapons play on the force continuum, as tools that augment and enhance mission capability in a critical way. Accordingly, "Joint Vision 2010" contains a joint concept for nonlethal weapons as part of "full dimensional" protection. Examining "the ability to produce a broader range of potential weapons effects," it identifies the operational capabilities required to allow commanders to accomplish their mission while reducing the adverse effects of military operations, especially collateral damage.[9]

NLWs have been used by American forces since before the republic was founded. However, the late twentieth century differs markedly from the late eighteenth century, the age of reason, and of limited war resulting in few civilian casualties. For instance, during the American Revolution, British and American forces suffered thirty-four thousand military casualties; civilian deaths were practically negligible. By the 1950s, however, noncombatants accounted for about half of all war casualties; by the 1980s noncombatant casualties had increased to 80 percent.[10] This alarming trend has continued in the 1990s, with increasing numbers of refugees, immigrants, and noncombatants caught in the crossfire of civil and ethnic strife and battles involving states, rogue states, failed nation-states, and terrorists. These statistics imply that NLWs may be as valuable in a major regional contingency as in operations other than war (OOTW): they offer an ability to discriminate between an enemy's forces and the civilian population, to disrupt communications, and to limit the vulnerability of friendly troops more effectively than is possible with lethal weapons.

Another advantage of NLWs is that they provide a military commander a way to take action when the use of lethal weapons would violate rules of engagement. NLWs create less material damage and are thus less provocative than conventional munitions. Consequently, NLWs provide more flexibility on the battlefield, enabling commanders to deal with restrictive targets that once posed serious challenges because of precautions and restrictions imposed by higher authority. Additionally, NLWs allow commanders to take the political and moral high ground in circumventing the strategy of terrorists. An added advantage is that they may replace lethal weapons, such as land mines, that are condemned by the international community because of their potential to cause, long after a conflict, damage to the environment and death or injury to people.[11] Nonlethal weapons may well serve the intended function of such munitions without their long-term negative impacts.[12]

Department of Defense policy defines nonlethal weapons as "weapons systems 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."[13] NLWs are not "required to have a zero probability of producing fatalities or permanent injuries," but they are intended to reduce these probabilities significantly. Availability of nonlethal weapons does not limit a commander's inherent authority and obligation to use all necessary means, and specifically to take any appropriate action in self-defense. Doctrine and concepts of operations for NLWs are designed to reinforce deterrence and expand the range of options available to commanders. (See Figure 1 for a listing of nonlethal weapons by category.)[14]

In 1994, the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (OASD-SO/LIC) coordinated a policy study concluding that NLWs could be of significant value in low-intensity conflict and that their proper use would probably forestall any legal, ethical, or political challenge. Nonetheless, the acquisition process proceeded slowly, because defense funds are of course allocated first to the military's most important missions: prevailing in strategic war and major regional conflicts (MRC), as set forth in the national military strategy. With this in mind, in August 1996 OASD-SO/LIC (Policy Planning) prepared a report listing (in the framework of military and joint doctrine) potential applications for nonlethal weapons in operations other than war, in major regional conflicts, and for certain "emerging missions" (see Table 1).[15] The report argued that effectiveness in most military missions arising in these environments could be improved by employment of these weapons. Of the 103 possible missions associated with MRC and OOTW, it found, NLWs have utility in seventy-nine. (Of course, a given mission can be conducted in both MRC and OOTW; for instance, an enforcement action, such as riot or border control, could take place in the rear area of a military force prosecuting a battle miles away.)

A memorandum of agreement was signed by the services on 21 January 1997 formally assigning functional responsibility for NLW technology to the Commandant of the Marine Corps, as the NLW Program Executive Agent. The Joint Nonlethal Directorate Charter established a Joint NLW Directorate, whose principal function is to manage the day-to-day activities of the Defense NLW program and support an Integrated Product Team.[16]

Legal Dimensions

A long-standing Defense Department regulation requires that any new weapon undergo a legal review by the Judge Advocate General of the military department involved to ensure that the weapon's intended use is consistent with the "obligations assumed by the United States Government under all applicable treaties, with customary international law, and, in particular, with the laws of war."[17] Further, the acquisition and procurement of weapons must be consistent with all applicable treaties and customary international law; each service is also to ensure that any planned activities that could reasonably generate questions concerning compliance with arms control agreements to which the United States is a party must first be cleared by the Under Secretary of Defense for Acquisition and Technology, in coordination with the Office of the Secretary of Defense General Counsel and the Under Secretary of Defense (Policy). A legal review takes place before the award of the engineering and manufacturing development contract and again before the award of the initial production contract.[18] The Department of the Navy Judge Advocate General (JAG) conducts this review of NLWs for the Navy and the Marine Corps.[19]

To date the Navy JAG has completed reviews of several nonlethal weapons:[20] stinger grenades; the 12-gauge shotgun using bean bags, rubber pellets, and wood baton rounds; 40 mm rubber pellet foam-rubber, bean bag, and wood multiple-baton rounds; sticky and restraining foam; barrier foam; and the 40 mm M781 practice fuse modified for a foam-rubber projectile. * Additionally, the International and Operational Law Division of the Deputy Assistant Judge Advocate General of the Navy has recently approved a list of proposed new, advanced, or emerging technologies that may lead to developments of interest to the joint nonlethal weapons effort. Among these, antipersonnel technologies include gastrointestinal convulsives, calmative agents, aqueous foam, malodorous agents, oleoresin capsicum (OC) cayenne pepper spray, smokes and fogs, and riot control agents (CS and CN). Antimaterial possibilities are viscosity and surface polymerization agents, corrosives and supercorrosives, caustic and embrittling agents, depolymerization agents, combustion modifiers, and microbes. Sticky foam, adhesives, slick coatings, and superlubricants are potentially useful for either purpose. Only microbes did not receive approval for development; this category of weapons was held to violate the Biological Weapons Convention.[21] Calmative and gastrointestinal convulsives, if classified as riot control agents, can be acceptable. Once these technologies evolve into actual weapons or weapons systems, the Navy JAG will analyze them again as to their toxic properties and compliance with international laws, treaties, and domestic restrictions before final approval for series production, or rejection.

International Law Instruments. In its reviews, the Navy JAG must consult international agreements that have direct relevance to the military use of NLWs, keeping in mind three major issues. Would the weapon cause suffering that is needless, superfluous, or disproportionate to the military advantage reasonably expected from the use of the weapon? Could the weapon be controlled so as to strike only a lawful target and thus be discriminate in its effect? Do rules or laws exist that prohibit its use? These issues represent in essence the concept of "proportionality" under the law of armed conflict—that whereas any military action or weapon inevitably causes suffering, that suffering must be balanced against military necessity. Proportionality is subsumed within the overarching legal concept of "humanity," which requires that

combatants and noncombatants not be subjected to unnecessary suffering. From these basic concepts the principles governing the prohibition and control of certain weapons are derived; they concern unnecessary suffering, discrimination, and treachery (or perfidy).[22] Nonlethal weapons such as lasers, directed-energy weapons, high-power microwaves and infrasound, weapons developed from biotechnology and genetic engineering, and chemical and biological weapons—along with their respective applications to the spectrum of modern conflict—must be analyzed according to these concepts and principles.

The groundwork for the declarations and conventions pertinent to the legal review of NLWs was laid in the Lieber Code of 1863 and the Declaration of St. Petersburg of 1868. The Lieber Code, produced for the regulation of the Union army during the U.S. Civil War and today the cornerstone of humanitarian law, established that military necessity does not embrace means and methods of warfare that are cruel, and that it must take into account the long-term consequences of the use of a particular weapon.[23] A few years later, as a result of a general abhorrence of inhumane weapons, the Declaration of St. Petersburg was signed. It legally prohibited employment of certain weapons that "uselessly aggravate the sufferings of disabled men, or render their death inevitable."[24] These documents, along with the Hague Declarations Concerning Asphyxiating Gases and Concerning Expanding Bullets (1899) and the Hague Convention Respecting the Laws and Customs of War on Land (1907), as well as the concomitant protocols, are standards by which future conventions and treaties can be evaluated.[25]

Of more recent conventions, those most directly pertinent to nonlethal weapons technology and applications were consulted by the Navy JAG.[26] The first such instrument, of particular relevance to various foam substances, was the Chemical Weapons Convention (CWC), signed on 13 January 1993 by the United States and ratified in 1998. The CWC definition of toxic chemicals does not apply to sticky foam, which acts as a "high-tech lasso," restricting the movement of an individual's limbs, and is essentially nontoxic. (This characteristic clearly distinguishes it from CS and CN gas, two riot control agents, or RCAs, that depend on their chemical effects on the human body for their efficacy. It should be noted that since "method of warfare" is not defined in the CWC treaty, RCAs may be used in operations not involving international armed conflict, such as peacekeeping, humanitarian or disaster relief, noncombatant evacuation, counterterrorist operations such as hostage rescue, and law enforcement.) Sticky foam also raised an international environmental law issue related to the Montreal Protocol on Substances That Deplete the Ozone Layer. Dichlorodifluoromethane, or Freon-12, which constitutes 30–32 percent of sticky foam, is on the list of controlled substances and is being phased out of use on an accelerated basis. In the United States, the Clean Air Act, which implements the Montreal Protocol, and Environmental Protection Agency regulations banned production and consumption of Freon-12 after 31 December 1995.[27]

Relatedly under the CWC, barrier foam, classified as an RCA because it contains CS gas, may not be used against combatants in armed conflict.[28] The restriction results from a June 1994 presidential memorandum interpreting "method of warfare" in terms of circumstance (whether or not internal armed conflict is involved) and class of targets (that is, combatants, or combatants and noncombatants intermingled, or solely noncombatants).[29] Second, the Biological Weapons Convention, signed by the

United States on 10 April 1972 and ratified in 1975, bans the development, production, stockpiling, or acquisition of biological agents or toxins of "types and quantities that have no justification for prophylactic, protective, or other peaceful purposes."[30] Third, the Nairobi International Telecommunications Convention of 10 January 1986 restricts the use of electromagnetic weapons. Article 35 (1) prohibits "harmful interference" with the radio services or communications of member states. The United States is not a party to this treaty, but it has nonetheless implemented its provisions by incorporating them into law (47 U.S. Code 502). The treaty's provisions do not apply during wartime; although "wartime" is not defined, it would certainly apply to major regional conflict.

Fourth, the 1977 Environmental Modification Convention (that is, the Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques, or ENMOD) defines "environmental modification techniques" as "changing through deliberate manipulation of natural processes the dynamics, composition, or structure of the Earth, including its biota, lithosphere, hydrosphere, and atmosphere, or of outer space." ENMOD prohibits methods having widespread (several hundred square kilometers), long-lasting (months), or severe (serious or significant disruption or harm to human life, natural and economic resources, or other assets) environmental effects as a means of destruction, damage, or injury to any other state party.

The Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous, or Other Gases, and of Bacteriological Methods of Warfare, of 17 June 1925, entered into force 8 February 1928. When the United States ratified this treaty in 1975 it did so only with respect to first use in war of chemical weapons, but in May 1991 the Bush administration declared, "We are formally forswearing the use of chemical weapons for any reason, including retaliation, against any state, effective when the Chemical Weapons Convention enters into force."[31] The Geneva Protocol does not itself prohibit the development or possession of CN-type weapons, so it does not directly affect the development of nonlethal weapons.[32] However, the Clinton administration has interpreted the CWC as prohibiting the use of RCAs in combat.

Lastly, the Certain Conventional Weapons (CCW) Convention of 1980 (properly, the Convention of Prohibitions or Restrictions on the Use of CCWs Which May Be Deemed to Be Excessively Injurious Or to Have Indiscriminate Effects) was ratified by the United States in 1995. This convention, also known as the UN Inhumane Weapons Convention, applies to lethal weapons only, but it does prohibit the use of laser weapons that are specifically designed to cause permanent blinding to unenhanced vision (the naked eye or an eye with corrective eyesight devices). On 29 August 1995 the Defense Department confirmed U.S. compliance with this restriction. Nevertheless, the use of lasers as NLWs is not affected by this policy, since if they are used appropriately in that framework their bioeffects are reversible. Defense Department policy highlights the vital role laser systems play in detection, targeting, range finding, and communications, as well as in the destruction of targets. Additionally, laser systems provide significant humanitarian benefits in that they allow weapon systems to be increasingly discriminate, thereby reducing collateral damage to civilian lives and property.[33]

Legal Concerns and Restrictions. With respect to chemical-based NLWs, although their use will likely be restricted to military operations other than war, certain difficulties arise. First, facilities where

chemical-based NLWs are developed, produced, stored, or tested must be declared and under the CWC may be subject to routine or challenge inspections. This is an important consideration if the nature or existence of such chemicals is to be kept secret, and because even riot control agents declared under the CWC could be used by adversaries as an excuse for developing lethal chemical weapons.

A second legal concern is liability resulting from a decision *not* to use nonlethal weapons. This liability could be on the individual level (for example, of a soldier who decides to use lethal instead of nonlethal force in a humanitarian mission) or on a much broader scale. It is possible that a nation could bring a case to the UN or World Court claiming that the United States had used excessive force in that, having a nonlethal capability, it had chosen to use lethal force instead. For example, following DESERT STORM the human rights organization Middle East Watch argued that since the United States had precision guided munitions, the use of "dumb bombs" was illegal.[34]

In sum, there may well be legal and treaty restrictions on the use of NLWs in both operations other than war and major regional contingencies. For example, such nonlethal weapons as neural inhibitors, gastrointestinal convulsives, neuropharmacological agents, calmative agents, disassociative hallucinogens, and sedatives may be considered "temporary incapacitants" and therefore toxic chemicals prohibited by the Chemical Weapons Convention for any purpose. Notwithstanding, other antipersonnel, chemical-based NLWs, such as sticky foam, odor-producing chemicals, and lubricants, are likely to be permitted. Riot control agents (which in major conflicts can be used only against noncombatants, such as in riot control situations or in rear echelon areas outside the zone of immediate combat) could be employed in operations other than war adjunct to a regional contingency. Biological weapons, both antipersonnel and antimaterial, violate U.S. domestic law, but the use of antimaterial chemical-based NLWs, such as corrosive, embrittling, viscosity, or depolymerization agents, is probably permitted under the CWC. If the Pentagon lawyers interpret "toxic chemicals" to include incapacitating NLWs, like calmative agents, their utility in combat will be questionable; the sole operational use of chemical-based antipersonnel NLWs would be in operations other than war.[35] The status of some NLWs is ambiguous under broadly conceived international conventions prohibiting the use of certain kinds of technologies and weapons. It would be ironic if "lethal weapons were employed because ambiguities in international law prevented the use of non-lethal weapons."[36]

Ethical Dimensions

Inevitably, the use of NLWs brings with it ethical and moral implications. The Western just war tradition is for U.S. decision makers the central point of reference concerning both the general decision on when the use of force is justifiable and how much force may be employed. By such criteria, the United States would be on a firm ethical basis in employing NLWs in regional contingencies. Today, situations arise that blur the lines of distinction between operations other than war and "armed conflict"—for instance, the unexpected use of deadly force by local factions during humanitarian assistance missions. *Jus ad bellum*, international law governing when a state may resort to war, lays down seven essentially ethical criteria that must be satisfied if a war is to be considered lawful: just cause, right authority, right intention, a goal of restoring peace, an overall preponderance of good over evil (proportionality), a

reasonable hope of success, and force as the last resort.[37] *Jus in bello*, international law regulating the conduct of war (in essence, the law of armed conflict), sets ethical limitations once a justified decision to resort to military force has been taken.

The just conduct of war rests on two main principles, proportionality and discrimination. We have already discussed proportionality in connection with humanity; it requires that the means used be reasonably proportionate to the ends pursued. Discrimination, relatedly, prohibits the direct and deliberate targeting of noncombatants and civilian targets; civilian damage must be proportionate to the military advantage gained by the military measure.[38] "Nonlethal" as a concept can foster the inevitable demand for humanity and proportionality (or suitability) of the applied means. From the perspective of the force continuum, applied within the context of justifiable use of military power as a legitimized instrument of state political power, nonlethal weapons use can be justified on the basis of moral and legal obligations to stop wrongdoing, to provide protection and justice, and to promote the return to order.[39]

How, then, can we say that the employment of NLWs is consistent with *jus ad bellum* and *jus in bello*? In the warfighting framework, specific weapons technologies figure (obliquely) in only two of the seven *jus ad bellum* criteria: those are overall preponderance of good over evil (proportionality) and reasonable hope of success. Since most weapons employed in any major armed conflict will potentially be lethal ones, with some possible exceptions for operations in urban terrain, it is highly unlikely that the possible use of NLWs will change the overall war-decision calculus. In war-conduct criteria, by contrast, the nature of weapons technologies figures much more directly. The impact on *jus in bello* is important, given that some NLWs may substitute for lethal weapons in certain combat missions, while others will open up new missions altogether. It is probably safe to argue, however, that the introduction of NLWs will not violate war-conduct criteria unless these weapons produce (as they should not) physiological effects that are major, long-term, or irreversible. If NLWs cause debilitating or permanent (even if nonlethal) effects such as blindness or paralysis, long-term lethal consequences (such as cancer), or other unnecessary suffering, serious questions will arise about proportionality. Additionally, combatants must not, in any treacherous or perfidious manner, use NLWs toward lethal ends (for instance, disorienting in order to facilitate killing). Finally, military planners and technologists design NLWs with the factor of discrimination in mind, as they must because of the legal review; nevertheless, some weapons—for example, infrasound and pulsing-light weapons used in urban operations—will not discriminate between combatants and noncombatants. Even so, however, they may be permissible if their effects are temporary and far less destructive than those of lethal weapons.[40]

Foreign and Domestic Policy Dimensions

The debate on the employment of nonlethal weapons has generated questions about implications for U.S. foreign policy. On the positive side, insofar as they increase U.S. warfighting effectiveness, NLWs should contribute to the success of foreign policy. They can make multinational coalitions more cohesive, by lessening casualties and collateral damage, and they provide a measure of escalation control at all levels of armed conflict. On the negative side, adversaries could interpret NLW use as unwillingness to employ lethal force, and that could be construed as a weakness to be exploited.

Certainly there are liabilities involved with a national commitment to nonlethal weapons, and it is important to evaluate them. A task force of the Council on Foreign Relations has perceived six inherent risks or problems related to NLWs.[41] The first, which it called the "slippery slope," is the likelihood of escalation if the use of NLWs leads to "unintended and unwanted involvement," including their use on a large scale. This prospect can be obviated by a comprehensive understanding of NLW capabilities and limitations; careful, coherent, and integrated planning; congressional consultation; and clear identification of the enemy. The second risk is of retaliation in kind, that is, enemy NLWs directed against "mirror-image" vulnerabilities: computer viruses, forced bank failures, etc. Indeed, U.S. and Western dependence on technology and financial infrastructures increases this vulnerability. The third risk is proliferation. Much military research and development is based on mimicry; other countries might develop NLWs, which could then fall into the hands of renegades and mercenaries. But then, no degree of restraint by the United States in development of NLWs will prevent their appearance in other nations. Russia, the United Kingdom, France, Italy, and Israel have made significant inroads in this domain, and the components are commercially available. Proliferation would require efforts to develop antidotes—which (though the Council did not point it out) would themselves proliferate, reducing the usefulness of the original weapons. Thus secrecy is of considerable importance.

The fourth and fifth problems, and possible objections, pertain to unrealistic expectations and comparative cost-effectiveness. As to the former, if the public expects bloodless battles and therefore requires that NLWs always be used before lethal means, disappointment and unnecessary exposure to danger will result. On the other hand, in the proper setting NLW employment could certainly increase the safety of U.S. troops and the effectiveness of American policy. Examples include a sniper who hides in a crowd consisting mainly of women and children and is thus shielded from lethal fire, and a hostile regime that the United States wishes to separate from its populace and army. As to expense, some have proposed that the casualty-limiting benefits of NLWs could be achieved more quickly and at less cost by increasing the precision of lethal arms. In the final analysis, however, NLW technologies are not expensive compared to their potential benefits or to the development, procurement, training, and operation of other weapon systems.

From a domestic perspective, U.S. policy may be influenced by the growing interest in the concept of NLWs on the part of the American media and special-interest groups. The "CNN factor," or media reaction to the employment of NLWs, will be an important influence upon public perceptions. In turn, media coverage will be shaped primarily by the circumstances and the appropriateness of specific instances of nonlethal force and by the integrity of NLW-capability claims. Media coverage might elicit such negative public or political reactions as, on one hand, that NLWs violate international treaties, damage the environment, make war more likely by reducing the destructive consequences, maim and injure noncombatants, cost too much, or simply do not work; or on the other that NLWs reflect a sentimental or naive view of war and a lack of resolve to defend national interests, that such weapons risk the lives of soldiers, compromise operational effectiveness, are insufficiently potent to punish aggressors, and are "politically correct" but militarily irrelevant.[42]

From the perspective of the American public, there are reasons to support or reject development and

employment of NLWs. Those who favor them emphasize that NLWs are humanitarian and minimize human suffering, that they save U.S. lives by enabling forces to disable enemy capabilities without, say, air strikes. They can enhance electronic attack, itself a generally nonlethal mode; in themselves they constitute an acceptable middle ground between diplomacy and conventional military force, aiming at strategic paralysis rather than destruction of the enemy. Notwithstanding, the public could reject NLWs on the basis of concerns and risks like those above, or a perception that they would produce a tendency toward "gradualism" vice application of overwhelming force. All these factors today influence and stimulate the debate over NLWs.[43]

Operation UNITED SHIELD is again a case in point. Then–Lieutenant General Anthony C. Zinni, commanding I Marine Expeditionary Force extracting UN forces from Somalia, had requested "less lethal" alternatives for use in unarmed hostile situations in Mogadishu. In time, however, his staff discovered that some media reports were putting the Marines at a disadvantage: a Pentagon official had provided to the media, which had duly published them, precise descriptions of the capabilities of barrier foam. The Somalis quickly learned to defeat this nonlethal technology; also, the world was led to expect the "first large-scale employment of non-lethal weapons by U.S. armed forces" and amazing abilities to immobilize hostile crowds quickly.[44] Evening news broadcasts ran footage of the movie *Ghostbusters* in which actor Bill Murray is immobilized by "slime." Sectors of the public may not have been aware that nonlethal weapons had never been intended to preclude the use of deadly force when justified; and thus they had a skewed perspective on the role of NLWs in a real-world scenario.

Rules of Engagement

U.S. national rules of engagement (ROE) for specific situations are based on the Joint Chiefs of Staff Standing Rules of Engagement (SROE) of 1 October 1994. The SROE, shaped by the principles of necessity and proportionality, apply to the use of force for self-defense and the accomplishment of missions. They give commanders the authority, and the obligation, to use all means necessary in self-defense, whereas the use of force for mission accomplishment generally involves supplemental restrictions.

During UNITED SHIELD most provisions of the operation's rules of engagement were unclassified. Each Marine was issued an unclassified ROE card: "When US forces are attacked by unarmed hostile elements, mobs, and/or rioters, US forces should use the minimum force necessary under the circumstances and proportional to the threat."[45] ROE restrictions on nonlethal options were arbitrary: no distinction was made between the use of deadly force and of other kinds. In spite of these restrictions—a consequence of the novelty of the employment of NLWs—the task force managed to employ properly and appropriately the NLWs, having trained with them prior to landing in Somalia.

Figure 2 depicts a force continuum, measured gradations between *no force* and *lethal force*. In its light, the limitations imposed by the ROE in UNITED SHIELD did not make sense. If a soldier or Marine has to wait until deadly force is actually authorized—that is, life is at risk—before, say, a bean bag or rubber baton can be used, then no incentive to restrict response to nonlethal means exists. In the Somalia case,

there was misunderstanding in Washington about the effects of certain NLWs. For example, it was believed there that sticky foam (which local commanders considered most useful for area denial, in conjunction with other barricades) could suffocate a hostile subject and that it would be used as an antipersonnel weapon. Misconceptions abounded and interfered with progress.

Because nonlethal weapons require quick decisions in stressful situations, fundamental concepts of training and employment are more critical than the technology itself. Troops on the scene may have to switch swiftly from nonlethal means to lethal and then back again as a situation develops. Thus initiative and leadership on the part of junior commanders take on a new magnitude of importance. NLWs should be considered as a component of training across the entire operational spectrum and force continuum, especially for armed interventions and peace operations.

"Weapons of Mass Protection"

Nonlethal weapons have gained a strong foothold in the minds of decision makers and military planners. Some scholars characterize these new weapons, along with anti-lethal and information weapons, as "weapons of mass protection" that constitute a "new arsenal for a new era of warfare."[46] Indeed, today's international climate demands a new dimension in warfare. The concept of "weapons of mass protection" reflects a hybrid approach to the new world order, or chaos, and by extension to the NLWs debate. In this view the West needs to expand its operational capabilities across a spectrum much broader than conventional warfare, not only in terms of peace operations but also of special operations and covert warfare.[47]

At the end of the Cold War, optimists foresaw the emergence of a new, peaceful world order based on the model of Western capitalism. Military activity was regarded as undesirable in a world preoccupied with creating wealth within and between capitalist societies. Liberal democracy and the market economy were the popular vernacular, and conflict between nations was to become an anachronism.[48] The use of military force would continue, but only on the scale of peripheral involvement; the majority of nation-states would bask in prosperity and stability. The resulting "peace dividend" could be diverted to civilian purposes.

Another perspective was postulated by the neo-Realists, who saw the 1990s as an interwar period; the collapse of the Soviet Union was creating a multipolar world in which preexisting rivalries between nation-states would continue to disrupt world tranquillity and stability. Conflict and the potential for it increased with the emergence of newly independent states in the former Soviet Union and elsewhere; growing economic and military power in Southeast Asia seemed to augur economic competition between allies—the United States and Japan, or a solidified European Union. "Fault lines" in human society based on fundamental differences in culture and social fabric would produce unresolvable tensions leading to a reversal of peace and peaceful uses of resources. Military capabilities would have to be increased to meet the ever-growing challenges, threats, and technological developments: "Hence the West will increasingly have to accommodate these non-Western modern civilizations whose power approaches that of the West but whose values and interests differ significantly from those of the West. This will require the West to

maintain the economic and military power necessary to protect its interests in relation to these civilizations."[49]

These opposing views have now joined, largely as a result of the Persian Gulf War and the subsequent quagmire in the former Yugoslavia. The effects of this combined view can be seen in the cooperation of advanced industrial societies with the United States against rogue states, ethnic conflict, and civil war—while military planners at the same time consider longer-term military threats, a potentially resurgent Russia or an aggressively nationalist China.[50]

In this uncertain and fluid security environment—a "fourth epoch," founded on postmechanical energy—the introduction of nonlethal weapons on the battlefield will be as significant as the introduction of gunpowder during the European Renaissance.[51] In the heated debate on nonlethal weapons, this author concurs with the scholars, military leaders, and planners who postulate that in the decades to come the political and military value of the now-emerging nonlethal capability will be regarded as superior to lethal ones in the furtherance of the national security policy and national strategy, because it fills so well the gap between oral warnings and deadly force. With them, commanders will be able to function along the entire force continuum, like musicians playing fully chromatic musical scales where once they were limited to a few widely separated notes. Nonlethal weapons will make commanders much more responsive to situations, more effective in employing a new, expanded operational spectrum—heretofore nonexistent—while maintaining the political, legal, and moral high ground.[52] Nonlethal weapons will in the future furnish the means to meet the challenges of an expanded battlefield of cyberspace, where boundaries will disappear and the enemy will melt into the environment. They promise a genuine technological breakthrough for military strategy and warfare in the twenty-first century.

Notes

1. U.S. Defense Dept., "Policy for Non-Lethal Weapons," Directive 3000.3, 9 July 1996; Leading- Edge Warfare Working Group, "Non-Lethal Technologies for Leading-Edge Warfare," Center for Strategic and International Studies Report on Session #7, 21 May 1997; and Xavier K. Maruyama, "Non-Lethal Weapons Technology and C2," Department of Physics and Institute for Joint Warfare Analysis, Naval Postgraduate School, Monterey, Calif. (published in Institute for Technology Assessment, *Technologies in Support of Peace Operations*, ITA Report BP-PSO-3 [Washington, D.C.: 1998]). Other terms for nonlethal weapons include nonlethal defense, less-lethal weapons, tunable lethality, limited-effects technology, soft kill, disabling technologies, nonlethal disabling technologies, low collateral–damage weapons, and anti-materiel weapons.

2. F. M. Lorenz, "Non-Lethal Force: The Slippery Slope to War?" *Parameters*, Autumn 1996, pp. 52–62.

3. Martin N. Stanton, "What Price Sticky Foam?" *Parameters*, Autumn 1996, pp. 63–8.

4. Lorenz.

5. U.S. Marine Corps Non-Lethal Weapons Capability Sets are "specifically designed to equip a 200 man reinforced rifle company" with "the munitions and equipment to employ a range of nonlethal options short of deadly force in contingency operations." Commanding General, Marine Corps Combat Development Center, Quantico, Va., "FY96 Nonlethal Weapons (NLW) Procurement: A US Marines NLW Capability," administrative message, 29 April 1996.

6. Charles Heal, "Making Not Breaking the Rules," *Jane's International Defense Review*, September 1997, pp. 77–8. Heal is a member of the Marine Corps Reserve and a lieutenant in the Los Angeles County Sheriff's Department; he is highly regarded as a nonlethal weapons expert by the military.

7. The Army employed NLWs in Haiti but had no capability kits; it used commercial, off-the-shelf items. The three NLWs used were shotgun munitions (flashbang [producing an intense flash of light and a loud report], shotgun stinger); 40 mm foam baton round and 40 mm stinger round; and OC pepper spray (individual canister size). In Bosnia the Army used the same NLWs, with the addition of one 40 mm foam baton round (smokeless). Charles Heal, interview, 4 December 1997.

8. Sun Tzu, *The Art of War*, ed. James Clavell (New York: Delacorte Press, 1981), chap. 3, axiom 3.

9. "A Joint Concept for Nonlethal Weapons," Commandant, U.S. Marine Corps, Nonlethal Weapons Directorate, Quantico, Va., 5 January 1998.

10. Ruth Leger Sivard, *World Military and Social Expenditures, 1989*, 13th ed. (Washington, D.C.: World Priorities, 1989), pp. 21, 23.

11. Anthony DePalma, "U.S. Avoids Mine Ban," *Monterey County (California) Herald*, 4 December 1997, pp. A1, A10. The formal signing by 120 nations of the global land mine treaty in Ottawa, Canada, took place on 3–4 December 1997. The United States, China, and Russia participated in meetings but did not sign. The treaty participants rejected at a September 1997 meeting in Oslo, Norway, an American proposal for an exemption in Korea. The United States fears the land mine ban applied to Korea would endanger the thirty-seven thousand troops stationed there and would invite disaster should the one million land mines already in place be removed. The signatories to the treaty pledged resources and money to eliminate the existing 100 million antipersonnel land mines known to exist throughout the world.

12. Anthony C. Zinni [Gen., USMC], telephone interview, 16 July 1997.

13. Defense Directive 3000.3, pp. 1–2.

14. Timothy J. Hannigan, Lori Raff, and Rod Paschall, "Mission Applications of Non-Lethal Weapons," Report for Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (Policy Planning), August 1996, Appendix C.

15. Ibid., p. 6.

16. Defense Directive 3000.3, p. A-2.

17. U.S. Defense Dept., "Review of Legality of Weapons under International Law," Instruction 5500.15, 16 October 1974.

18. U.S. Defense Dept. "Defense Acquisition," Directive 5000.1, 15 March 1996, p. 7.

19. U.S. Navy Dept., "Review of Weapons under International Law," Secretary of the Navy Instruction [hereafter SECNAVINST] 5711.8A, 29 January 1988, and U.S. Navy Dept., "Implementation of Defense Acquisition Management Policies, Procedures, Documentation and Report," SECNAVINST 5000.2B, 6 December 1996.

20. U.S. Navy Dept., Judge Advocate General [hereafter JAG], memoranda: "Legal Review of Stinger Grenades," 25 January 1995; "Legal Review of 12 Gauge Shotgun Bean Bag/Rubber Pellet/Wood Baton Rounds," 30 January 1995; "Legal Review of 40 mm Rubber Pellet/Foam Rubber Multiple Baton/Bean Bag/Wood Multiple Baton Rounds," 30 January 1995; "Legal Review of Sticky/Restraining Foam," 6 February 1995; "Legal Review of Barrier Foam," 6 February 1995; and "Legal Review of 40 mm Practice M781 Round Modified with Foam Rubber Projectile," 7 February 1995. For the M781 see "Mortar Systems Information (M931)," *FSAC Mortar Office Home Page*, <http://www.pica.army.mil/orgs/fsac/aif_mo/xm931/html> (29 June 1998).

21. U.S. Navy Dept., Deputy Assistant JAG, "Legal Review of Proposed Chemical Based Nonlethal Weapons," proposal 10 March 1997, final review and approval 30 November 1997; and telephone interviews, 30 September and 5 December 1997.

22. U.S. Navy Dept., Deputy Assistant JAG, "Legal Review."

23. Instructions for the Government of Armies of the United States in the Field, in *The Laws of Armed Conflicts: A Collection of Conventions, Resolutions and Other Documents*, ed. Dietrich Schindler and Jiri Toman (Dordrecht, The Netherlands: Martinus Nijhoff, 1988), pp. 3–23. See also Human Rights Watch Arms Project, "Blinding Laser Weapons: The Need to Ban a Cruel and Inhumane Weapon," Washington, D.C.: Human Rights Watch, September 1995.

24. W. Michael Reisman and Chris T. Antoniou, eds., *The Laws of War: A Comprehensive Collection of Primary Documents on International Laws Governing Armed Conflict* (New York: Vintage Books, 1994), p. 35.

25. Ibid., pp. 38–150.

26. U.S. Navy Dept., JAG, various reviews (see note 20).

27. U.S. Navy Dept., JAG, "Legal Review of Sticky/Restraining Foam," 1995, pp. 1–6.

28. RCA use was unacceptable in armed conflict because it could easily be confused with chemical weapons of a more lethal nature by the enemy, who might be provoked to escalate the conflict. In Vietnam, RCAs were used for offensive purposes, to widespread public disapproval: some soldiers employed RCAs to "smoke out" the enemy hiding in tunnels or other inaccessible places—once out in the open, the enemy soldiers were shot (rather than taken as prisoners of war). The use of RCAs against combatants in armed conflict has since then been legally disallowed. Navy JAG, interview, 30 October 1997.

29. U.S. Navy Dept., JAG, "Legal Review of Barrier Foam," pp. 1–4.

30. Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction.

31. General John M. Shalikashvili, Chairman of the Joint Chiefs of Staff, statement before the Senate Armed Services Committee, 11 August 1994.

32. Executive Order 11850: "Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents," April 8, 1975. The presidentially approved uses of riot control agents are quite specific and include four parameters: (1) to control situations in areas under direct and distinct U.S. military control, such as rioting prisoners of war; (2) when civilians are used to mask or screen attacks and civilian casualties can either be avoided or reduced; (3) missions in remotely isolated areas to rescue downed aircrews and passengers or escaping U.S. or allied prisoners of war; (4) in rear echelon areas outside the zone of immediate combat to protect convoys from civil disturbances, terrorists, or paramilitary organizations.

33. Hannigan, Raff, and Paschall, pp. 16–7.

34. W. Hays Parks (Special Assistant for Law of War Matters, Department of the Army Office of the Judge Advocate General), "Memorandum for OASD SO/LIC Policy Planning of June 17, 1994, Subject: Nonlethal Technology," cited in Hannigan, Raff, and Paschall, pp. 17–8.

35. Hannigan, Raff, and Paschall.

36. Malcolm H. Wiener, "Non-Lethal Technologies: Military Options and Implications," Report of an Independent Task Force, Council on Foreign Relations, Washington, D.C., 1995, p. x.

37. James Turner Johnson, "The Just War Tradition and the American Military," in James Turner Johnson and George Weigel, eds., *Just War and the Gulf War* (Washington, D.C.: Ethics and Public Policy Center, 1991), pp. 21–9.

38. William V. O'Brien, "Just War Doctrine's Complementary Role in the International Law of War," paper delivered at the Symposium on Moral/Legal Limits on Low-Intensity Conflict, U.S. Naval War College, Newport, R.I., 9 April 1992, pp. 23–5.

39. Edwin R. Micewski, lecture, "Moral Justification for Defense," Political Philosophy and Ethics seminar, Naval Postgraduate School, Monterey, Calif., 28 April 1998.

40. Hannigan, Raff, and Paschall, pp. 21–3.

41. Wiener, p. ix.

42. Hannigan, Raff, and Paschall, p. 28.

43. Ibid., p. 30.

44. Lorenz, p. 57.

45. Joint Task Force UNITED SHIELD, Rules of Engagement, unclassified ROE card ser. 1, 11 January 1995, cited in Lorenz, p. 62.

46. Chris Morris, Janet Morris, Thomas Baines, "Weapons of Mass Protection," *Airpower Journal*, Spring 1995, pp. 15–29.

47. Nick Lewer and Steven Schofield, *Non-Lethal Weapons: A Fatal Attraction?* (London: Zed Books, 1997), pp. 5–17.

48. Francis Fukuyama, *The End of History and the Last Man* (London: Penguin, 1992).

49. Samuel P. Huntington, "The Clash of Civilizations?" *Foreign Affairs,* Summer 1993, pp. 22–49.

50. Lewer and Schofield.

51. Robert J. Bunker and T. Lindsay, "Nonlethal Technology and Fourth Epoch War: A New Paradigm of Politico-Military Force," *The Land Warfare Papers,* no. 23 (Arlington, Va.: Institute of Land Warfare, February 1996), pp. 1–17.

52. Zinni.

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*12-gauge shotgun wood baton rounds, weighing three grams and 0.92 by 0.62 inches in size, are "skip-fired" (direct fire can be lethal) so as to strike the lower extremities of persons thirty to 150 feet away; 40 mm multiple baton rounds (three hardwood, 0.77 ounce batons, 1.35 by 1.35 inches) are also skip-fired at ranges between thirty feet and a hundred yards; the 40 mm, 58-gram foam rubber projectile for the M781 mortar practice fuse is nonpenetrating and nonlethal at ranges over twenty meters and has a maximum range of 150 meters.

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