

LA-UR-92-3773

LA-UR-92-3773

c.1

c.1

Title:

RETHINKING NATIONAL SECURITY REQUIREMENTS & THE
NEED FOR NON-LETHAL WEAPONS OPTIONS

Author(s):

John B. Alexander, Ph.D.

Submitted to:

- President-Elect Clinton's Transition Team

DO NOT CIRCULATE

PERMANENT RETENTION



Los Alamos
NATIONAL LABORATORY

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the U.S. Department of Energy under contract W-7405-ENG-36. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. The Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy.

Form No. 836-95
ST 26, 9 10 91

EXECUTIVE SUMMARY
RETHINKING NATIONAL SECURITY REQUIREMENTS AND THE NEED
FOR NON-LETHAL WEAPONS OPTIONS

by
John B. Alexander, Ph.D.
Los Alamos National Laboratory

This paper outlines the need for major changes in our approach to national security and offers possible solutions. It suggests the U.S. must create new options to meet very different future threats to our national interests.

National Security for the Future

1. The very nature of conflict has changed: few will challenge us directly.
2. The Gulf War was a special case and cannot be used to predict future defense requirements.
3. Emerging threats are more complex and not easily defined/explained.
4. Many threats will be transnational.
5. Use of lethal force in many scenarios will be counterproductive.
6. All casualties must be kept to a minimum, especially U.S. troops.
7. Consensus, internal and external, may be necessary in regional issues.
8. Reconstruction costs may be borne by the "winner" - the U.S.
9. New force projection options are urgently needed.
10. Civilian requirements for nonlethal options also exist.

Next Generation Solutions

1. Reorganize the Government and involve all participants in security issues.
2. Restructure the Defense Department. (1&2 are beyond scope of this paper).
3. Develop nonlethal/disabling/low-lethal weapons systems.
4. The Non-Lethal Defense concepts are comprehensive, far beyond adjuncts to present warfighting capabilities.
5. Non-Lethal Defense has applicability across the continuum of conflict up to, and including strategic paralysis of an adversary.
6. Current independent technology development efforts are insufficient.
7. Through simulations, develop nonlethal requirements and doctrine.
8. Non-Lethal Defense offers "Technological Sanctions" -- options before open conflict and can demonstrate U.S. resolve without troops.
9. Targets will be the adversary's infrastructure; command, control, & communications; energy; transportation; utilities; and financial systems.
10. Some nonlethal weapons produce minimal physical damage.
11. The technologies for Non-Lethal Defense range in maturity from immediately available to long-term development.
12. U.S. troops must not be placed in danger unnecessarily.
13. Concept is tied to the use of precision lethal weapons.



RETHINKING NATIONAL SECURITY REQUIREMENTS AND THE NEED FOR NON-LETHAL WEAPONS OPTIONS

by

John B. Alexander
Los Alamos National Laboratory

National Security for the Future

The challenge to U.S. national security is changing. The extent of these changes is not yet clear, but a major shift in thinking is required if the future national security needs of the United States are to be met. Lacking in many military and political leaders is a firm understanding of the magnitude of the changes and the implications they hold for military forces and other elements of government involved in protection of national interests in the future. The changes go well beyond simple acknowledgment of the end of the Cold War. Although the principles of war remain fairly constant, conflict of the future may be conducted outside the realm of traditional warfare.

For a number of reasons, the Persian Gulf War was a special case and cannot be used to predict the nature of future conflict. It has served to cloud the vision of many defense planners and political decision makers. To be sure, an impressive array of technology was brought to bear against an adversary to soundly defeat his military forces. That adversary was equipped with Soviet materiel that was generally at least a generation old. This equipment was the benchmark against which our systems had been designed to defeat years ago. Iraq also based its tactics on its anachronistic war experience with Iran while erroneously placing strategic faith in our lack of resolve from a fear of U.S. casualties. In addition, we were given time to prepare.

In the post-Cold War period there have been major changes in the geopolitical structure of the world. This nation, and many of our allies, have been pressed to decrease rapidly the size of our military organizations. This effort was predicated on national and international economic issues and the almost irresistible lure of short-term benefits that might be derived from a "peace dividend." What has not occurred is the development of a well thought out strategy to meet future security needs.

The emerging threats to U.S. national security are complex and ill-defined. Gone is the bipolar world divided neatly into "good guys and bad guys." Even the concept of viewing the threat as a specific nation-state is losing much meaning. While there remains a set of countries that offer potential threats, another set of more complex threats is evolving. They are transnational in nature, often lack clear identity, and frequently are partially populated by U.S. citizens. With such threats to U.S. national interests, the use of conventional military force, based on extremely lethal weaponry, will have limited applicability.

Two other issues will greatly impact the decision to employ conventional military options. First will be the nature of the perceived threat to national security coupled with difficulty in the Government's ability to articulate succinctly the issue to the American people. In the past we understood the threat of an armed invasion of our territory or that of allies. We also understood physical threats made against Americans abroad. In recent campaigns, public reaction to the use of force has been quick and vocal. As an example, remember the "no blood for oil" movement that arose almost immediately in the Gulf War.

To legitimize the use of military force it will be essential that clear, concise, and convincing statements are communicated to the American people. That may be difficult when both the potential adversary and threats are relatively vague. For example, some drug cartels approach the power of nation-states and have the economic capability to destabilize countries or regions, and even impact American business ventures. They are transnational and it is hard to identify their members, some of whom may be Americans. While attacking such an adversary with conventional military force may gain emotional favor initially, the application of force will be difficult and, possibly, counter-productive in the long term. Consider what actions the Government might take if such an organization could enter and disrupt a portion of the U.S. banking system. The use of force options might be limited. Many other equally difficult scenarios can easily be imagined.

The second issue in regard to employing conventional military options is the acceptance of American casualties. The Gulf War set a new standard and firmly established high, possibly unreasonably high, expectations. Through our media we consistently demonstrated

and bragged about the effectiveness of our precision weapons. These weapons are good and are a factor in reducing collateral casualties. However, many in the public, and even some military personnel, believe that war is easy, short, and can be accomplished with few, if any, casualties. They forget that a single, well trained terrorist attack, such as the attack on the Marines in Beirut, can produce more casualties in a second than occurred in the whole Gulf War. Here again our response options are limited.

The casualty issue goes beyond American losses. Holding those to a minimum is an imperative. In the future most actions will be taken as part of a coalition. This will be a necessity in regional stability operations. Both U.S. interests and those of coalition forces will be impacted adversely by collateral casualties. Again, this was dramatically demonstrated when we bombed a military bunker that contained some civilians. While extant intelligence justified the striking of that target in Baghdad, the effect on the alliance when it stated to unravel must be remembered.

The issue transcends even collateral casualties and goes to the number of acceptable enemy casualties. The Gulf War postmortems raise questions about the necessity of inflicting a high number of casualties on the substantially inferior Iraqi forces that included many conscripts. Such considerations were factors in determining when to stop the war. More complex was the situation in Just Cause. In that case we knew we would want to be friends with the Panamanians after the cessation of hostilities. In fact, we only quarreled with a small subset of that population. Minimizing opposing force casualties in such a situation is both desirable and necessary.

There are a host of potential situations that could be problematic for the U.S. Government and its allies. The proper role in peacekeeping missions as well as humanitarian support offers several examples in which there is a need or desire to act, and yet application of conventional military force is inappropriate. Recent events have shown the problems that can arise as traditional political boundaries disintegrate. Too frequently countries were established based on external factors, including the whims of cartographers. They did not take into account long-standing historical, ethnic, and religious issues that were suppressed by force or other methods. The question that arises is under what circumstances the United States, with the support of other regional powers, should intervene. If the decision is

made to intervene, then issues such as by what means and to what end must be clearly thought through. Currently the options available to political leaders are very limited.

Additional tricky scenarios include the application of power in economic situations that exceed acceptable norms. The fragility of the global environment is becoming a sensitive issue. Actions taken by one country, or even an industry, can have significant impact on its neighbors and, potentially, the entire world. In both of these cases, transnational issues emerge. Any response must be predicated on establishment of consensus both internal to the U.S. and with those having interests in the region. Note that those with such interests may or may not be geographically located in that region.

Before employing military options, all of these considerations must be traded off against the imperative of protecting U.S. forces once they are committed to combat. I am not suggesting that we should place our troops at risk unnecessarily, but that these very real potential situations pose special problems for national decision-makers.

In addition to military requirements, there are a number of applications in the civilian sector. Law enforcement needs offer obvious examples. The Justice Department has been conducting a "Less-Than-Lethal" program for a number of years. It focuses on antipersonnel measures such as incapacitating agents. This is a very difficult area owing to the associated margin of safety issues. Some antimateriel aspects of military developments will have similar applicability. Techniques to safely stopping fleeing vehicles and boats and information perturb have applicability outside the DoD. Here is a great opportunity to work together to meet joint needs.

Already the lines between military and civilian jurisdictions are becoming blurred, *posse comitatus* notwithstanding. The military has become involved in counterdrug operations within the U.S. boundaries. Other uses of federal forces can be envisioned.

While state militia have different laws, they will be faced with similar difficult situations. As an example, very recently the National Guard was employed in Florida to stop sniping and rock throwing near an interstate highway. Determining what actions the troops would take if a sniper were discovered is a difficult problem. Many

similar situations might arise. Each poses a serious dilemma in the appropriate employment of a given force and what actions those troops are permitted to take. Nonlethal weapons might provide soldiers with an acceptable alternative in application of force.

Humanitarian efforts, both here and abroad, generate unique protection requirements. In the aftermath of hurricane Andrew, substantial armed force was needed to protect relief convoys going into the Miami area. In most instances, the show of force was sufficient to dissuade looters. But, the only real alternative available to police was the use of lethal means. Similar problems have arisen in delivery of aid to other disaster areas around the world.

Next Generation Solutions

All the issues listed above dramatically limit the military action options available to political leaders. Since U.S. national interests are sure to be threatened, new options must be considered. Some of these are extremely broad in nature. They start with reorganization of the United States Government agencies and their respective roles and missions. That has been already proposed by others and goes well beyond the scope of this paper. Still it must be recognized that the complexity of future national security issues will involve increased participation by agencies that previously have not played a major role in national defense.

The next major step includes restructuring and reorganization of the Defense Department. This is not just a reduction in size but development of a force structure that provides the best balance of personnel and weapons systems to accomplish a wide variety of missions. Again, total restructuring of the force also goes beyond the scope of this paper, and is addressed in the Unified Command Plan.

The third step, one that I will address, is the development and application of technologies designed to allow for projection of power in regimes that are currently very difficult to handle. The concept is what I have called Non-Lethal Defense for the last four years. Others have used similar terminology including disabling measures, mission kill, soft kill, and low lethality.

The semantics are important. A major point that needs to be brought into focus is that Non-Lethal Defense is far more than an adjunct to "business as usual." Rather it provides for force application options

across the entire continuum of conflict in the most expanded definition. The technological options suggested offer the National Command Authority more options on the low end of the spectrum.

One way of looking at these nonlethal technologies and concepts is what has been called "Technological Sanctions." This suggests they provided new options between diplomacy and armed conflict.

Once a decision is made to engage in battle, options on the high end of the conflict spectrum can include the goal of strategic paralysis. This focuses power against the infrastructure of a potential adversary and attacks his centers of gravity. The attacks are conducted in such a way that the aggressor is deterred or dissuaded from an undesirable course of action. Failing that, his war-fighting is capability degraded to the point that prolonged armed conflict is clearly not viable. There is a limited set of targets that can be attacked resulting in strategic degradation of a potential adversary. Some of these include communications, command, control, and computer systems; power systems; energy distribution systems; transportation systems; and financial systems.

Emerging doctrine acknowledges these points of attack and calls for parallel war. In this situation, precision munitions targeting is designed to cripple simultaneously as many systems as possible. The emphasis on precision munitions allows the military to carry sufficient armament to accomplish their mission quickly while minimizing collateral damage. Non-Lethal Defense concepts propose employment of weapons other than smart hard bombs but that can achieve the same basic results in systems degradation: strategic paralysis of the adversary.

Another advantage in employment of some nonlethal weapons is that physical damage can be minimized. In many of the scenarios projected above the outcome of conflict is a given. The U.S. has sufficient military might to prevail. However, once the military objective has been achieved, the task of rebuilding begins and the cost most likely will fall on the American people or our allies. Therefore, development of weapons that temporarily incapacitate or degrade system functioning without major structural damage to the target makes sense. The emotional impact of some nonlethal systems can be enormous and the full power of psychological operations should be brought to bear.

As an example of limited physical damage, actually used in Desert Storm was the degradation of the Iraqi electrical power generation and distribution network. However physical destruction of electrical power plants yields long-term rebuilding problems. While some casualties at the time of conflict may be acceptable, there is a temporal component. Secondary and tertiary casualties might not be acceptable. Hospital patients dying for lack of electricity quickly becomes intolerable. Inappropriate casualties engender deep and pervasive hatreds that can last for a long time, even centuries.

The entire world has become dependent on automated information systems. Even nations that are just beginning to evolve industrially use, and often rely on, computer technology. As individuals, industry and government organizations become more dependent upon, and interconnected by advanced information systems, those systems will be more vulnerable to attacks of a wide variety. The U.S. society is by far the most advanced in these systems, and therefore most vulnerable. However, all societies will continue to become more vulnerable as the information age matures worldwide. An advantage to degradation of critical information systems is that restoration of service can be made without the need to rebuild large facilities or complex machinery.

On the low end of the spectrum of conflict, nonlethal technologies offer military and political leaders options that can be applied in relatively ambiguous situations. These same systems can be employed to send a message of resolve to a potential adversary. In other cases, covert employment may be a desirable option.

A range of technologies are currently available or could be developed. Missing is our understanding of employment options. There have been a few technologies developed independently by various organizations. Many of them are black owing either to their potential impact or to their sensitivity to countermeasures. To date there has been no coordinated effort to determine requirements and measures of effectiveness issues. An essential step is to develop a model of potential adversaries and then allow practitioners to try out many technologies and scenarios. This will assist in a better understanding of the potential systems thus providing both input to systems development decisions as well as strategy and doctrine for employment.

The nonlethal technologies are in a wide range of maturity. Some are "off-the-shelf" while others would require extensive development. Needed is a cohesive plan to study these capabilities and develop the supporting doctrine. It should be done from a framework that establishes a new paradigm for the needs of national security of the future while leveraging off the lessons of the past.

Cost of the new nonlethal systems should not be a significant issue. Most of the technologies under consideration do not require new delivery platforms, alleviating expense significantly. Many are new munitions or subsystems that can augment existing weapons systems as modifications and upgrades. The overall costs should be moderate when compared with development of totally new weapons systems. When the utility and effects of nonlethal systems are considered, the cost effectiveness is clear.

Nonlethal weapons will impact force structure. Consideration should be given to providing special units with equipment designed to meet the nonlethal task, but backed by substantial firepower. Psychological operations units can play an important role in increasing the effectiveness on the weapons systems. Additionally, there may be a greater need for civil affairs units with enhanced capabilities. When considering the limited size of the active units available in the future, nonlethal weapons may be considered a force multiplier allowing early resolution of problems.

Summary

This paper suggests that future challenges to U.S. national security will be very different from those previously experienced. In a number of foreseeable circumstances, conventional military force will be inappropriate. The National Command Authority, and other appropriate levels of command, need expanded options available to meet threats for which the application of massive lethal force is counterproductive or inadvisable.

It is proposed that nonlethal concepts be developed that provide additional options for military leaders and politicians. Included in this initiative should be exploration of policy, strategy, doctrine, and training issues as well as the development of selected technologies and weapons.

LOS ALAMOS NAT'L LAB.
LIB. REPT. COLLECTION
RECEIVED

'94 SEP 23 PM 3 54