

Terrorism Literature Report

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[Article 1](#) “Are We Prepared? Four WMD Crises That Could Transform U.S. Security,” **Center for the Study of Weapons of Mass Destruction** (Washington, D.C.: National Defense University), June 2009. *This study addresses the ability of the U.S. government to cope with four plausible, far-reaching weapons of mass destruction (WMD) crises, any one of which could occur today and adversely affect the foreign and national security policies of the United States for many years to come. These crisis scenarios include: A collapse of the nonproliferation regime; a failed WMD-armed state; a biological terror campaign; and a nuclear detonation in a U.S. city. Taken together, these scenarios demonstrate the complex, multifaceted nature of the WMD challenge for American decision-makers and illustrate the demands that such events could place on the entire apparatus of government, alliances, and the American people.*

[Article 2](#) “White Paper Prepared for the Secretary of Defense Task Force on DoD Nuclear Weapons Management: Tradeoffs and Paradoxes—Terrorism, Deterrence, and Nuclear Weapons,” by Scott Helfstein, Michael J. Meese, Don Rassler, Reid Sawyer, Troy Schnack, Mathew Sheiffer, Scott Silverstone, and Scott Taylor, **Studies in Conflict and Terrorism**, Vol. 32, No. 9, September 2009. *While this analysis suggests that certain types of terrorists can be deterred from certain types of attacks, it is less optimistic about the use of nuclear weapons in a terrorist deterrent strategy. Specifically, it may be possible to deter nationalist/separatist, political, and revolutionary terrorist groups, but deterrence is much less likely to secure desired ends when used against millennial groups, “lone wolves,” and religious fundamentalists. In sum, certain terrorists can be deterred, but the best method of deterrence requires a strategy that imposes costs directly against the terrorist group. And the actors best positioned to impose such costs on radical jihadis are local parties that can sanction the terrorist group by informing on them or withholding resources.*

[Article 3](#) “Al-Qaeda, Deterrence, and Weapons of Mass Destruction,” by John Stone, **Studies in Conflict and Terrorism**, Vol. 32, No. 9, September 2009. *This manuscript takes issue with the frequently made assertion that Al-Qaeda cannot be deterred from employing weapons of mass destruction (WMD). It argues that Al-Qaeda’s leadership employs terroristic violence in a manner calculated to achieve a set of political goals. They are, in other words, rational actors who are sensitive to the potential costs and benefits associated with their actions, and thus are to some extent deterrable. The article examines a number of ways in which the lack of discrimination and proportionality associated with WMD might be expected to produce more problems than benefits for Al-Qaeda and thus deter their use.*

[Article 4](#) “Finding Needles in a Haystack: A Resource Allocation Methodology to Design Strategies to Detect Terrorist Weapon Development,” by David R. Howell, **Doctoral Dissertation submitted to the Pardee RAND Graduate School**, June 2009. *Detecting terrorists that are developing weapons is a crucial challenge facing the U.S. intelligence and law enforcement communities. Systematic methods to design intelligence detection strategies are an essential to meeting this challenge. This research proposes a methodology to design strategies to detect terrorist weapon development and then shows how these methods might be used to detect terrorist development of improvised explosive devices and radiological dispersal devices.*

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1. **“Are We Prepared? Four WMD Crises That Could Transform U.S. Security,”** Center for the Study of Weapons of Mass Destruction (Washington, D.C.: National Defense University), June 2009. [KBTTNuclear, KBTTWMD, KBTQWMD, KBTTBioChem] For the full report see <http://www.ndu.edu/WMDCenter/docUploaded/Are%20We%20Prepared.pdf>. In the below *quoted* excerpts we focus on the two terrorism-related weapons of mass destruction crises:

This study addresses **the ability of the U.S. government to cope with four plausible, far-reaching weapons of mass destruction (WMD) crises, any one of which could occur today** and adversely affect the foreign and national security policies of the United States for many years to come:

- **Collapse of the nonproliferation regime**, in which a number of unresolved nuclear proliferation challenges threaten to unleash a sudden and destabilizing wave of proliferation.
- **A failed WMD-armed state**, creating unprecedented risks that radical actors will obtain WMD and unprecedented challenges for prevention.
- **A biological terror campaign**, in which terrorists employ deadly biological pathogens to strike at multiple cities.
- **A nuclear detonation in a U.S. city**, delivered covertly and leaving great uncertainty about who did it, whether it will happen again, and how we should respond.

Taken together, **these scenarios demonstrate the complex, multifaceted nature of the WMD challenge for American decision-makers and illustrate the demands that such events could place on the entire apparatus of government, alliances, and the American people.** . . . These four scenarios illustrate near-term threats associated with WMD. **They all could occur today using 40-year-old technology.** The danger is here and now. Yet should these scenarios come to pass, **the United States could be caught dangerously unprepared.**

In recent years the U.S. government has made considerable strides in preparing for individual aspects of such crises. New interdiction processes and activities have improved our ability to track proliferation-related activities and prepare to stop them. High-value programs are leveraging Cold War technologies to **enhance the nation’s nuclear and biological forensics capabilities.** Various nuclear and biological detection

programs at home and at key ports and facilities abroad have **enhanced our ability to stop the smuggling and transfer of WMD capabilities and improved our ability to detect and defend** against WMD terrorism at home. As the number of WMD-related programs and activities has grown, however, **the mechanisms necessary to coordinate and synchronize responses, adjudicate priorities, and allocate resources across the government have failed to keep pace.**

This atomized or stove-piped approach will not withstand its first encounter with a major WMD crisis or large-scale contingency such as the four described here. **Organizational and operational responses that rely on neat divisions between counterproliferation and counterterrorism, foreign or domestic responses, military or civilian capabilities, or federal, state, local, or tribal government responses will collapse in the face of a major WMD attack against the United States or the dissolution of a WMD-armed state.** A sustained bioterror campaign need not heed borders or boundaries at home or abroad. Should diplomacy fail to prevent breakout proliferation and sustain the nonproliferation regime, the U.S. military may be forced to keep the peace among an assortment of WMD-armed adversaries. **These crises cannot be easily confined to a region but rather are likely to be global contingencies. Such events could fundamentally alter the security landscape for this and future generations.** They are tests we cannot afford to fail.

These scenarios are strictly illustrative, not comprehensive. For example, **the United States must be prepared for the prospect of nuclear use not only at home but also on foreign soil,** and by both terrorists and states. In addition, **the biological threat could take many forms**—for example, an attack using a contagious agent such as smallpox or the deliberate spread of foot and mouth disease to cripple the nation's agricultural and livestock industries and devastate Western economies.

Although a chemical or radiological attack was not among the four crisis scenarios in this package, **chemical and radiological weapons pose serious threats to the United States and its interests,** particularly chemical weapons utilizing advanced chemical threat agents. Nonetheless, **the four scenarios present a baseline of possibilities from which myriad requirements flow. They imply the need for multiple, complex, and sophisticated responses,** any of which might prove impossible to accomplish at the level needed to reassure the American public. Moreover, they provide **a common point of reference for each of the many players across the interagency [players] who own a piece of the WMD problem and are responsible for a piece of a coordinated federal and intergovernmental solution.** Over the next few years the United States will need to consider each of these different scenarios—any of which could fundamentally alter the course of national security—and **develop appropriate strategies and plans to manage them or, better yet, to prevent them.**

The present and evolving WMD threat

The current threat environment is sobering. **Iran and North Korea continue their nuclear programs. Al-Qaeda, by all accounts, remains interested in WMD,** including chemical and biological weapons. Insurgents in Iraq have experimented with rudimentary chemical weapons in attacks on American and allied forces. **Changes in the life sciences and the spread of advanced chemical industries are making dual-use capabilities more prevalent in more countries. The nuclear energy renaissance has the potential to proliferate nuclear weapons-related capabilities,** such as uranium enrichment and

plutonium reprocessing, to more countries. And the possibility that more countries are becoming interested in some level of nuclear weapons capabilities seems to grow.

Dealing with threats that could manifest themselves today is not enough. **The WMD threat is a complex and evolving problem.** As we respond to present dangers, more daunting challenges lie just over the horizon. Events and trends already evident could greatly complicate the U.S. ability to keep pace with WMD requirements. In particular, **we must work now to mitigate the risks posed by several “systemic game-changers” that could fundamentally alter America’s ability to respond to future crises.**

More modern WMD and means of delivery

Most of the weapons of mass destruction the United States focuses on today have their origins in scientific and technological advances made in the late-nineteenth and early twentieth centuries. **The science and technology that enable weapons of mass destruction continue to evolve faster than our response capabilities. Advances in biology and chemistry can already produce more formidable versions** of some well known types of biological and chemical agents and can be expected to produce entirely new types of threats in the future. **Tomorrow may hold even more grim possibilities given the rapid pace of scientific and technological development in the life sciences and chemistry and reports of some advanced nuclear weapons states’ research on exotic nuclear weapons effects.**

While such trends are recognized and important efforts are under way to meet them, **our current counter-WMD programs and activities are overwhelmingly geared toward traditional threats.** For example, most of our existing medical countermeasures for biological agents are directed at the same threat agents we were concerned about two decades ago. **We have yet to develop an approach that keeps pace with threat agents that can be genetically modified. Our chemical weapons defenses remain geared toward the traditional agents** listed by the Chemical Weapons Convention and toward toxic industrial chemicals. **Our technical nuclear forensic capabilities largely are aging legacies of Cold War programs that were focused on the powerful and sophisticated nuclear weapons of the Soviet Union,** which we expected to be employed overtly, **as opposed to the crude or improvised weapons currently attainable by rogue states and terrorists.**

Further complicating our ability to adapt our countermeasures to the evolving WMD environment is **the likelihood that the United States will not always lead in technological innovation. Other nations increasingly play leading roles.** Moreover, **government-affiliated scientific talent in the United States has been shrinking in critical areas for a generation.** Today, most of those scientists are retired or are approaching retirement. The number of scientists with detailed knowledge of the nuclear weapons design process is declining rapidly, and there are even fewer with an understanding of how an adversary might develop and test chemical and biological weapons. **The United States must find new ways to harness its scientific ingenuity and legacy**

A more proliferated world

The vast majority of states have rejected, and we hope will continue to reject, nuclear, chemical, and biological weapons, but the latent capacity to produce such weapons is

reaching unprecedented heights. **The steady progress of technology brings not only the danger of new weapons in the hands of new actors, but also a new context in which proliferation will occur.** Increasingly, **these technologies belong not just to the few, but to the many states with the capacity for modern medical science, pharmaceutical and chemical industries, and nuclear energy.** A state with a space-launch capacity has a virtual long-range ballistic missile capability, just as the proliferation of unmanned aerial vehicles (including in civilian roles) provides new and effective means to deliver chemical and biological weapons. A state with an indigenous nuclear fuel cycle capability is well on its way to having nuclear weapons; and for states with modern pharmaceutical or chemical industries, the ability to possess biological or advanced chemical weapons is limited far more by intent than capability.

There are other worrisome trends. **Evidence suggests that in some regions the taboos associated with nuclear weapons are weakening, while the perception of prestige and security benefits is on the rise.** Also, **complex network dynamics are changing the ways states can acquire nuclear capabilities and marginalizing traditional control mechanisms.** The discovery of the A. Q. Khan network exposed weaknesses in the nonproliferation regime's ability to detect and prevent black market transactions in nuclear technology, design, and expertise. Moreover, **an increase in nuclear proliferation may also help renew interest in biological and chemical weapons as the "poorman's nuclear weapons."**

Finally, **as WMD-enabling technologies become more widely proliferated, the opportunity for theft, leakage, or transfer to other state or non-state actors can only grow.** Weak or unstable regional nuclear powers may lack sufficient safety and security controls over their nuclear weapons, materials, or equipment. **The collapse or compromise of a WMD-armed state could lead to the sudden and potentially catastrophic leakage or transfer of WMD capabilities to terrorists or state actors.**

Evolving adversaries

Finally, **perspectives on the nature and character of the future threats posed by nuclear, chemical, and biological weapons are fundamentally shaped by the evolving views of those who might use them.** **The 1990s were marked by growing concern that smaller hostile or rogue states might seek to acquire and use chemical, biological, or even nuclear weapons as an asymmetrical counterweight to U.S. conventional dominance or as a means to intimidate regional rivals.** Such states may or may not be susceptible to the pressures of traditional retaliatory deterrence; therefore, **the U.S. military had to prepare to fight under chemical, biological, and nuclear conditions.**

Following 9/11, the focus immediately shifted to terrorists as the primary locus of the threat. The growing conventional wisdom was that terrorist use of WMD could not be deterred through fear of retaliation. This shift in emphasis **brought greater reliance on deterrence through denial—detection, defenses, interdiction—in hopes of denying the opportunity for a successful attack.**

Without question, **terrorist use of nuclear or biological weapons remains the most critical near-term WMD threat.** This immediate threat, however, **obscures the likelihood that over the longer term the United States will need to deal with a variety of state and non-state actors operating in a more multipolar world marked**

by increased conflict over natural resources. Such trends could again reshape views on the role of deterrent forces, complicate international nonproliferation cooperation, and stoke military competition. **By preparing tools and strategies overly focused on the terrorist threat, the United States risks finding itself dangerously flat-footed as it seeks to deal with future dangers. . . .**

Biological terror campaign: The crisis scenario

Analysis of samples from multiple BioWatch sensors has identified **a large-scale release of aerosolized anthrax 12 hours earlier during the Fourth of July celebration on the National Mall.** The U.S. government has **high confidence that a biological attack has occurred but has limited information** about the extent of the attack or the size of the area affected. Because of these uncertainties, **initial estimates suggest that anywhere from 100,000 to one million people might have been exposed to the deadly spores,** including those on the Mall during the release, those downwind of the release, and those in other areas where anthrax spores have been unwittingly carried by parties who were exposed initially.

Because of uncertainty as to exactly who was exposed, public health experts indicate that it may be necessary to provide pre-symptomatic treatments to everyone in the Washington metropolitan area (up to five million people). The nation has been at a heightened state of readiness for a bioterrorist attack since an anthrax attack in the London subway system two months earlier infected more than 2,000 people and resulted in more than 500 deaths. In recent weeks, **intelligence sources have confirmed that a previously unreported disease outbreak in Kashmir that killed dozens of people was likely the work of an Al-Qaeda affiliate** conducting a dry run of an anthrax attack. Due to limited disease surveillance capabilities, Indian medical, public health, and security officials failed to recognize the attack. **It now seems likely that the United States and its European allies are facing a broader biological terror campaign, making additional attacks in the coming days and weeks likely.**

Senior decision-makers are consumed with the enormous tasks of saving lives and preventing follow-on attacks. Modeling suggests that 90 percent of those actually infected can be saved if they are located and treated within 48 hours. **Activation of the Strategic National Stockpile is under way,** and health departments in the National Capital Region have begun to identify and mass-treat the potentially exposed population. That said, **it is not clear how many of the infected can be located and treated within this critical window or how the area will cope with the tens of thousands likely to require intensive medical intervention.**

At the same time, **law enforcement and intelligence agencies are trying to attribute the attacks and prevent follow-on attacks, but they have little to report.** Word of the attack reached the press within minutes of the start of responses, and **senior officials worry that panic will spread across the country.**

Biological terror campaign: Policy implications

Biological attacks on U.S. urban areas would have unprecedented and potentially catastrophic consequences for the nation. Today, **the United States probably could not stop a biological attack even after receiving strategic warning.** At best, **officials might be able to detect an attack within a day,** but only if, as in the above scenario, an

attack occurs in a place and manner that can trigger Bio-Watch sensors to provide an alert. Moreover, **U.S. leaders would be forced to rely on response capabilities that are largely untested for crises of this magnitude.**

Complicating matters, **many of those affected would be government officials responsible for response operations.** Local and state governments, aided by the federal government, would need to distribute antibiotics to millions within days to minimize loss of life. **Even with a highly effective response, senior officials know that tens of thousands of people would probably die.** With a failed response, fatalities could easily exceed 100,000. **Mounting an effective response to such a crisis would pose challenges that could make the difficulties of Hurricane Katrina seem small.** It would not be a time for hesitation.

The impact of such an attack would extend far beyond those actually infected. Because of the recognition that “reload” is highly feasible with biological agents, **the population will probably expect follow-on attacks. That will generate widespread fear,** as was evident from the public reaction to the 2001 anthrax letters, and **fear could degenerate into panic if government responses do not enhance confidence.**

People across the country would likely alter normal patterns of commerce and transportation. Some may flee urban areas in the hope of being less vulnerable. Others may refuse to go to work or send their children to school, especially if the government’s handling of the attack raises doubts about its ability to protect its citizens. **If fear of repeated attacks takes hold in the population, it could disrupt the country’s financial and economic systems and thus the fabric of our society.**

Such circumstances will require decision-makers to undertake operations of a scope and complexity with which they will have had no previous experience. They will be obliged to act with incomplete or inaccurate information. At the same time, **the world will be looking to the United States to take the lead in organizing the global effort to prevent additional attacks.** Drastic measures will be needed to regain public confidence since any subsequent attacks could destroy the legitimacy of our national institutions.

Other implications of such an event include the following:

- **Responding to a bioterrorism attack will require an unprecedented national effort calling for integrated responses by both government** (federal, state, local, and tribal) **and private institutions.** Given our federal form of government, this will pose an extraordinary challenge.
- **Enormous pressures to locate the perpetrators and prevent additional attacks may result in unprecedented intrusions of law enforcement** in daily life and curbs on civil liberties.
- **Other nations will try to ensure that they are not attacked and may drastically restrict the movement of people and goods.**
- **The economic cost to the United States could easily exceed \$1 trillion,** and cumulative international costs would be far higher. **Such an attack could devastate economies already faltering in the global recession.**

- **A large swath of the nation’s capital could be rendered unusable/uninhabitable until people feel confident** they are not at risk for infection from the reaerosolization of spores blanketing the area.
- **The catastrophic use of a biological weapon could result in broader adoption of biological agents as terrorist weapons** and erode global norms against their use. . . .

Nuclear detonation in a U.S. city: The crisis scenario

Witnesses have reported a blinding flash and mushroom cloud in the seaport area of a major U.S. city. First responders have detected high radiation levels in the area. **Aerial reconnaissance has indicated that most structures within a one square-mile area have been destroyed or severely damaged.** **The federal government has assumed that the explosion was a nuclear detonation,** with a yield of perhaps one to ten kilotons, **but experts have given no definitive word on the nature or size of the event.**

If it was a nuclear detonation, modeling predicts that nearly 16,000 people have died or soon will from the detonation’s prompt effects and that **another 20,000 are at risk of death** from exposure to radioactive fallout downwind of ground zero. An additional 10,000 people could be injured. **Local first responders are carrying out rescue efforts but are hampered by the physical devastation, radiation hazards, and their unfamiliarity with such an event.** Federal emergency response assets are en route to the scene.

The government has not characterized the event publicly as a nuclear detonation, but the media are reporting it as one. Speculation is rife as to the most likely culprits and how Washington will respond. **No one has claimed responsibility, nor has the government determined who is responsible.** Nevertheless, some public opinion leaders are calling for prompt military action against potential perpetrators. **The biggest question on leaders’ minds is whether to expect follow-on attacks. Fear grips the United States and other Western nations. People are fleeing major cities,** including Washington, New York, London, Paris, and Tel Aviv.

World leaders, including those of all known and suspected nuclear weapons states, are condemning the apparent attack and pledging support and assistance to the United States. They entreat Washington to refrain from rash military action and to work through international bodies, including the United Nations Security Council and the International Atomic Energy Agency, in determining and holding accountable the responsible parties. The U.S. President’s first public remarks on the event are awaited anxiously everywhere.

Nuclear detonation in a U.S. city: Policy implications

It has been said that a nuclear detonation in a U.S. city would “change everything.” It is difficult to imagine a more shocking blow to the public’s sense of security and its faith in traditional methods of securing the nation. Americans know that some current and potential adversaries already possess nuclear weapons, but faith is placed in those states being sufficiently rational to be deterred by our overwhelming retaliatory capability.

Americans also know there are terrorists who seek nuclear weapons and have justified their use against our nation, but some comfort is taken in the assessment that terrorists do not currently possess such weapons and that it would be very difficult to acquire them. **The government's efforts against nuclear terrorism are focused on prevention:** securing nuclear weapons and fissile material and detecting and interdicting them if they slip their bonds. **Yet if an act of nuclear terrorism occurs, that source of comfort would immediately disappear. Americans would be consumed with fear about the possibility of future attacks and could:**

- **Demand violent retaliation against the most likely suspects even before we have convincing evidence** of their involvement in the attacks, **potentially stimulating a widening and escalating cycle of catastrophic violence.**
- **Consider unprecedented restrictions on personal freedom to enhance our security.**
- **Relocate away from population centers** that are likely sites of future attacks.
- **Call for withdrawal from international commitments and reducing other international engagement in an attempt to build a more impregnable barrier** around our country and/or to give adversaries less cause to attack us. . . .

The foregoing is Article No. 1 (TL081A01) in the [Terrorism Literature Report](#) (TLR), No. 81, 7 September 2009, prepared by Interaction Systems Incorporated (isinreports@mindspring.com).

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2. “White Paper Prepared for the Secretary of Defense Task Force on DoD Nuclear Weapons Management: Tradeoffs and Paradoxes—Terrorism, Deterrence, and Nuclear Weapons,” by Scott Helfstein, Michael J. Meese, Don Rassler, Reid Sawyer, Troy Schnack, Mathew Sheiffer, Scott Silverstone, and Scott Taylor, [Studies in Conflict and Terrorism](#), Vol. 32, No. 9, September 2009. [KBTTNuclear, KBTTWMD, KBTQWMD, KBTTBioChem, KBTGStrategies] The authors are affiliated with the Department of Social Sciences, United States Military Academy, and the Combating Terrorism Center, West Point, New York. We *quote* from the original at <http://www.informaworld.com/smpp/title~db=all~content=g914018327>:

. . . **While this analysis suggests that certain types of terrorists can be deterred from certain types of attacks, it is less optimistic about the use of nuclear weapons in a terrorist deterrent strategy.** A broad approach to deterrence may be effective against certain types of terrorist groups and attacks, making it crucially important to disaggregate the terrorist threat when setting policy.

The article goes on to address **two types of terrorist groups with a “global reach” that pose a serious threat to the United States: non-state actors driven by doctrines permitting catastrophic attacks and state-sponsored groups capable of carrying out catastrophic attacks.** The analysis reveals a number of previously unappreciated **tradeoffs and paradoxes associated with the deterrence of terrorists.**

The Combating Terrorism Center produced this article at the request of the Secretary of Defense Task Force on DoD [Department of Defense] Nuclear Weapons Management. The Task Force asked the Combating Terrorism Center and the Department of Social Sciences at United States Military Academy to consider the concept of deterrence within the context of two questions: (1) How can jihadists and terrorists be deterred? And (2) What role might nuclear weapons and capabilities play in that particular domain of deterrence?

[Deterrence may be effective against some terrorist groups, attacks—but not against others]

The first section of the article addresses the deterrence of terrorism, sorting through the various arguments for and against the applicability of deterrence to terrorism. **The notion of deterrence used in this report focuses generally on the prevention of undesired acts through credible and capable threats given the target group’s motivations and values.**

This is a broad notion of deterrence whereby states may use nuclear, conventional, political, or economic threats and retaliatory acts to prevent undesired action. **The article concludes that deterrence, thus broadly defined, may be effective against certain types of terrorist groups and attacks, but not against others.** In particular, **it may be possible to deter nationalist/separatist, political, and revolutionary terrorist groups, as these groups ultimately rely on the support of their internal constituencies to achieve their goals.** The importance of their constituencies and the value placed on political settlements may mitigate the use of catastrophic tactics.

Alternatively, **deterrence is much less likely to secure desired ends when used against millennial groups, “lone wolves,” and religious fundamentalists. These actors are much more difficult to punish,** thereby making deterrent threats less credible.

[Jihadist community does not have uniform position on the use of nuclear weapons]

The analysis points to a previously unappreciated paradox when attempting to deter terrorists. **The groups most susceptible to deterrent policies are the same groups that are less likely to carry out major attacks due to internal constraints on violence or self-policing measures.** It is also important to recognize that **there is a tradeoff between retaliatory capability and credibility when applying deterrent policies to terrorism.** Larger retaliatory punishments are more likely to reach guilty parties and/or destroy valuable targets, thereby overcoming attribution and targeting problems, but **the prospect of greater collateral damage makes such threats less credible.**

This section of the article also demonstrates that **deterrent and preventative strategies may not work in conjunction with one another. Preventative counterterrorist strategies involve neutralizing terrorists before they strike. Deterrence is essentially moot when directed at targets that are already being hunted,** especially where punishment has been unsuccessful. Using the two strategies in conjunction requires a clearly articulated policy and disciplined execution.

The second section of the article examines the objects of a deterrence strategy: non-state and state-sponsored terrorist organizations possessing global reach. The most significant threat is Al-Qaeda and its affiliates, which rely on their own interpretation of Islamic doctrine to justify their actions. **Two extremist Islamic clerics aligned with Al-**

Qaeda have already issued a fatwa condoning the use of nuclear weapons against the West.

While this position is not uniformly held throughout the jihadist community, **a threat of nuclear punishment from the United States is likely to eliminate current divisions among Islamic extremists in favor of mass acceptance of nuclear attacks against the West.** One interpretation of Islamic doctrine, consistent with the traditional notion of realpolitik, **argues that Muslim states are required to develop nuclear weapons in order to have the same capabilities as potential adversaries.**

Currently, there is division about nuclear weapons among extremist jihadis. **Some argue that a nuclear arsenal is the only means to counter Western power, while others maintain that the use of nuclear weapons would invite condemnation of the wider jihadi movement.** Explicit threats involving nuclear weapons are likely to increase support for nuclear armament and use. **State-sponsored terrorists, particularly Hezbollah,** may pose a serious risk should they acquire unconventional weapons in the future. **Deterrent policies aimed at state sponsors like Iran may prevent catastrophic attacks if the state sponsor maintains leverage over the terrorist group and believes that it will be targeted in retaliation for the acts of the group.**

[Local actors best positioned to impose real costs on those terrorists that can be deterred]

While this analysis suggests that certain types of terrorists can be deterred from certain types of attacks, it is less optimistic about the use of nuclear weapons in a terrorist deterrent strategy. **The most effective nuclear deterrent would target state sponsors of terrorism through the doctrine of strategic culpability, which holds that any state capable of providing resources for chemical, biological, radiological, and nuclear (CBRN) terrorist attacks,** developing weapons outside of acceptable international legalistic frameworks, **is potentially liable for any attack using those resources.** The threat should only target states operating outside of international agreements (by developing or supplying weapons of mass destruction, or WMD), since such threats might otherwise deter allies from cooperative measures such as securing arsenals or reporting lost nuclear weapons.

A doctrine of strategic culpability could have two complementary effects. It would: (1) **deter states from passing on CBRN material to terrorists** and (2) **encourage states to abandon prohibited activities altogether.** **Yet these potential benefits should be weighed carefully against the costs.** Announcing such a doctrine could potentially turn allies against the United States and might actually boost susceptible states' desire to develop CBRN weapons to ensure a deterrent capability of their own.

The United States should also expect that **any nuclear punishment would pose significant problems in the concomitant long war for hearts and minds.**

Terrorists, and particularly Al-Qaeda, are adept at seeking repression, punishment, and perceived grievance to rally support. Using nuclear weapons against terrorists would reify the jihadist narrative and provide an ideal call to arms. In this context, a group like Al-Qaeda might welcome the threat of nuclear retaliation. **Such a strategy would also make the United States appear weak,** since reliance on such drastic measures to address what should be a minor enemy represents a major weakness in U.S. strategy.

In sum, **certain terrorists can be deterred, but the best method of deterrence requires a strategy that imposes costs directly against the terrorist group. The actors best positioned to impose such costs are local parties** that can sanction the terrorist group by informing on them or withholding resources.

The key to engaging these actors is to convey the legitimacy of alternate and more moderate belief systems relative to the bankrupt and dangerous belief systems of terrorists operating within their midst. An enhanced nuclear posture would almost certainly undermine any attempts to convey legitimacy and would likely dissipate support from allies for future counterterrorism efforts. In all likelihood, such a strategy would play right into Al-Qaeda's hands. . . .

[Deterrence by counternarrative effective if terrorists fear losing support of their networks]

Any successful counterterrorism strategy must be flexible in scope and approach to address the diversity of terrorist actors and the varied threats that they pose. **Deterrence can be an important component of a broader counterterrorism strategy, but policymakers must recognize situations where deterrence will be effective.** Expecting deterrence to work across all terrorist groups is likely to generate the belief that the policy failed. However . . . **there are nuances of deterrence strategy and ways in which deterrence can be applied to some aspects of the terrorist threat.**

Deterrent policies are most effective when retaliation imposes meaningful costs directly on the guilty parties. Deterrent strategies may be able to impose limited costs on certain groups, but such a policy is bound to fail on occasion. **The most effective way to deter terrorist groups and prevent them from using CBRN weapons is to threaten the primary items they value and from which they draw strength.**

Ideally, such a strategy would systematically undermine the components they value most. **For many terrorist organizations, their most valuable assets are their ideological narratives, the support they generate, the sanctuary they obtain, and the resources they need to operate.** Blocking or restricting access to these assets reduces the terrorists' operational capability, creating a condition where they must abandon their campaign or operate in an increasingly restrictive and risky environment.

The best way to attack these resources is by attacking the ideological narratives terrorists use to justify their acts and draw support. This type of approach would target the legitimacy of terrorist organizations by exposing the ideological flaws in their arguments and fomenting discontent among the terrorists themselves. **By employing a well-developed strategy aimed at undermining terrorist ideology, local communities will eventually turn away from the terrorists operating within their midst.**

Deterrence by counternarrative is effective if the terrorist group decides against a given attack out of fear that their support networks will disappear.

The foregoing is Article No. 2 (TL081A02) in the [Terrorism Literature Report](#) (TLR), No. 81, 7 September 2009, prepared by Interaction Systems Incorporated (isincreports@mindspring.com).

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3. “Al-Qaeda, Deterrence, and Weapons of Mass Destruction,” by John Stone, **Studies in Conflict and Terrorism**, Vol. 32, No. 9, September 2009. [KBTQWMD, KBTQStrategy, KBTTNuclear, KBTTWMD, KBTTBioChem, KBTGStrategies] The author is affiliated with the Department of War Studies, King’s College London, Strand, London, United Kingdom. From this article at <http://www.informaworld.com/smpp/title~db=all~content=g914018327> we *quote* from the abstract and concluding section:

This manuscript takes issue with the frequently made assertion that Al-Qaeda cannot be deterred from employing weapons of mass destruction (WMD). It argues that Al-Qaeda’s leadership employs terroristic violence in a manner calculated to achieve a set of political goals. They are, in other words, rational actors who are sensitive to the potential costs and benefits associated with their actions, and thus are to some extent deterrable.

The article examines **a number of ways in which the lack of discrimination and proportionality associated with WMD might be expected to produce more problems than benefits for Al-Qaeda and thus deter their use.** It also considers some ways in which the West might seek to bolster these deterrent effects.

[Politically impracticable, ethnically impossible for West to threaten collective punishment]

Is it possible to deter the terroristic use of WMD by Al-Qaeda? Studies have suggested that states, along with other sponsoring groups and individuals, might be deterred from furnishing Al-Qaeda with WMD or the wherewithal to acquire them. On the other hand, **there is less confidence that Al-Qaeda leadership can be deterred from using WMD that nevertheless fall into their hands. Indeed, it is often argued that Osama bin Laden and his lieutenants would certainly use such weapons because the threat of retributive action is of no concern to them.** Accordingly, the West cannot afford to make deterrence a significant component of its strategy for dealing with this particular problem.

Two distinct groups of arguments are normally advanced in support of such assertions. **One of these is that Al-Qaeda’s use of force is not governed by any form of strategic logic.** Thus for Bruce Cummings, “The 9/11 attack . . . lacked the essential relationship between violent means and political ends that, as Clausewitz taught us, must govern any act of war.” Similarly, former British defense secretary John Reid has **described Al-Qaeda as “completely unconstrained” in its use of force, and thereby prone to treat mass murder as an end in itself. If this is indeed the case—if bin Laden and his lieutenants desire nothing better than to inflict loss of life—then it must be accepted that deterrent threats will achieve nothing.** Reid’s contention must be accepted that “anyone who uses planes to try to kill tens of thousands of people won’t hesitate to use chemical and biological weapons to kill hundreds of thousands, or millions with ease.”

A second group of arguments is concerned less with the rationality of Al-Qaeda than with the obstacles confronting Western efforts to make credible threats of retaliation. These obstacles are usually considered to be practical and ethical in nature. Richard Betts has pointed out that it is difficult to deter the actions of a non-state actor whose members are notoriously elusive. **If they cannot be found they cannot be targeted, and thus cannot be deterred.**

Historically, certain states have circumvented this problem by widening the scope for retributive action to include targets that an otherwise untouchable adversary holds dear. During the Second World War, for example, the German army kept occupied territories under control with the help of the threat of collective punishment. Civilians were shot and houses razed in response to attacks on occupation forces. **In principle, it might be possible to gain some leverage over an elusive terrorist opponent by holding at risk family members or perhaps even Muslims in general.** But as Edward Luttwak has observed: “It is enough to consider these methods to see why the armed forces of the United States or any other democratic country cannot possibly use them.”

Quite so. **Such actions would constitute gross violations of the principles of proportionality and discrimination. They would, in other words, be deeply unethical,** and thus a strategy based on the conditional intention to perform them is a non-starter; for **not only is it politically impracticable to threaten collective punishment, but were such threats to be made they would lack credibility.** Even “if we, as Americans, did suggest that we were willing to sacrifice some ideals to combat terrorists, would the terrorists believe us?” asks Uri Fisher.

[Evidence supporting undeterrable nature of Al-Qaeda at best contradictory, inconclusive]

If either one of these positions is true—if Al-Qaeda’s leadership is irrational in its use of force, or it is practicably and ethically impossible to make credible threats of retribution—**then the prospects for deterring WMD attacks must be considered remote.** Add to this the observation that plots have already been uncovered to attack Western cities with both toxic agents and a radiological weapon, and **it may well appear that the only way to avert future attacks**—possibly involving even more potent weapons—**is via a strategy designed to prevent Al-Qaeda acquiring such weapons** until such time as the organization is eliminated.

Nevertheless, this article suggests that the prospects for deterrence are better than might be considered, and that **while some relatively “minor” attacks involving WMD may be suffered a major instance is less likely,** and might perhaps be made even less so. This is because:

- **Al-Qaeda is by no means “completely unconstrained,” but acts in accordance with a carefully formulated strategy that subordinates the use of force to a clearly articulated set of political goals.**
- **This strategy demands that careful attention be paid to Muslim expectations in respect of proportionality and discrimination in the application of force.**
- **Previous attempts to mount WMD attacks may not presage substantially more lethal efforts, but may simply reflect a non-Western view on where the line between “useable” and “non-useable” weapons lies.**
- **Al-Qaeda is less impressed by Western moralizing about the use of force than is thought, and thus is more likely to expect unconstrained retaliation in response to a WMD attack.**

- **There exist a number of credible threats that can be made that, in conjunction with a declared willingness to engage in dialogue, should bolster deterrence.**

To be sure, **the evidence underpinning these propositions is at best contradictory and inconclusive. But given that claims for the undeterrable nature of Al-Qaeda often rest on equally problematic grounds, it is worthwhile investigating the extent to which an alternative interpretation can be constructed.** The purpose of this article is to attempt such a construction, and in doing so to challenge those who believe that Al-Qaeda cannot be deterred to sharpen their analyses by way of a response. . . .

[Maximizing deterrent credibility demands states say enough without saying too much]

What, then, should be said? For one thing, **there are some deterrent threats that can be articulated with a certain degree of credibility.** Thus far this article has been considering deterrence solely in terms of retributive acts. **The implicit idea, here, is that deterrence works by persuading an adversary that the costs flowing from a particular course of action will outweigh the benefits.** The purpose of punitive acts in this context would be to ensure that the costs of acting are indeed raised to unacceptable levels.

There is, however, **a second way of manipulating an adversary's cost-benefit calculations,** which is to reduce the prospective benefits of acting to levels where they are outweighed by the likely costs. **The goal here is to convince terrorists that WMD attacks would not generate as much benefit for them as they would trouble.** According to the New York Times, **such an approach is already part of U.S. strategy, which now seeks in part to deter attacks by creating fear that they will end in "embarrassing failure" for Al-Qaeda.**

Public discussion of the West's capacity for detecting, preventing, preempting, or otherwise frustrating WMD attacks is valuable in this regard. This is because it draws attention to the possibility that **such attacks might fail; and in failing they will attract moral opprobrium and erode support for the terrorist cause while delivering no great benefit.**

The bomb that is found and deactivated will not inflict damage sufficient to alienate an electorate from the policy of its government. It will cause a good deal of alarm about the possibility of other undetected bombs, but it may also boost public confidence in the authorities' ability to deal with such events effectively, and increase public support for more muscular efforts against the terrorists themselves, just as it reduces Muslim support for their activities. **The more convincing the possibility of preventing such attacks can be made to appear, therefore, the more likely it is that the benefits of mounting them will be considered too small in relation to the costs.**

Of course, **a terrorist organization might conceivably respond to such initiatives by seeking to mount more widespread or sophisticated attacks in the hope that at least some element will be successful.** Having said that, **the chances of such a mission being detected and disrupted would presumably increase in proportion to its scale and sophistication.** The greater the ambition, the larger would be the number of people involved and the greater the financial and logistical "footprint" of the operation. Thus the harder it would be to achieve the level of surprise necessary to produce effects capable of

justifying the costs involved. **Well-publicized countermeasures might therefore serve to deter both relatively small or unsophisticated WMD attacks, and larger, more sophisticated efforts.**

Nevertheless, **it clearly pays not to be too specific about exactly what measures exist to frustrate such attacks.** Too much specificity will facilitate terrorist initiatives designed to overcome them, thus raising the likelihood of WMD attacks being successful. In this regard, **maximizing credibility demands that states tread a fine line between saying enough to demonstrate a convincing capacity for preventing attacks, and not saying so much that the capacity is undermined** via the exposure of important operational detail.

[Collateral deaths risk increasing Muslim tolerance for more destructive retaliation]

A final point to consider is the relationship between the overall aims of the U.S.-led “War on Terror” and the role of deterrence. **The U.S. “National Strategy for Combating Terrorism” claims that a “hard core amongst our terrorist enemies cannot be reformed or deterred; they will be tracked down, captured, or killed.”** Perhaps so, **but it should be remembered that robust efforts of this kind might themselves be detrimental to deterrence in at least two ways.**

To date, strikes against leadership targets have not been without beneficial effects. To be sure, in 2007 Philip Bobbitt correctly noted that this approach had failed to prevent an increase in Al-Qaeda attacks around the world, **but it really needs to be asked how many more attacks would have occurred had Osama bin Laden and his associates been left to their own devices.** On the other hand, **striking leadership targets risks contributing to the mounting number of collateral deaths in the “War on Terror,” thereby alienating Muslim opinion and possibly increasing its tolerance for more destructive forms of retaliation against the West.** Some caution in relation to the scale and scope of such efforts would therefore seem to be indicated here.

Additionally, **such attacks might ultimately encourage Al-Qaeda’s leadership itself to countenance more violent forms of retaliation.** According to [Peter Neumann and M. L. R. Smith], the effects of the escalation trap mean that **one of two long-term fates await most terrorist organizations. Some fizzle out without attaining their political goals,** because they are unable and/or unwilling to escalate the violence of their campaign to levels that demand to be taken seriously by their state adversaries. **Others fall apart into smaller factions, as those who are willing to resort to more violent methods split off from the rest.**

This latter scenario is one to be avoided in respect of Al-Qaeda. Granted, **its willingness to use force is already high, but it may well become higher still** if whatever influence for moderation exists ultimately melts away under the twin pressures of implacable Western hostility and limited political progress. **This is a recipe for the failure of deterrence (self-imposed or otherwise) in respect of WMD use.**

From this perspective, it would seem **reasonable to explore the possibility of opening some form of constructive dialogue, so as to strengthen the hand of any voices of moderation that exist within Al-Qaeda’s leadership.** Offering to talk would provide a way out of the escalation trap by creating an intermediate option between escalation and acquiescence in the current political situation. In doing so it **may serve to shore up**

whatever voluntary restraints on the use of force that Al-Qaeda might currently be observing, and that may otherwise be eroded over time.

Needless to say, unrestricted efforts designed to ensure that bin Laden and his associates are “tracked down, captured, or killed” might merit reconsideration in the event that any attempt were made to open a dialogue and shore up deterrence.

The foregoing is Article No. 3 (TL081A03) in the **Terrorism Literature Report** (TLR), No. 81, 7 September 2009, prepared by Interaction Systems Incorporated (isincreports@mindspring.com).

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4. “Finding Needles in a Haystack: A Resource Allocation Methodology to Design Strategies to Detect Terrorist Weapon Development,” by David R. Howell, Doctoral Dissertation submitted to the **Pardee RAND Graduate School, June 2009** (<http://www.rand.org>). [KBTKAnalysis, KBTKIntel, KBTKRisk, KBTHStateLocal, KBTTNuclear, KBTTProLiferation, KBTTWMD, KBTTBioChem, KBTTBombs] From the abstract and concluding section we *quote* from this article at http://www.rand.org/pubs/rgs_dissertations/RGSD247:

Detecting terrorist weapon development is a fundamental goal of the intelligence and law enforcement communities. Achieving this goal can be quite difficult as many of the actions taken by terrorists can be executed covertly or may be seemingly innocuous against a background of non-terrorist related activities. **This dissertation presents a systematic resource allocation methodology to design strategies to detect terrorist weapon development.**

First, a framework to approach the problem of detection of terrorist weapon development is introduced.

Then, weapon pathways are generated, which define the target set of potential evidence the intelligence and law enforcement communities could pursue to discover terrorist weapon development.

Finally, Bayesian networks are used to create a logical structure for how potential observations would affect our belief a weapon is being developed. Information entropy measures how much uncertainty is present in a system and can be used to assess the relative information content of potential evidence in the Bayesian networks. **Resource allocations can be guided by these information-theoretic measures.**

The dissertation then shows how these methods might be used to detect terrorist development of improvised explosive devices (IEDs) and radiological dispersal devices (RDDs). This method is an example of how expert judgments made prior to observations can guide collection and analytic resource allocations. . . .

[Conclusions: Analysis using Bayesian networks could guide resource allocation]

Detecting terrorists that are developing weapons is a crucial challenge facing the U.S. intelligence and law enforcement communities. This research proposes a

methodology to design strategies to detect terrorist weapon development. First, a framework for examining this problem was developed. **The measures used for this analysis were importance, uniqueness, and detectability. These measures reflect the core concept that detection strategies should focus on pathway elements that are likely to be present if a pathway is being pursued (i.e., high importance), are indicative of weapon development (i.e., high uniqueness), and are able to be detected with dedicated collection resources (i.e., high detectability).** These characteristics were used to bin the pathway elements defined to enable more rigorous analysis of pathway elements that initially appeared advantageous to determining whether a weapon is being developed.

Bayesian networks are a useful analytic tool that can be used to analyze the selected pathway elements. **They provide a framework to structure how a set of variables affect our belief about whether a weapon is being developed.** This method forces analysts to be transparent about how observation of a pathway element would affect their beliefs. **Information-theoretic measures provide a convenient means to analyze complex networks to identify pathway elements that have a significant impact on assessing whether a weapon is being developed.**

Such analysis can be used to calculate optimal resource allocations for all pathway elements modeled. Since all characteristics relevant to this problem cannot be incorporated into the model, optimal resource allocation calculations should be used as a guide. **Guiding resource allocation by such methods could verify whether current allocations seem appropriate or identify new areas that have not been focused on previously.**

[Conclusions: Policy can be designed to affect the measures of uniqueness and detectability]

The crucial theme underlying this research is that much of the intelligence analysis with respect to detecting terrorist weapon development can be performed by structuring and eliciting expert judgments before observations occur. Characterizing such beliefs can in fact guide collection strategies. For example, when an analyst considers the observation of someone purchasing a particular chemical, it may increase his or her belief that a weapon is being pursued.

However, such a judgment can be made before the observation occurs and used to assess the value of such an observation. These judgments should be used to determine how collection and analytic resources are allocated. **Such an analysis-driven collection strategy could leverage an analyst's ability to shed light on crucial hypotheses because pursuit of evidence is being tailored to what its observation would mean for analysis.**

The cost of pursuing this methodology to design strategies could be cost effective, if it identifies more efficient allocations of collection and analytic resources than currently exist. It is possible that the methodology would define resource allocations similar to those currently employed, which would simply provide supporting analysis for current allocations. **Analysts would still retain the ability to superimpose contextual information to assess hypotheses when actual observations are made.**

When a set of evidence has been observed, the methods proposed in this dissertation can be used to adjust collection and analytic priorities based on the current

evidence. For example, once someone is observed acquiring Cesium-137, additional resources should not be dedicated to detecting acquisition of a Geiger counter. Detection of a Geiger counter might initially be pursued because it is a potential indicator of the presence of radiological material. Once radiological materials have been observed, the additional observation of a Geiger counter does not further enlighten the hypothesis of whether a radiological dispersal device is being developed. Thus, **the methods developed in this dissertation yield an adaptive strategy that adjusts allocations based on observations that have already occurred.**

Policy can be designed to affect the measures of uniqueness and detectability Regulations could be designed to control the acquisition, transport, and use of pathway elements that are determined to be highly indicative of weapon development. This would effectively increase the uniqueness of the pathway element. In addition, **policies could be pursued to decrease the prevalence of non-weapons applications of pathway elements.** For example, in the United States policies have been recommended [e.g., National Research Council, 2008] to replace Cesium-137 sources in some applications with alternative materials, which present a reduced security risk. Such policies would make the possession of Cesium-137 more indicative of potential weapon development. . . .

[Conclusions: Training key to teaching indicators of terrorist weapon development]

Policies can be designed to affect the detectability of pathway elements. Increased regulations on materials and equipment could create greater barriers for terrorists to acquire them. For example, various policies have been proposed to require sellers and buyers of certain materials (e.g., ammonium nitrate) that could be used to manufacture explosives to register with the government [National Research Council, 1998]. **Such regulations could increase the detectability of acquisition of those materials.** Additionally, **such policies could increase awareness of potential nefarious activities in communities of legitimate users.**

Much of the materials and equipment applicable to developing a range of potential terrorist weapons have a host of non-nefarious purposes. Thus, **programs could be designed to build collaborative relationships with industrial producers and users of such materials and equipment.** Such programs could raise awareness in industry about potential terrorism risks and increase the likelihood that potential threats would be reported to appropriate agencies.

The methods presented in this dissertation can be used to determine how the intelligence and law enforcement communities should allocate efforts to build relationships across various industries. In other words, **if we are considering two industries that use different pathway elements applicable to radiological weapons, the methodology can be used to determine how outreach efforts should be allocated between the two industries.**

Training the intelligence and law enforcement communities to recognize indicators of terrorist activities is crucial to achieving counterterrorism objectives. Law enforcement agencies are uniquely positioned to contribute to the detection of domestic terrorist weapon development because they have a significant presence throughout the United States. However, **most of their daily functions do not directly relate to counterterrorism. Training presents a key opportunity to teach law enforcement**

personnel about potential indicators of terrorist weapon development. The methodology presented in this dissertation could be used to determine which indicators of weapon development should receive the most attention in training activities.

[Conclusions: Intelligence detection strategies essential to finding nefarious activity signals]

This methodology could also be used to develop tools to support law enforcement in conducting investigations (e.g., visitor cards, manuals). For example, law enforcement personnel conducting an investigation of an illegal drug lab could refer to a list of items that, if observed, should be recognized as a potential indicator of weapon development.

Additionally, **the methodology could be used to establish protocols of what actions are appropriate based on what is known at a given point in an investigation.** For example, the appropriate response to observing acquisition of a particular chemical might be to focus more resources on an investigation; then, upon observing acquisition of a piece of equipment, the appropriate response might be to obtain a search warrant or make an arrest. . . .

The intelligence and law enforcement communities face an enormous challenge in detecting terrorist weapon development. Small signals of nefarious activity are hidden amongst a sea of benign activities. It is the job of the intelligence and law enforcement communities to filter out benign behaviors and reliably identify potential threats. **Systematic methods to design intelligence detection strategies are essential to achieving this goal.**

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