

Closing Pandora's Box: The Threat of Terrorist Use of Weapons of Mass Destruction

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Abstract

The threat of terrorist use of weapons of mass destruction (WMDs) cannot remain far from the minds of present-day counterterrorism and homeland security policy makers, especially in light of those weapons' prevalence in countries which have recently undergone - or are currently undergoing - violent revolutions. To understand the current nature of the threat, it is important to review the history of development and proliferation of such weapons, with particular attention to groups and states which have used or attempted to use them in the past. This paper will discuss some of the relevant dynamics involved in the use of WMDs by terrorist groups, as well as offer some modest policy and theoretical prescriptions in light of the ever-increasing threat posed by the deadly combination of terrorists and WMDs.

Key Words: Key words: WMD, proliferation, terrorism, al Qaeda, Aum Shinrikyo, Pakistan, Syria, Libya, Egypt, Iraq, Iran, USSR

Introduction

The threat of weapons of mass destruction has remained in the collective consciousness since their broad wartime use in the nightmare trenches of World War I. The awesome destructive power of the bombs dropped on Hiroshima and Nagasaki is eclipsed by the lethal capabilities of today's modern weaponry. Properly formulated and dispersed chemical or biological weapons can be rapidly fatal or agonizingly injurious to human life over a wide area, with potential for a concurrent devastating economic effect. International sanctions preventing their use aside, these weapons' highly-efficient means of interrupting the processes of human biological functions without the need for direct military action makes them an attractive option for states seeking to gain a decisive military advantage over their adversaries. Small wonder then that terrorists seeking to influence political change would attempt to acquire such weapons for use in furtherance of their goals.

Although World War I gave rise to modern-day weapons of mass destruction, and states fully expected and prepared for massive use of advanced chemical weapons during World War II, such weapons were thankfully never widely employed. As technologies in the field advanced, WMD prevalence grew during the Cold War, and developed a surprising precedent for use by states through at least the 1980s. With the end of the Cold War and a loosening of controls on proliferation, the threat posed by WMDs - and the consequences of their employment by terrorists - is hardly new material. But in the

age of the international terrorist, nuclear regimes, and WMD-possessing states undergoing violent overthrow, the topic is especially relevant to today's policy-makers.

This paper will address the acquisition and attempts at development and use of weapons of mass destruction (WMDs) both by states and by terrorist groups, as well as trace some of the pertinent history involved with regards to development and proliferation of these weapons. This paper will additionally discuss relevant dynamics involved, as well as offer some modest policy and theoretical prescriptions in light of the ever-increasing threat posed by the deadly combination of terrorists and WMDs.

Concepts and Assumptions

Weapons of Mass Destruction and Early International Response

By applying the Clausewitzian definition of war as an extension of politics by other means, one could convincingly argue that WMDs – much like all other weapons – were originally designed to cause rapid political change by their very nature. When faced with the lethal cocktail of mustard, blister, and choking agents being used with effect against massed military forces in the Darwinian trenches of WWI, Allied and Central Powers armies had to rapidly devise tactics and operations to counter the strategic surprise these weapons posed. Chemical weapons threatened existing conventional military strategies which had as their basis the massive formations of troops to overwhelm enemy defenses. While chemical weapons only accounted for two percent of total deaths and perhaps 72,000 Allied casualties during WWI (Hilmas, Smart, Hill, 2008), the efforts to develop and defend against them were understandably, if disproportionately high. This response is perhaps unsurprising, given the psychological impact of an unseen weapon capable of delivering a horrible and impersonal death from a distance.

During the recovery from the destruction of the Great War, the international community sought to relieve the indiscriminate and unnecessary suffering caused by chemical weapons employed in war and renewed prohibitions – which had existed as early as 1625, with the banning of poisonous bullets – against the offensive use of chemical weapons during wartime. The result was the 1925 Geneva Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and Bacteriological Methods of Warfare. The Organization for the Prohibition of Chemical Weapons (OPCW) states that although the Geneva Protocol proscribed the use of chemical weapons, there were no prohibitions against the manufacture and storage of such weapons. Accordingly, many of the signatories to the Protocol enjoined with reservations allowing them to respond in kind if attacked with such weapons. (OPCW, 2012).

Modern State Use and Development of WMD – A Brief Overview

World War I saw the first widespread modern-day use of WMDs in warfare. Chemical weapons made their first successful battlefield appearance in 1915 when chlorine gas was employed against Allied troops at Ypres, Belgium, causing 5,000 casualties (Hilmas, et al., 2008). The incapacitating nature of chemical warfare and its

psychological impact meant that it would rapidly become part and parcel of belligerent tactics for the remainder of WWI, and in fact continued the arms race that initially led up to the war. (Hilmas, et al., 2008).

"The Allies developed their first protective mask the day after the first German chlorine attack, and in September 1915 they launched their own chlorine attack against the Germans at Loos, Belgium. These moves initiated a deadly competition to develop better protective masks, more potent chemicals, and long-range delivery systems to disperse the agents more widely. The Germans quickly replaced chlorine with phosgene, which was more effective. In May 1916 the Germans started using diphosgene, and 2 months later the French tried hydrogen cyanide (HCN), then cyanogen chloride. In July 1917 the Germans introduced mustard agent to provide a persistent vesicant that attacked the body in places unprotected by gas masks. Both sides also mixed agents and experimented with camouflage materials to prevent quick agent identification." (Hilmas, et al., 2008, p. 18).

Following hostilities and general agreement on the 1925 Geneva Conventions, chemical warfare attacks were still rumored to have occurred throughout the 1920s. The major world powers and several other countries continued development of chemical warfare capabilities, with some countries putting them to use in remote conflicts. Instances of chemical warfare attacks were reported during the Russian civil war in the early 1920s. British, French, and Spanish forces reportedly used chemical warfare at various times during the 1920s - notably the French and Spanish against Berber resistance forces in North Africa in 1925. (Hilmas, et al., 2008, pp. 43-44).

During the 1930s, Italy and Japan deployed offensive chemical weapons against Ethiopia and China, respectively. In addition, the discovery of nerve agents by Dr. Gerhard Schrader in Germany opened a new chapter in chemical warfare. (Hilmas, et al., 2008, p. 45). These deadly nerve agents were further developed to the point of causing human fatalities within 15 minutes of exposure to skin. (Hilmas, et al., 2008).

Most nations fully expected World War II to be characterized by the widespread use of chemical weapons, and the principal belligerents had made extensive preparations for just such an eventuality. There is in addition well-documented evidence and witness testimony of Axis tests of chemical weapons on civilians and prisoners of war, and the Japanese reportedly employed full-scale chemical warfare against Chinese troops (Tanaka, 1988). With the firebombing of heavily populated cities by both sides, many expected chemical warfare to follow (Hilmas, et al., 2008). Why widespread battlefield use never occurred between Axis and Allied powers remains something of a mystery today, but common theories extend to de facto and actual "no first use" policies, due to the calculated likelihood of retaliation. Additionally, the German blitzkrieg style of maneuver warfare did not lend itself to chemical warfare, since the rapid movement of mobile units would place friendly troops in contaminated areas shortly after chemical deployment. Others have surmised that Hitler, having suffered two chemical injuries during his service in WWI, had developed a healthy loathing for the weapons on the battlefield ó although it did not stop him from using it against civilians in concentration camps.

In the closing days of WWII, the Soviet army entered Berlin before the Americans and captured documents related to the Nazi production of soman, a particularly lethal nerve agent. They also seized factories producing tabun and sarin, as well as extensive research and production documentation, eventually reassembling one of these factories in Russia and resuming production of tabun and sarin after the war. (Hilmas, et al., 2008, p. 51).

The best-known employment of weapons of mass destruction is of course the atomic bombs which leveled Nakasaki and Hiroshima, thus ending the war in the Pacific. Their use, however, kicked off a 50-year standoff between a new set of belligerents and former battlefield allies. During the ensuing Cold War, nations continued to develop and produce increasingly-lethal nuclear, chemical, and biological weapons. NATO and Warsaw Pact states developed their strategic capabilities to the point that any first-use scenario was rendered null by the promise of a devastating retaliatory attack. The resulting nuclear balance of power also precluded conventional superpower confrontations, since the disadvantaged side could reasonably be expected to employ WMD under certain circumstances. Waltz and other optimists have written of this phenomenon, and as discussed later, continue to theorize that proliferation begets peace.

Breakout – Modern Examples of State Use of Chemical Weapons

As the struggle for global influence continued through the Cold War, Western states sought to contain Soviet expansion of Communism, and the Soviets attempted to subvert states friendly or of strategic importance to the West. As a result of this friction, since direct military confrontation was necessarily precluded by the WMD warfare certain to result, conflict between the superpowers therefore devolved into warfare by proxy - including terrorism. It was during this period that proliferation of WMDs and associated technology to proxy states began in earnest.

"Egypt was the first country in the Middle East region to obtain chemical weapons training, indoctrination, and materiel as part of the sizeable security assistance it received from the Soviet Union throughout the 1960s. High-ranking Egyptian officers were sent to Moscow for training at the Soviet Red Banner Academy of Chemical Defense, and chemical warfare capabilities were integrated into the Egyptian force structure under Soviet tutelage. This capability was subsequently employed against the Yemenis in the 1963 and 1967 campaigns." (CIA, 1983, p. 10).

Egyptian forces, frustrated in their attempts to defeat royalist forces and destroy civilian support bases in the rugged terrain of northern Yemen, employed "chemical weapons it had developed in the 1950s and obtained from the Soviet Union, becoming the first Arab state to use chemical weapons...including tear gas, mustard gas, phosgene, and nerve agents repeatedly from 1963 to 1967." (Hilmas, et al., 2008, p. 57, Cromley, 1967).

Reports of the use of chemicals and toxin agents in various conflicts in both Southeast Asia and Afghanistan began in 1975. Interviews suggested that Vietnamese and Soviet forces might have used chemical and toxic weapons against the Hmong. In

1978, there were reports that the Vietnamese had killed over 980 Kampuchean villagers with chemical weapons. (Haig, 1982). The CIA concluded that Lao and Vietnamese forces, with Soviet logistics and supervision, had used lethal chemical agents since at least 1976, with Vietnamese forces using toxins and a variety of chemical agents against Kampuchean troops and Khmer since at least 1978. The CIA further stated that laboratory forensics showed the toxins and chemical warfare were likely developed in the Soviet Union and provided to Lao and Vietnamese forces for weaponization. (CIA, 1983). Soviet troops were also reportedly using chemical weapons in Afghanistan, even before the Soviet invasion in 1979. (Hilmas, et al., 2008, p. 61, CIA, 1983, p. A-1, Haig, 1982).

The CIA concluded that despite the Soviet Union's ratification of the 1925 Geneva Protocol and 1975 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (also known as the Biological Weapons Convention), there were several key points that entered Soviet calculations in employing chemical toxins: First, that the agents would be militarily effective for the purposes intended, given the terrain and nature of the opposing forces; second, that no threat of retaliation in kind existed; third, that the situations offered opportunities for operational testing; fourth, that the probability of detection was low and any evidence acquired would be ambiguous - a reasonable conclusion, given the terrain, locations, and absence of international observers; and finally, "that the political risks of a response were negligible, and any adverse international reaction could be contained." (CIA, 1983, p. 1).

The Libyan Case. The case of Libya proves instructive regarding the difficulty of countering weapons proliferation, even when a state is a demonstrated sponsor of terrorism - or when it becomes a signatory to treaties prohibiting WMDs. Libyan sponsorship of terrorism is well-documented and will be only briefly discussed here, however, for contextual purposes, a brief review of the state's history with regard to WMDs and Soviet sponsorship is in order.

"The USSR and Libya developed a relationship based largely on Libya's ability to pay hard currency for the large quantities of arms it receives from the USSR. While the ideologies and long-term objectives of the two nations remain incompatible in many respects, they share a number of goals, such as...the fostering of certain radical and anti-Western elements in the Middle East and Africa. The two nations frequently follow complementary policies in the region...Libya, the region's most active state supporter of international terrorist groups, had supported terrorist activities well before the significant improvement in its relationship with the USSR in the mid-1970s. The Soviets undoubtedly knew this and knew that some of the weapons they sold to Qadhafi would be diverted for terrorist purposes." (CIA, 1981, pp. 18).

Soviet military assistance to Libya did not end with conventional weaponry and training, however. In the 1980s, the CIA presumed that state was receiving Soviet chemical warfare assistance and training as well, as Libya had acquired chemical weapon production facilities and materiel from East and West European sources beginning in the mid-1970s, as well as chemical warfare agents from Poland in 1980. (CIA, 1983). The

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CIA's presumption was later validated by former Romanian intelligence chief, Ion Pacepa, who stated in a 2004 interview:

"In the early 1970s, the Kremlin established a socialist division of labor for persuading the governments of Iraq and Libya to join the terrorist war against the U.S. KGB chairman Yury Andropov (who would later become the leader of the Soviet Union), told me that either of those two countries could inflict more damage on the Americans than could the Red Brigades, the Baader-Meinhof group and all other terrorist organizations taken together. The governments of those Arab countries, Andropov explained, not only had inexhaustible financial resources (read: oil), but they also had huge intelligence services that were being run by our *razvedka* advisers and could extend their tentacles to every corner of the earth. There was one major danger, though: by raising terrorism to the state level we risked American reprisal. Washington would never dispatch its airplanes and rockets to exterminate the Baader-Meinhof, but it might well deploy them to destroy a terrorist state. We therefore were also tasked to provide those countries secretly with weapons of mass destruction, because Andropov concluded that the Yankees would never attack a country that could retaliate with such deadly weapons." (Glazov, 2004).

Although Libya was slow to develop its own production in the absence of Soviet assistance following the collapse of the Soviet Union, by 1990, a Libyan chemical weapons plant at Rabta had produced about 100 tons of agent 6 and in 1991, a German news report covering Libya's ongoing construction of underground bunkers stated the complex was intended to serve as an arsenal for both chemical and nuclear weapons. U.S. sources countered that the facility was primarily for storage of chemical weapons, and added that although Qadhafi was known to have tried for years to obtain nuclear weapons with foreign help, there was no sign that he had succeeded. (see e.g., Mann, 1991). Additionally, "[n]ew disclosures surfaced in 1996 that Libya was constructing a second chemical production plant at Tarhunah. U.S. intelligence sources claimed this would be the largest underground chemical weapons plant in the world, covering roughly six square miles and situated in a hollowed-out mountain." (Hilmas, et al., 2008, p. 65).

The case of Pakistani nuclear physicist A.Q. Khan very likely contributed heavily to Libya's acceptance of the OPCW and signing of the Chemical Weapons Convention, in addition to Libya's very public abandonment of terrorism in 2003. Following lengthy international investigations by various Western agencies, Khan was revealed to be providing his unofficial services in developing nuclear weaponry for various states through a clandestine network designed to defeat international nonproliferation controls.

"The Khan network provided 'one-stop shopping' for a state seeking to develop a gas centrifuge uranium enrichment program, to procure nuclear weapons information, or to gain access to supplier contacts. By 2000, information was uncovered that revealed shipments of centrifuge technology from the Khan network were destined for Libya. The Intelligence Community then learned through what former DCI George Tenet correctly described as 'operational daring' that the Khan network was the source of Libya's procurement of a nuclear weapons design." (U.S. Senate, 2005, p. 257).

When Qadhafi was confronted with this evidence, along with a mounting conviction that U.S. forces would target him as a state sponsor of terrorism in the wake of 11 September 2001 and the U.S.-led invasion of Iraq in 2003, he relented and began to take long-demanded steps towards reconciliation with the international community. Libya also became a party to the Chemical Weapons Convention (CWC), which among other things, requires its members to destroy chemical weapons stockpiles and production facilities, as well as submit to no-notice compliance inspections. (OPCW, 2012).

A 2004 National Intelligence Estimate documented Libya's possession of chemical weapons agents and delivery systems (U.S. Senate, 2005). In keeping with its CWC commitments, that year Libya declared about 24 metric tons of sulfur mustard agent - an amount considerably less than predicted. (U.S. Senate, 2005, p. 254-255). The surprisingly small amount of declared chemical stockpiles would cast the U.S. intelligence community in a poor light, given its previous production estimates. As a sign of its continued commitment to the CWC, in February 2011, Libya claimed to have destroyed over half of its declared sulfur mustard inventory (NTI, 2012). However, after the 2011 overthrow of the Qadhafi regime, the 2004 Libyan declarations were exposed as false in the wake of revelations that at least two additional undeclared and previously unknown WMD sites existed elsewhere in the country. (NTI, 2012).

Syria. Syria was deemed to be a major recipient of Soviet chemical weapons assistance and was considered to have the most advanced chemical warfare capability in the Arab world, with the possible exception of Egypt. Both Czechoslovakia and the Soviet Union provided chemical agents, delivery systems, and training to Syria. In the 1980s, the CIA concluded that as long as Warsaw Pact support continued, there was no need for Syria to develop an indigenous chemical weapons capability - and had identified none as of the time of the assessment. (CIA, 1983, p. 11). Of note, in 2007, an Israeli airstrike destroyed an undeclared Syrian nuclear plant reportedly capable of producing plutonium, and built with assistance from North Korea. (Finnian, 2008). At the time of this writing, the international community and states in the region around Syria are paying great attention to known or suspected Syrian chemical weapons sites, with the worry that the ongoing civil war there will allow unfettered access to substantial stockpiles by unknown actors.

Iraq. With Soviet assistance, Iraq began developing chemical weapons in the 1970s and entered production in the early 1980s, depending largely on the import of precursors from foreign sources (CIA, 1983). During the outbreak of the Iran-Iraq War shortly after Saddam Hussein took power, Iraq employed tear gas to repel Iranian forces. In 1983, Iraqi forces employed mustard gas and tabun in 1984 (FAS, 1998). Chemical use against the Iranians would last for the duration of the war, and saw the employment of sarin and GF as part of an overall campaign strategy, with estimated chemical casualties numbering over 10,000 by 1986. In 1987, Iraqi forces launched punitive chemical attacks against Kurd villages which had collaborated with Iranian forces, reportedly killing hundreds with mustard gas, sarin, tabun, and VX. (FAS, 1998).

Extensive interrogations of Saddam Hussein following his capture in 2003 revealed that that Hussein deemed deployment of chemical weapons a necessary step as a condition of maintaining power. The Iranians, in Hussein's eyes, with their

overwhelming numbers could only be defeated with WMDs (FBI, 2004). The strategy of repelling invading forces worked and was repeated, with Hussein giving his commanders authority to employ WMDs in the field against Iranian forces (DIA, 1990, FBI, 2004). "The Iraqis demonstrated the effectiveness of chemical weapons on the battlefield, particularly the negative effect on enemy morale." (DIA, 1990). Hussein and other countries in the Middle East accordingly developed doctrine regarding WMDs, first, "as a way to compensate for inferior numbers or forces way to compensate for inferior numbers or forces and to protect against the loss of territory;" Second, that "[t]reaties, such as the Geneva Protocol, which prohibit the use of chemical weapons do not ensure against an enemy's use of [chemical weapons];" and finally, "that the superpowers are unwilling, or unable, to stop the flow or needed technical assistance, chemical precursors, and process equipment, or to prevent or stop the use of chemical weapons in a war." (DIA, 1990).

Iraq's widely documented use of chemical weapons against the Kurds in the late 1980s was another topic for U.S. interrogators, although Hussein balked at admitting such (FBI, 2004). Much like the deployment of chemical weapons against the Iranians, however, in deploying mustard and sarin gas against Kurdish villages and towns which had supported the Iranians (Pike, 1998), Hussein had apparently concluded this tactic to be an effective message to a restive populace and as a means of maintaining internal control.

Concluding Note. "Under the influence of Soviet assistance, Egypt, Iraq, Syria, and Libya all developed their initial appetites and capabilities for chemical warfare. These acquisition efforts have had an accelerating effect on proliferation in the region as a whole and possibly beyond." (CIA, 1983, p. 12). While the full extent of Soviet support for Middle Eastern terrorism is beyond the scope of this paper, an important step in the emergence of terrorism has its roots in the Cold War, which had

"...devolved into a series of proxy confrontations in the Third World. Since a direct assault on the democracies had become unthinkable, the Soviets developed international terror as one of the weapons in their arsenal for carrying on the Communist struggle in many Western strongholds, while maintaining plausible deniability about their complicity...here the carefully concealed, one-step-removed brand of Soviet-supported terrorism found a ready partner in the rabid anti-Western antipathies of the radical Arab regimes led by Syria, Libya, and Iraq." (Netanyahu, 2001, p. 57).

Finally, the case of Saddam Hussein and his unrelenting grip on power, both in dealing with adversaries and rebellious populations, has present-day applications and should prove instructive for the international community.

The Terror Connection

The CIA opined in 1983 that increasing state use of chemical and biological weapons had the potential to influence the attitudes of terrorists toward use of WMDs. The agency stated that production of chemical or biological weapons for a small-scale attack was technologically no more difficult than the production of narcotics or heroin,

finding instead that the volume production required to inflict mass casualties would be much more formidable, citing considerable increase in safety requirements, cost, and the risk of discovery. (CIA, 1983). Japanese terrorist group Aum Shinrinkyo would test that theory in detail less than a decade later.

The CIA found motivational and practical considerations, rather than technical obstacles, had to that point accounted for the lower levels of terrorist use of WMDs, citing accessibility, flexibility, and control considerations, as compared to conventional small arms and explosives. The agency additionally cited the potential for increased public alienation as a result of widespread indiscriminate killing by WMDs.

"On the other hand, increased publicity regarding the effective use of chemical and toxin agents in Southeast Asia and Afghanistan, coupled with the acknowledged difficulties of detection and identification, might increase the attractions of such weapons for use or threats of use against indiscriminate targets. One successful incident involving such agents would significantly lower the threshold of restraint on their application by other terrorists. The ready availability of these agents and associated protective gear in regions of potential conflict makes them possible targets for theft." (CIA, 1983, p 13).

Stern (1999) addresses the various obstacles confronting terror groups in using WMD - obstacles ranging from technological, political, organizational, and moral. Aspects of various technological challenges facing terrorist groups are discussed throughout this paper. The political hurdles include potential alienation of a terrorist group from supporters due to the group's use of WMD, with distinctions made for groups with amorphous support bases or those seeking to inflict chaos; and the possibility that the targeted government will respond drastically to such an attack (which could be a terrorist objective in and of itself). Organizational obstacles include the group dynamics of a particular terror organization, particularly their ability to maintain integrity and security. Finally, the moral obstacles pose perhaps the largest challenge to a group seeking to employ WMD, given the widespread destruction and public revulsion likely to result from a successful attack. Terrorists overcome these obstacles through moral justification (seeing themselves as saviors of a group threatened by the target); displacement of responsibility, also known as the 'Nuremburg Defense,' or the claim of following leadership direction to escape individual responsibility; minimization of exposure to the actual suffering caused by attacks through distancing techniques such as use of remotely-triggered bombs or stand-off weapons - bolstering Lieutenant Colonel Dave Grossman's findings of a direct link between the trauma of killing and physical proximity to the victim; and finally, dehumanization of the victims. (Stern, 1999, pp. 71-86). Determining whether a group can overcome these obstacles requires an examination of the group's objectives, discussed below.

Groups such as al Qaeda attempt to justify their interest in and intended use of WMDs as a sort of just revenge for Western countries' killing or repression of Muslims. The group received religious sanction in 2003 for the use of WMD against the enemies of Islam by Saudi cleric Nassir bin Hamad al-Fahd, who issued a detailed fatwa stating that since America had destroyed countless lands and killed millions of Muslims, it would be permitted to respond in kind. (Kindt, Post, Schneider, 2009, p. 108). Al Qaeda has

publicly stated on several occasions their intent to employ nuclear, chemical, and biological weapons.

Terrorist Objectives Specific to WMDs. Terrorism's ultimate psychological objective is its main currency - specifically, to instill widespread fear with the goal of coercing political change. If a terrorist threat is sufficiently convincing, actual casualties need not occur for the terrorists to achieve their goals. Hoffman (2006) defines terrorism as:

"the deliberate creation and exploitation of fear through violence or the threat of violence in the pursuit of political change...Terrorism is specifically designed to have far-reaching psychological effects beyond the immediate victim(s) or object of the terrorist attack." (Hoffman, 2006, p. 40).

With that distinction in mind, the threat posed by weapons of mass destruction - whether chemical, biological, radioactive, or nuclear (CBRN) - is a logical terminating point of the terrorist mindset. As Stern (1999) states, "[n]uclear, chemical, and biological agents...are inherently terrorizing. They evoke moral dread and visceral revulsion out of proportion to their lethality (p. 48)."

"Nuclear and (perhaps) some biological weapons apart, the single most important factor motivating terrorists to employ CBRN weapons could be the desire to exert a disproportionate psychological impact. In principle, such an attack might stun if not cow enemies while impressing and inspiring supporters...If the primary aim is to traumatize a wider target audience (or multiple audiences) psychologically, terrorists may prefer to use CBR provided that they have the technical capacity to do so and the cost is not too great. Due to the lay public's primal fears of contamination and infection from unseen agents, a CBR terrorist attack that ÷only÷ caused several dozen deaths would probably have a more traumatic and terrifying impact than a conventional terrorist attack that killed hundreds...This is certainly the lesson of both Aum Shinrikyo, which attracted inordinate attention by using CBW agents, and the 2001 B. anthracis letters in the United States. Given the growing frequency of mass casualty Islamist terrorist bombings, it could be argued that conventional attacks must nowadays produce thousands of deaths to match the psychological impact of these relatively isolated examples of CBR terrorism." (Maurer, 2009, p. 17).

Given their ability to cause widespread death and injury - economic, physical, and psychological - the appeal of WMDs to terrorist groups is evident. For example, al Qaeda's aspirations to acquire WMDs were seen as early as 1998 in a bin Laden statement, in which he declared that "it is the duty of Muslims to prepare as much force as possible to terrorize the enemies of God." (Forest, 2009). When asked several months later by a Pakistani journalist whether Al Qaeda was poised to develop chemical weapons or nuclear materials, bin Laden replied that "acquiring weapons for the defense of Muslims is a religious duty." (Forest, 2009). Al Qaeda initially

"sought WMDs to defend their safe havens in Afghanistan. Today, research indicates that Al Qaeda wishes to acquire a WMD to use as a first strike weapon against the United States and its allies. Their calculus for WMD acquisition is

rational, not apocalyptic. They believe that WMD will advance their strategic objective of exhausting the United States economically and militarily by forcing the United States to expend massive amounts of money on protecting our critical infrastructure, borders and ports of entry, and on military deployments in Iraq, Afghanistan, and elsewhere. They are convinced that acquiring WMD will allow them to achieve military and strategic parity with the West, bestow credibility on the mujahideen, exaggerate the movement's power and capability, and frighten the enemies of Islam." (Forest, 2009, p. 108)

Discussion

The history of use and proliferation of WMD technology, when added to the increasing number of terrorist attacks makes for a concerning pattern, generating convictions that only time separates us from a major terrorist attack using WMDs. The problem today is more than theoretical, as recent events have shown.

Terrorist Acquisition of WMDs. While there are no publicly-available instances of Soviet transfer of WMDs to a terrorist group, there is ample recorded evidence of Soviet provision of weaponry, training, and indoctrination - both directly and by proxy - to terrorists and their state sponsors, beginning in earnest in the late 1960s and continuing well into the 1970s. There is also ample recorded evidence of transfer of Soviet and Warsaw Pact WMD technology to states such as Syria, Iraq, and Libya, each of them notable state sponsors of terrorist groups. The use of WMDs in remote locations such as Laos, Vietnam, and Afghanistan by Soviet and Soviet-advised/trained forces demonstrated a willingness to use WMDs in a permissive or passive political environment providing plausible deniability (CIA, 1983). The open and widespread use of chemical weapons by Egyptian, Iraqi, and Iranian forces operating against insurgent and conventional adversaries, as well as civilian populations, further solidifies that precedent. That significant quantities of such weapons to date have not been deployed by terrorist groups as a result of a combination of the above factors seems a quite improbable miracle of no small magnitude.

"Terrorists might be able to acquire chemical or biological (CB) agents from governments favorable to their cause...In 1997, Secretary of Defense William Cohen estimated the number of countries with 'mature chemical and biological weapons programs' at 'about thirty,' and the CIA claimed that around twenty nations had developed these weapons. Iran, Iraq, Libya, North Korea, and Syria - all listed by the State Department as supporters of terrorism - are believed to possess chemical weapons and at least some biological weapons. Iraq's CB programs are quite extensive. The small quantities of CB agents required for an attack would make it very difficult to track the flow of the weapons or their component chemicals to terrorist groups...Terrorists also might be able to steal CB agents from national stockpiles. In Albania in 1997, according to an Albanian military official, antigovernment bandits stole chemical weapons and radioactive materials from four army depots." (Stern, 1999, p. 49).

Somewhat ominously, the thefts in Albania coincided with a period of widespread civil unrest - mirroring the ongoing civil unrest in Syria, Egypt, and Libya today. Indeed, weak states or those which sponsor terrorists can assist such groups obtain WMDs, with

the "ability to produce or obtain WMD...growing due to looser controls of stockpiles and technology in the Former Soviet Union and the dissemination of technology and information." (Forest, 2009, pp 97-98).

"Other scholars have echoed these concerns. For example, James Adams has suggested that 'terrorist groups are more likely to acquire their WMD from friendly nations than they are to develop them.' Jonathan Tucker has suggested that state assistance could allow terrorist groups to overcome the technical hurdles that have been perceived as limiting the threat of CBRN terrorism, and expressed his growing concern about 'a clear congruence between a number of states that support terrorism and states that have WMD programs.' And Karl Lowe has argued that since terrorist groups are not likely to possess the required mix of technical, scientific, and military skills to carry out an effective attack using biological weapons, the group most likely to do so is one that has state sponsorship and access to that state's biological warfare efforts. Still, others in this debate over the global WMD threat have cautioned us not to assume that state involvement is a necessary element of a terrorist's attack plan. According to Matthew Bunn and Anthony Wier, policy makers have too often been willing to believe in the myth that the only plausible way that terrorists could acquire a nuclear bomb (or the ability to make one) is from a state, a myth that could limit our intelligence gathering and proliferation monitoring efforts." (Forest, 2009, p.98)

"Because chemical and biological agents are relatively easy to produce, a single person with the right expertise could design an entire weapons program. Thus terrorists might acquire CB weapons by taking advantage of the 'brain drain' - the prospect that weapons scientists will sell their expertise to the highest bidder." (Stern, 1999, p. 49). Engaging in cooperative operations with Jemaat Islamayiah (JI) in Indonesia, al Qaeda sought to exploit such a capability when JI sent an operative with scientific expertise to Afghanistan to try to develop an anthrax program for al Qaeda. (9/11 Commission Report, p. 151.) Indeed, the existence of A.Q. Khan's network should serve as Exhibit A in the realm of possible sources of technical assistance.

Although terrorists sponsored by a state are the most likely to be able to overcome technical obstacles to the use of WMD, the threat of retaliation against the sponsoring state may provide a deterrent. However, deterrence alone is insufficient to counter the threat - since some attacks will defy identification of the source. (Stern, 1999, p. 77). Additionally, as the recent so-called Arab Spring highlights, considerable uncertainty results when the state controlling the weapons effectively collapses - potentially allowing unfettered access to WMD arsenals. These concerns were highlighted in the recent Libyan civil war and are being echoed in Syria today (Telegraph, 2012).

Echoing the findings of Bunn and Weir discussed above, Stern recounts how the secret South African nuclear weapon program proved highly instructive in just how easily a determined actor could construct its own bomb, given a source for fissile materials. By the time South African President de Klerk cancelled the program in 1989, South Africa had acquired a secret plant for enriching uranium for bombs; a stockpile of weapons-grade uranium; and six gun-assembly fission weapons..." South Africa's cost for this project was estimated to cost \$200 million, including uranium enrichment. (Stern, 1999,

pp. 58-59). For countries seeking to gain regional prominence at any price, a similar sum in today's dollars would be a good bargain.

Stern goes on to describe the lax security at former Soviet republic nuclear sites in the wake of the fall of the Soviet Union, in places such as Romania, Ukraine, and Georgia. My personal travels to those countries in the late 1990s allowed me to see first-hand the decaying infrastructure, widespread poverty, high unemployment, and basic lack of services prevalent in major cities ranging from Varna and Yalta, Bulgaria; Constanta and Bucharest, Romania; Tblisi, Georgia; to Novorossyisk, Russia - as well as the lack of security at defunct nuclear power plants. During a trip to the former Soviet Republic of Georgia, the interpreter assigned to our small group by the U.S. Embassy recounted how the local nuclear plant outside Tblisi was literally guarded by a night watchman with a stick - and went on to describe Iranian efforts to obtain the spent fuel rods from the reactor, as well as the U.S. special forces mission to remove the fuel from the country before the Iranian team could complete the transaction. This episode is covered by Stern (1999) on Page 96.

Al Qaeda does not expect to defeat America via raids, even a devastating one on the order of 9/11 or one deploying a weapon of mass destruction. The United States must be worn down, just as the Soviet Union was in Afghanistan...[however] al Qaeda seems to think it must outdo 9/11. What it considers small attacks-such as bombing in a shopping mall or on a subway system, as in London and Madrid-are too insignificant for America. Apparently both bin Laden and Zawahiri want the next raid into America's heartland to be a substantial strike. Hence the attempt to down ten jumbo jets across the Atlantic. What else would match 9/11? The obvious answer is a raid with a weapon of mass destruction. In his memoirs, former CIA director George Tenet lays out in detail al Qaeda's prolonged efforts to acquire a nuclear device. Procuring such a device, Tenet concludes, is among al Qaeda's highest priorities. The most likely place for al Qaeda to acquire a nuclear weapon is Pakistan, which has been the focus of the organization's attention, as Tenet notes. According to most accounts, Pakistan possesses up to 200 nuclear weapons. Although the security surrounding them has improved significantly over the past decade, at least on paper, the growing presence of al Qaeda and its allies in Pakistan should serve as a cause for deep concern." (Riedel, 2008, pp. 132-133).

Examples of Modern Terrorist Attempts at WMD Development

Aum Shinrikyo. In 1992, forty members of the Japanese cult consisting of doctors and nurses traveled to Zaire under the guise of assisting victims of the Ebola virus in an effort to obtain the virus (Aytac, Kibaroglu, 2009, p. 64). Between the fall of 1994 and the March 1995 subway attacks, Aum Shinrikyo specialists produced research quantities of numerous chemical street drugs, soman, GF nerve agent, VX nerve agent, gunpowder, and catalysts for ammonium and nitric acid. Some of these were used in assassination attempts (Danzig, et al., 2011). The group's successful small-scale sarin synthesis based on widely-available literature encouraged Aum to build a large-scale production plant, designed to produce 70 tons of nerve agent. The complex, known as Satyan 7, was estimated to cost more than 10 million dollars to construct and equip. It contained a two-story distillation column, numerous stainless holding tanks for precursors and intermediates, five chemical reactors, heat exchangers, pumps and a

computerized process control system. Several sources speculated that the plans for the Satyan 7 sarin plant may have come from Russia. A senior Aum member testified in 1997 that the group obtained the design for the sarin plant from a Russian source, and donated 10 million yen (presumably in return) to Oleg Lobov, then secretary of the Russian Security Council. (Danzig, et al., 2011, p. 49). When Japanese police raided Aum's facilities following the group's 1995 sarin-gas attacks on the Tokyo subway system which resulted in 13 deaths and 6,252 injuries, they found sarin stored in tremendous quantities (U.S. Senate, 1995), likely capable of causing several hundred thousand, if not millions of deaths, if properly dispersed.

Al Qaeda. Following the 2001 U.S. invasion of Afghanistan, Osama bin Laden publicly declared al Qaeda to be in possession of chemical and nuclear weapons, but would only use them if the United States used them first. During the conflict, forces discovered a chemical laboratory and training films depicting chemical agents killing dogs, but did not discover any chemical weapons. (Hilmas, et al., 2008, p. 65).

"At the time of the commencement of the war, al-Qaeda's biological weapons program was both more advanced and more sophisticated than previously assessed...[and] brought to light detailed and revealing information about the direction and progress of al-Qaeda's radiological and nuclear ambitions...analysts were surprised by the intentions and level of research and development. Documents found at sites used by al-Qaeda operatives indicated that the group was interested in nuclear device design. In addition, al-Qaeda had established contact with Pakistani scientists who discussed development of nuclear devices that would require hard-to-obtain materials like uranium to create a nuclear explosion...In November 2001, CNN journalists found hundreds of documents describing al-Qaeda's nuclear and explosive development efforts in an abandoned safe house. Based on a review by three experts, including David Albright, a U.N. proliferation expert, CNN concluded that al-Qaeda was pursuing 'a serious weapons program with heavy emphasis on developing a nuclear device.'" (U.S. Senate, 2005, pp. 267-268, 272)

Other Attempts. Forest (2009) details several international attempts at WMD attacks. Following a raid on a north London apartment in January 2003, British police uncovered recipes in Arabic for making ricin and other toxins, as well as instructions for explosives manufacture, along with various pieces of equipment and materials for those purposes. In April 2004, Jordanian police announced the discovery of an al Qaeda plot to employ large quantities of toxic industrial chemicals against the U.S. Embassy as well as Jordanian government buildings. In January 2004, U.S. forces discovered seven pounds of cyanide salt during a raid on a Baghdad house connected with Al Qaeda members, and in November of that year a chemical laboratory in Fallujah was found to contain potassium cyanide, hydrochloric acid, and sulfuric acid. (Forest, 2009, pp .95-96)

Terrorist Use of WMDs. There have been several terrorist uses of WMDs over the past decades, thankfully none of which resulted in the carnage hoped for by the employing group.

Cult leader Bagwan Shree Rajneesh was responsible for the 1984 successful salmonella attack on salad bars in Oregon, resulting in over 750 cases of salmonellosis poisoning, with 45 hospitalized. (Aytac, Kibaroglu, 2009, p. 64). This was a fairly simple, low-tech attack requiring little expertise in formulation or dispersal methods, but its lethality and end results did little more than achieve some short-term notoriety and designation as a public nuisance.

In June 1990, the Liberation Tigers of Tamil Eelam (LTTE) became the first nonstate actor to stage a chemical weapons attack when it used chlorine gas during an assault on a Sri Lankan Armed Forces camp. The attack involved the theft of several large drums of the chemical from a nearby paper mill, which were positioned around the camp's perimeter and then opened under favorable wind conditions. More than 60 were injured as a result, and the LTTE captured the facility...but the group refrained from repeating the tactic, due in part due to strong resistance from core supporters (Forest, 2009, pp. 94-5).

Perhaps the most notorious terrorist employment of WMDs to date was by the Japanese religious group Aum Shinrikyo, which made multiple attempts to employ WMDs against the Japanese public as a means of triggering an apocalyptic scenario. The group released anthrax spores in and around Tokyo from 1991 to 1994, as well as thousands of liters of aerosol anthrax from the roof of a building, with the intent of causing tens of thousands of fatalities. After Aum failed in their attempt to obtain viable lethal biological agents such as Ebola from Zaire, they decided to produce and use sarin, which was used in June 1994 Matsumoto and March 1995 Tokyo attacks. (Aytac, Kibaroglu, 2009, p. 64). For some time after the nationwide crackdown on the group, Aum persisted in conducting small-scale attacks with sarin and other lethal chemical weapons, but was largely unable to achieve the desired effects. (U.S. Senate, 1995).

Following the attacks of 11 September 2001, there was a release of anthrax spores through the U.S. mail, leading to the death of five people and the hospitalization of 16 workers. The number of casualties was kept low reportedly due to prophylactic antibiotic treatments. (Aytac, Kibaroglu, 2009, p. 64).

Citing several sources, Hilmas, et al., (2008) detail numerous chemical weapons attacks in Iraq. In February 2007, Iraqi insurgents detonated a tanker truck carrying chlorine, causing five deaths, and 148 chlorine-gas related casualties. The following day, insurgents detonated a car carrying an explosive device attached to chlorine gas canisters. The resulting gas cloud killed two and injured 33 others. A raid in Fallujah in late February 2007 uncovered a factory containing car bombs and chlorine gas cylinders and other chemicals. Three additional attacks in western Iraq involving chlorine car bombs occurred just weeks later, killing two and injuring hundreds. At least one roadside attack involved the detonation of a sarin-filled artillery projectile, but produced no casualties. (Hilmas, et al., 2008, p. 66).

Does Acquisition Equal Use? As discussed earlier, there are several obstacles to terrorist use of WMD, which must be overcome to successfully launch an attack. Some have argued that a terrorist group's possession of WMD capability does not necessarily

mean the group will use the weapon. Indeed, mere possession of a weapon and the threat to use it may achieve a group's goals.

"...[W]hen forecasting a WMD threat, it is important to clarify the intentions of the group(s) of concern, in order to determine whether such weapons would truly be advantageous to their strategic objectives. Thus, understanding and countering the threat of WMD terrorism requires accurate information on both the intentions and capabilities of groups and individuals to carry out violent acts." (Forest, 2009, pp. 93-94).

A recent study by Parachini questioned the premise that terrorists will "inevitably graduate to WMD use," by comparing casualties from several terrorist attacks using unconventional weapons, and others which used conventional high explosives (cited in Forest, 2009). "His study focused on the Rajneeshee use of salmonella, the use of chlorine gas by the LTTE, Aum Shinrikyo's sarin gas attack, the World Trade Center bombing, the Oklahoma City bombing, and the U.S. Embassy bombings in Africa. The first three used unconventional weapons, while the latter three used conventional high explosives. Parachini concluded that in the cases involving the use of unconventional weapons, 'the attacks proved much more difficult and much less effective than the perpetrators imagined,' while the attacks with conventional high explosives 'were spectacularly successful.'" That the conventional attacks resulted in much higher casualties than did the use of unconventional weapons raised questions in Parachini's mind about whether terrorist groups enjoy any real benefit from WMD attacks. (Forest, 2009, pp. 98-99). Parachini's findings, however, must be contrasted with those of Maurer - specifically that "conventional attacks must nowadays produce thousands of deaths to match the psychological impact of these relatively isolated examples of CBR terrorism." (Maurer, 2009, p. 17). It is also important to note that the attacks involving chemical weapons each consisted of fairly crude dispersal methods - and it is even more important to keep in mind the psychological impacts that each attack carried - both unconventional and otherwise - perhaps an even more important factor than a comparative numbers of resulting casualties.

Theoretical and Policy Prescriptions

The Chemical Weapons Convention (CWC) "aims to eliminate an entire category of weapons of mass destruction by prohibiting the development, production, acquisition, stockpiling, retention, transfer or use of chemical weapons by member states. Those members must take the steps necessary to enforce that prohibition in respect of persons (natural or legal) within their jurisdiction." (OPCW, 2012). As of 2009, 188 countries had signed the CWC, agreeing to total chemical disarmament by destroying any stockpiles of chemical weapons and production facilities, as well as any chemical weapons abandoned elsewhere. The CWC also features a verification scheme for certain toxic chemicals and their precursors in order to ensure that such chemicals are not misused. Under the CWC's 'challenge inspection' procedure, parties commit to unrestricted, no-notice inspections, with no right of refusal. (OPCW, 2012). As the Libyan case shows, however, even a signatory to the Chemical Weapons Convention can stymie the international community as to the true extent of an existing chemical weapons program. What then is to be made of smaller nonstate projects, such as Aum's?

Assessing the Threat. Forest (2009) relates how Joshua Sinai has offered three areas for consideration in developing models to predict the spectrum of warfare likely to be employed by a terrorist group against an adversary, specific to the use of WMDs. First, Sinai states that threat assessments should focus on the types of warfare that typically - with an emphasis on - characterize a terrorist group's operations. The second area of focus should be the characteristics of the group which shape and define the type of warfare likely to be employed in order to achieve the group's objectives, specifically including leadership, motivation, strategy, supporters, and other factors such as capabilities, accelerators, triggers, and obstacles that will likely cause them to pursue a specific type of attack. Third, focus should turn to determining disincentives and constraints that may deter terrorist groups from employment of WMDs. (Forest, 2009, pp. 112-3).

The war in Afghanistan confirmed that al Qaeda did not have WMD capabilities, as was suspected, but that the group was actively engaged in researching and developing them. While analysts previously described al Qaeda's interest in WMD, intelligence gained during the war provided specific information about AQ's efforts to obtain these weapons. (U.S. Senate, 2005, p. 273). This factor highlights the crucial aspect of on-the-ground intelligence-gathering efforts and should serve as a stark reminder about the consequences of allowing a nation's human intelligence capabilities to lapse.

"There are also a variety of intelligence gathering activities that are critical to any counterterrorism and counterproliferation effort, including outreach to academic institutions and businesses (especially biotechnology research firms, chemical storage facilities, hazardous transportation companies, hospitals, science and technology think tanks, etc.). Robust interagency working relationships must be established between a variety of federal agencies (including customs and border control agencies) and local law enforcement. International partnerships are critical, as is monitoring the Internet for signs of activity which might suggest target surveillance or attempts to acquire WMD materials, recruit scientists, or mobilize others to carry out (or at least help facilitate) a WMD terror attack in pursuit of the group's ideological objectives." (Forest, 2009, p. 113)

Ensuring Recovery and Redundancy. Aside from defeating, deterring, and defending against terrorists, the biggest areas of focus regarding WMD attacks are mitigation, critical infrastructure protection, and continuity of mission - especially for public health and safety functions, as well as military forces. This focus is being reflected in recent U.S. Federal policy regarding mission assurance and continuity of operations, reflected in policies such as the Department of Defense's bedrock foundation of its anti-terrorism/force protection stance. The Federal Emergency Management Agency has additionally standardized training across the Federal government through the Incident Command System, as well as standardizing emergency operations centers, positions, responsibilities, communications, and operations. The key takeaway of these efforts are: first, determining which operations are truly essential to survivability and mission continuity/capability, including supporting operations for key efforts (ensuring continuous water supply for firefighting or decontamination, for example); second, determining the threats posed to those systems; third, assessing the impact on operations

by those threats; and fourth, determining the proper protective measures required to ensure impacts on essential operations are minimized.

Fighting the War of Ideas. Finally, the Global War on Terrorism necessarily includes the proverbial fight for the mind. In order for terrorists to succeed, "[t]he masses must view jihadis as liberators, not oppressors. They must be seen as fighting a just war and walking the moral high ground. Killing Muslims— even when undertaking legitimate operations against members of an unpopular local regime or symbols of Western occupation— is damaging to the jihadi movement because it inevitably leads to a loss of support." (Brachman, McCants, 2006, p. 12). Because terrorists depend on positive public opinion for recruiting and support, propaganda is essential to their efforts. "Conversely, the movement declines in popularity when it is perceived to be attacking fellow Muslims, causing public disorder, damaging critical national industries, or engaging in sectarianism." (Brachman, McCants, 2006, p. 20). To this end, Brachman and McCants (2006) advocate for discrete U.S. funding of informational campaigns designed to draw public support away from extremist violence and towards moderation and democracy. Once sufficient foundation is laid in this regard, any subsequent terrorist use of WMDs - given the already considerable stigma surrounding their use - will be viewed as an unforgivable transgression.

Conclusion

In 1981 and again in 2012 - Kenneth Waltz argued for widespread proliferation of nuclear weapons, positing that such weapons induce caution and thereby reduce the likelihood of war. (Waltz, 2012). Other optimists have agreed with him. If all nations had nuclear arms, according to one study, the probability of nuclear conflict would be essentially eliminated. (Stern, 1999, p. 109). It is worth noting that another prominent figure has agreed with Waltz - none other than Pakistani nuclear physicist A.Q. Khan, responsible for the spread of nuclear weaponry technology to states such as Pakistan, Libya, Iraq, Iran, and North Korea, who stated:

"Don't overlook the fact that no nuclear-capable country has been subjected to aggression or occupied, or had its borders redrawn. Had Iraq and Libya been nuclear powers, they wouldn't have been destroyed in the way we have seen recently." (Khan, 2011).

All things being equal, Khan's claim may well be accurate - but the world does not operate in a vacuum. A contrasting and convincing argument can be made that Iraqi or Libyan possession of nuclear weapons may have served as a de facto license to commit genocide, free from the threat of international armed intervention. Khan's examples highlight the ramifications of a nuclear-armed dictator turning against his own people, or a stubborn neighbor - the present-day example of North Korea. Khan also fails to consider the possibility of weak or failed/failing states and resulting concerns for nuclear weapon security, much like his native Pakistan.

As history has shown, nuclear and even direct conventional conflict between Cold War superpowers was indeed precluded by the contemplation of mutually-assured destruction. However, the realistic presumption and historical example have shown that

more available weaponry increases the chances of its use, especially in the hands of terrorists such as al Qaeda; dictators such as Hussein, Qaddafi, or Asad, desperate to retain power at all costs; or in the hands of an aggressive state with incentives to upset a regional balance of power, such as post-Hussein Iran or North Korea. Additionally, warfare by proxy, a byproduct of the absence of nuclear conflict, has sprung up in place of direct confrontation - leading directly to the emergence of modern international terrorism. With the prevalence of WMDs, and the dynamic of failing, weak, or collapsed states with little or no control over their arsenals or expertise, we now face the all-too-real possibility of terrorists and non-state actors armed with WMDs. As the Libyan and Syrian cases show, once the weapons are developed, they remain a menace to the international community. Political turmoil such as that seen over the past two years in North Africa and the Levant has rendered all existing security assurances null and void just as quickly as those assurances could be made.

There is ample precedent of chemical weapons use against adversaries by states when political conditions were judged permissive or at least passive - and terrorists opposing those same states could very easily apply similar criteria in employing WMDs against their targets. The Chemical Weapons Convention is a good start, but as so clearly demonstrated by Aum, efforts to prevent the proliferation of precursors and dual-use articles must be redoubled. Finally, as with so many other aspects of the War on Terrorism, employment of weapons of mass destruction is another front in which the war of ideas must be won - every time.

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