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Terrorist use of weapons of mass destruction: how serious is the threat?

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This article examines the extent to which terrorist use of nuclear, chemical, and biological weapons poses a tangible threat to international security. In the literature on terrorism and weapons of mass destruction (WMD) some analysts have tended to exaggerate the scope of the threat and assumed that large-scale terrorist acts involving WMD are only 'a matter of time'. In short, there is a tendency among observers to converge on analogous assessments at the higher end of the threat spectrum. In this article I argue that although WMD terrorism remains a real prospect, the ease with which such attacks can be carried out has been exaggerated; acquiring WMD capabilities for delivery against targets is a lot more problematic for terrorists than is generally acknowledged in the literature. However, this is not to say that the possibility of such attacks can (or should) be ruled out. The rise of a 'new' brand of terrorism that operates across transnational networks and whose operations aim to inflict mass casualties, coupled with the destructive threshold crossed on 11 September 2001, mean that terrorist attacks using WMD will continue to be a realistic prospect in the future.

Introduction

Accurately assessing threats is a notoriously problematic undertaking for states. The challenge of itemising and attaching specific priority to tangible and potential threats to national security in a way that is readily accessible for policy makers remains especially difficult. Even generously funded and highly capable intelligence agencies struggle to formulate coherent and timely threat assessments across the security spectrum. Terrorism is a particularly difficult threat to assess. Usually comprised of amorphous associations of highly mobile individuals whose intentions are virtually impossible to gauge without access to reliable (and timely) human intelligence, terrorist groups remain elusive (Hoffman 1996). Nevertheless, in recent years assessing terrorist threats has become the single most salient preoccupation for Western national security agencies. Faced with the most destructive phase of international terrorism in the modern era, critically evaluating the nature and scope of the threat in order to select the most appropriate countermeasures to safeguard the state and its interests has become a fixation for most Western political leaders.

Of the manifold threats posed by terrorist organisations, attacks using nuclear, chemical, or biological weapons against state assets loom especially large. The fear that terrorists will resort to using Weapons of Mass Destruction (WMD) is nothing new. The spectre of terrorist attacks involving WMD has preoccupied security analysts both within and outside official government circles since at least the early 1970s.¹ However, the perceived threat of WMD use by terrorist groups has been magnified dramatically since the end of the Cold War. This can be attributed to three main factors.

The first is the collapse of the USSR in 1991 and attendant concerns about the physical security of WMD assets in the territories of the former Soviet Union (FSU). The primary concern has been that lax security practices in the FSU have made it easier for terrorist organisations to access WMD technologies, either via covert purchasing arrangements or theft. The phenomenon of 'loose nukes' in the FSU has received wide publicity, but less acknowledged are the enormous stocks of unsecured biological and chemical weapons stemming from the massive Soviet Cold War inventory. One authoritative source has identified several dozen repositories in Russia housing BW stocks from the former Soviet program that lack adequate security and tracking arrangements (Cirincione, Wolfsthal, and Rajkumar 2002: 125). The second factor has been the rise of what is generally regarded as a new breed of terrorism worldwide. Prone to using far more lethal and indiscriminate forms of violence than older, more established, terrorist groups, the new terrorist groups are said to covet those weapons that can do the maximum damage to their target set: WMD. The third factor contributing to increased anxiety over the threat of WMD terrorism has been a gradual realisation that, in contrast to the Cold War period when worldwide terrorist attacks were concentrated largely in Europe and the Middle East, terrorism now poses a distinctive security threat to the United States mainland as well as other parts of the globe traditionally regarded as relatively safe. The 1993 attacks on the World Trade Centre, the 1995 Oklahoma City bombing, and the 11 September 2001 attacks each had the effect of dramatically illustrating America's vulnerability to terrorism. While none of these attacks involved the use of WMD, they nevertheless raised fears about the possibility of such an attack on American territory. As a general rule, when the world's sole remaining superpower becomes the target of a specific security danger, this invariably raises the profile of such threats internationally—and so it has been with WMD terrorism.

Over the past decade there has been a surge in the academic literature on the subject of WMD terrorism. Yet, as Amy Sands (2002) has noted, in dealing with this issue much of the literature has been marred by a tendency to 'comfortably reiterate the same threat mantra without examining more closely certain underlying assumptions'. A particularly salient feature has been an assumption that if terrorist groups are able to get their hands on WMD *materials*, they will, as a matter of course, be capable of fabricating a viable *weapon* to use against a target set (for instance, see Laqueur 1996; Falkenrath 1998; and Hoffman 1998: 196–97). One of the unfortunate by-products of this analytical trend among security specialists has been that 'a great deal of reporting on the subject has been careless and exagger-

ated, creating a mood of political paranoia' (Stern 1998–99: 176). This has been further fuelled by a prevailing view among policy elites and much of the academic community that large-scale terrorist acts using WMD are only 'a matter of time'.

Part of the problem is that insufficient attention has been devoted to assessing dispassionately whether hypothetical scenarios are likely to be transformed into reality. This article is concerned with addressing this issue, along with the broader question of whether the WMD threat has been exaggerated. I address three inter-related propositions that I maintain are central to understanding the degree to which WMD terrorism should be categorised as a security threat: can terrorists acquire WMD; what is the likelihood that terrorists will actually use WMD; has the threat increased since 11 September 2001?

My argument is essentially twofold. First, while terrorist attacks involving WMD remain a real prospect, the ease with which such attacks can be executed has been exaggerated. In particular, the inherent difficulties of weaponising a WMD capability (as distinct from merely having access to WMD materials) has often been underestimated. To achieve a realistic understanding of the scope of the threat it is necessary to draw a clear distinction between nuclear, biological, and chemical weapons. Second, although it is important to temper assumptions about the 'inevitability' of WMD terrorism, it is equally important not to let the pendulum swing too far in the other direction.² There is abundant evidence that a wide range of terrorist outfits have actively sought WMD materials, and it is very likely that some have obtained them. While the challenges of weaponising WMD capabilities remain formidable, groups which invest enormous amounts of time, energy, and resources in endeavouring to acquire these capabilities have a very strong incentive to succeed, which itself should not be underestimated as a factor. On balance, there can be little doubt that once terrorist groups who are intent on acquiring a WMD capability gain that capability, they will seek to use it.

Can terrorists acquire WMD?

Starting from scratch

Accounts vary over the ease with which terrorist groups could acquire nuclear, chemical, and biological weapons. Nuclear weapons clearly remain the most powerful of the WMD triad in terms of the sheer destruction they can wreak. The demonstrated blast, heat and longer-term radiation effects of fission and fusion weapons mark them out as unrivalled in the history of warfare. Because of this, they are no doubt attractive from a terrorist standpoint: but how easy are they to acquire?

Those who maintain that nuclear weapons are accessible for terrorist groups point out that knowledge on 'how to build a bomb' is now freely available to anyone who has Internet access. They also point to documented lapses in Russia's nuclear system during the 1990s that indicated a leakage of weapons-grade fissile material on to the black market and a striking level of vulnerability in Russia to theft of tactical nuclear warheads and smaller atomic demolition munitions (Collina

and Wolfsthal 2002). However, there is general consensus that nuclear weapons are more difficult to obtain than their chemical and biological counterparts. Despite some claims to the contrary, the core ingredients of weapons grade fissile material—highly enriched uranium and plutonium—are scarce internationally and very expensive to produce in sufficient quantities to manufacture even the crudest of nuclear devices. Moreover, since the mid-1980s, tight export controls have been observed by the small group of countries able to supply nuclear materials and equipment worldwide (Milhollin 2002). Even assuming that a terrorist organisation was able to amass enough fissile material to fabricate a nuclear device, the challenges of secure storage prior to use, the risks of being discovered transporting the device to the target area, and effective delivery would be prohibitive for all but the most sophisticated terrorist group.

A more readily attainable option would be acquiring the requisite materials to fabricate a radiological weapon, or 'dirty bomb' (i.e. conventional explosives laced with radioactive material aimed at propelling the latter across a wide area). There is some indication that elements of the Al Qaeda network have exhibited an interest in obtaining radioactive materials on the Russian black market for possible use in a 'dirty bomb', although it remains unclear whether their quest has been successful (see Warrick 2002; and Stout 2002). While yielding nowhere near the destructive effects of nuclear weapons, terrorist use of a radiological weapon could induce considerable panic among a target population by exploiting fears of radioactive poisoning. And unlike nuclear weapons, the materials required for a radiological weapon are widely used in 'unsecured' civilian applications such as medical imaging equipment. Although not usually included in the WMD threat template, radiological weapons could impose significant financial costs on the target state and would be an ideal terrorist weapon in severely disrupting public health and safety among a target population (Levi and Kelly 2002). As in the case of a complete nuclear warhead, however, terrorist groups would still confront significant challenges in transporting a radiological device over land, sea, or air and delivering that device against an assigned target.

The requisite technologies for manufacturing viable biological warfare (BW) agents and chemical warfare (CW) agents are widely available.³ The inherent dual-use nature of these technologies means that many of the key ingredients comprising chemical and biological weapons can also be found in perfectly legitimate biotechnology and chemical industry sectors in any number of states around the world.⁴ Indeed, it is generally agreed that if a country possesses a functioning civilian chemical or biotechnology industry then it is in a position to acquire the necessary materials to manufacture CW and BW agents. Certainly when compared with the difficulty of obtaining fissile material for manufacturing nuclear weapons, acquiring the requisite materials for constructing chemical and biological weapons is much less challenging for states and non-state entities alike. In many respects, a greater challenge for a terrorist organisation would be choosing the most appropriate CW or BW agent to weaponise for use against their designated target. As one authoritative US report has concluded, 'the ease or difficulty with which terrorists could cause mass casualties with an improvised chemical or biological

weapon or device depends on the chemical or biological agent selected' (US General Accounting Office 1999: 10).

The use of CW agents by terrorist groups has provoked serious concern among observers, particularly since the 1995 sarin gas attack by the Aum Shinrikyo sect on the Tokyo subway which killed twelve and injured in excess of five thousand people. If the operation had not been botched, it is estimated that the attack could have killed thousands given the acutely lethal nature of the nerve agent used (Stern 1999: 64). Yet while a terrorist attack using chemical weapons cannot be ruled out, the prospect of terrorists employing biological weapons against population centres is now regarded as the most likely scenario across the entire WMD threat spectrum. Biological weapons are judged to be the ideal terrorist WMD instrument for three key reasons.

First, BW agents are far easier to acquire than nuclear weapons and it takes considerably less BW agent to produce the same killing impact as chemical weapons. Quantum leaps in biotechnology applications may mean revolutionary advances in drug discovery for treatment, but the very same quantum leaps can be used to broaden horizons for acquiring new, and refining existing, BW agents (Wheelis 2002). Moreover, on a pound for pound basis, BW agents are far more potent than any of the most deadly CW agents which must be 'delivered in massive quantities to inflict lethal concentrations over large areas' (Tucker 2000: 5). As Tucker (2000: 5) observes:

[A] chemical attack that caused 50 per cent casualties over a square kilometre would require about a metric ton of sarin. In contrast, microorganisms infect people in minute doses and then multiply within the host to cause disease. For example, a mere 8,000 anthrax bacteria—an amount smaller than a speck of dust—are sufficient to infect a human being. As a result, a biological attack with a few kilograms of anthrax could inflict the same level of casualties over a square kilometer as a metric ton of sarin—provided that the anthrax was effectively disseminated.

Second, the effects of biological weapons on a target population would be extremely hard to counter. Administering vaccines and rendering more general medical assistance to a widely affected population would place unprecedented strains on emergency authorities (Katz 2002). This is assuming that an attack using BW agents could be detected in a timely fashion. Indeed, one of the major obstacles for state authorities would be detecting that a covert attack using BW agents had actually taken place. For instance, vaccination against the most contagious BW agent, smallpox, is only effective if administered within seven days of exposure to the virus. Yet during the early stages of contracting the virus, individuals merely exhibit flu-like symptoms making prompt diagnosis problematic. Left undetected for even a few days, smallpox has the potential to spread rapidly among the target population, creating an epidemic that could be impossible to contain (Chyba 2002: 134).

Third, the insidious nature of BW agents—composed as they are of living micro-organisms with the capacity to reproduce and mutate—has the potential to

psychologically 'unhinge' target populations. As one analyst has put it, 'because they are silent, stealthy, invisible, and slow acting, germs are capable of inducing levels of anxiety approaching hysteria (Regis 2001: 12). One only has to look at the American public's angst-ridden reaction to the tightly targeted anthrax attacks in October 2001 to appreciate the potential panic induced by a widespread terrorist attack involving BW agents. The fact that these attacks used small, though highly lethal, quantities of anthrax and were carried out by using a highly novel dissemination route (the postal service) merely served to accentuate the sense of vulnerability among the US public.

Although the necessary materials for manufacturing BW agents are relatively easy to acquire, it would be a mistake to assume that these materials can be easily weaponised for use against a target population. In order to ensure effective delivery to inflict mass casualties, a terrorist group would need to develop a powder or aerosol that could be disseminated over a wide geographical radius.⁵ This requires considerable scientific skill and expertise that, most analysts agree, is still beyond the reach of most terrorist organisations (see Falkenrath 1998: 47; Chyba 2002: 127; and Parachini 2001: 4). One of the main reasons why the Aum Shinrikyo sect used the CW agent sarin in its 1995 Tokyo subway attack was that it had previously failed to develop sufficiently virulent BW strains of anthrax and botulinum toxin. This was despite the group being generously financed and its employment of some two dozen professionally trained microbiologists working in well-equipped scientific laboratories (Mangold and Goldberg 1999: 335–51).

Alternative avenues?

Given the intrinsic difficulties associated with manufacturing a viable WMD device from scratch, would terrorist groups have alternative avenues for acquiring such a capability? One possible scenario would be the theft of complete or partially complete devices from established state inventories. As noted earlier, the security and tracking systems for all categories of WMD remains woefully underdeveloped in the FSU, especially Russia. But this is not to say that the latter would be the only target for terrorist groups intent on pilfering a WMD device. The 2001 anthrax attacks in the US were carried out with material that appears to have come from the US defence establishment, an establishment that has maintained some of the tightest security and tracking systems in the world (Cirincione, Wolfsthal, and Rajkumar 2002: 181–84).

Another scenario is that a nuclear, biological or chemical weapon could be provided to a terrorist organisation by a state that remains sympathetic to the terrorists' motives and aims. This threat has gained increased currency in US policy-making circles, with the Bush administration linking international terrorist networks with individual states it alleges are actively seeking WMD capabilities—Iran, Iraq, and North Korea (*The Economist* 2002). Yet despite these states having demonstrated a willingness to sponsor terrorist activities in the past, it is doubtful whether any state would transfer WMD to a non-state entity, assuming they were in a position to do so. It is difficult to imagine any state that would be willing to

risk being discovered as having links with a terrorist group that had attacked US targets (for instance) with WMD, let alone one that would be willing to furnish such a group with a WMD capability. For as long as regime preservation remains the paramount credo in Iran, Iraq, and North Korea, it is highly improbable that ruling elites would risk certain US retaliation (probably with nuclear weapons) in the wake of a WMD attack on American territory.

However, this cautious approach could be revised if a leadership elite found itself in mortal peril. While regime preservation may be the overriding priority in Baghdad, if the regime judged that its demise was imminent in the latter stages of a war with the United States, then it is entirely plausible that it would attempt to use all the WMD assets at its disposal. This could well include nuclear, biological, or chemical weapons supplied to terrorist groups for use against targets on the American mainland or targets in Israel. With the regime's demise imminent, there would be little, if any, incentive to exercise restraint and no fear of retaliation from the United States and its allies (O'Neil 2002: 14–15). Other countries for whom 'contracting out' WMD terrorism may be an option are US adversaries (possibly including China) who fear the longer term strategic implications of National Missile Defence (NMD). If Washington successfully deploys NMD, these states may be more inclined to consider using terrorists as 'delivery systems' if the option of delivering their WMD payloads against US targets with long range missiles has been effectively nullified (Glaser and Fetter 2001: 54–57). In such a scenario these states may well calculate that they would not be identified as the source of an attack.

What is the likelihood of terrorists using WMD?

Norms and strategic value

Just as the issue of WMD accessibility for terrorist groups is contested, so too is the question of whether such groups would actually use WMD in certain circumstances. Scepticism towards the notion that terrorists will seek to use WMD is largely predicated on accepting the much-quoted observation of US terrorist expert Brian Jenkins that 'terrorists want a lot of people watching and a lot of people listening, not a lot of people dead' (quoted in Hoffman 1998: 198). Traditionalists like Jenkins, who maintain that the WMD threat is exaggerated, point to the fact that historically few terrorist groups have shown an active interest in acquiring a capability to inflict mass casualties in the thousands or tens of thousands. According to this line of thinking, the best assurance we have that a mass casualty terrorist attack involving WMD will not happen is that it hasn't happened yet. While terrorist groups by their very nature aim to effect radical political and social change, an attack on this scale could not be vindicated by any conceivable ideology (see Kamp 1998–99: 170). No terrorist group, so the argument goes, would risk attracting the international opprobrium such a mass casualty attack would provoke. From this perspective, although terrorists may be violent, they are also rational and

calculating; they understand that a mass casualty attack using WMD would serve no instrumental purpose in propagating their ideology and objectives.

However, this traditionalist argument overlooks several important variables which suggest that, far from being remote, the likelihood of terrorist groups that have acquired nuclear, chemical, or biological weapons using these weapons is increasingly plausible. The most conspicuous of these variables is that non-state actors in international relations do not, as a general rule, operate according to the same normative constraints as sovereign states (Starr 1995: 306). While there is strong circumstantial evidence to support the claim that a norm of WMD non-use has evolved over time among states, there are few grounds for assuming that terrorist organisations will necessarily adhere to this norm. Indeed, the inherent shock value of terrorism is essentially based on the willingness of terrorist groups to flout generally accepted international norms of behaviour. Moreover, the perceived strategic merits of WMD are likely to outweigh any normative considerations for most terrorists. Due to the unprecedented mass casualties that they can cause, nuclear, biological, and chemical weapons are optimal instruments for achieving the asymmetric warfare strategy that lies at the heart of terrorist operations (Lesser 1999: 94–96; for broader discussion of asymmetric warfare strategies, see Arreguin-Toft 2001). Avoiding confrontation with a target state where it is strongest (in conventional military terms), the modus operandi of terrorist groups has been to strike states where they are most vulnerable to attack (in densely populated cities). From a terrorist perspective, using WMD would graphically illustrate a capacity to inflict maximum damage against a stronger power at a time and place of the terrorist group's own choosing.

The rise of 'new' terrorism

But the single most important variable that makes terrorist use of WMD increasingly credible is the changing nature of the underlying philosophy of terrorist groups themselves. International terrorism has, over time, become a more complex phenomenon. Long gone are the days when terrorism was exemplified by the gun-toting anarchist seeking to overturn a corrupt political order within the strict confines of state borders. The terrorist of the twenty-first century is exemplified by the operative who is part of a loose, yet sophisticated, transnational network whose goal is to overturn *global* trends that are deemed to be in profound conflict with their core religious or political beliefs (see Chalk 1999). Throughout the last decade of the twentieth century, the capacity of terrorist groups to organise themselves into transnational networks for the purpose of coordinating operations across different continents was significantly enhanced by the rapid globalisation of information technologies. The most well-known of these groups, Al Qaeda, used coded e-mail communications and posted encrypted messages on various Internet web sites to coordinate several high profile attacks during the 1990s as well as the 11 September attacks on the American mainland (Brownfeld 2001; and Risen and Engelberg 2001).

In the mid to late 1990s, official and non-official analysts began distinguishing

between the ideology of 'old' terrorism and 'new' terrorism. Encompassing groups such as ETA, the IRA, and the various 'Red' terrorist cells operating in Western Europe during the Cold War, the 'old' paradigm of terrorism was characterised by a calculation that indiscriminate or excessive violence would have the effect of undermining claims of legitimacy among domestic constituencies and international public opinion more generally. In eschewing mass casualty attacks of the type carried out by Aum Shinrikyo and Al Qaeda, old-style terrorist groups sought to preserve their eligibility for a seat at the post-conflict negotiating table. In short, these groups regarded themselves as fundamentally part of the political process, not separate from it (Stevenson 2001: 153–54).

Examples of the new terrorism include extremist fundamentalist organisations, millenarian and apocalyptic-inspired sects, and radical anti-government 'hate' groups. In marked contrast to the old terrorist groups, who invariably rationalised violence as an instrument for achieving a clear-cut political strategy, the violence employed by new terrorist groups is far less discriminating and far more lethal as a consequence. As evidenced over the last decade, the terrorist operations performed by these groups have frequently (and deliberately) failed to distinguish between 'legitimate' targets symbolising 'corrupt' state authority (such as military installations and police barracks) and civilian sectors of the population. The single most influential element uniting new terrorist groups has been hard-core religious dogma. Groups such as Al Qaeda, Aum Shinrikyo, and the various Christian Identity organisations active in the West are each inspired by the doctrine of 'cosmic war', in which violence is seen as the only means to achieve 'moral restoration' (Juergensmeyer 2001: 145–63). According to this mindset, violent acts 'are 'sanitised' because they are symbolic, enacted on a cosmic stage' (Simon and Benjamin 2000: 66). Engaged in a cosmic struggle where 'a satanic enemy cannot be transformed, only destroyed', the intensity of the violence used in specific terrorist acts is unconstrained by 'worldly' ethical considerations (Juergensmeyer 2001: 217). As Peter Chalk has observed:

The prevalence of radical religious imperatives [...] has significant implications for the lethality of terrorism. For the religious zealot, there is essentially no reason to show restraint in the perpetration of violence. The main objective is to inflict as much pain and suffering as possible, with the enemy typically denigrated as fundamentally evil and beyond all redemption.

In sum, terrorist groups subscribing to this form of ideology are much more likely to be attracted to the mass destructive properties of WMD than terrorist organisations have been in the past.

Has the WMD terrorist threat increased since 11 September 2001?

Would a terrorist group actively attempt to acquire and use WMD when the events of 11 September 2001 showed that spectacular attacks can be staged using fully fuel-laden hijacked civilian airliners? The short answer is that a successful large-scale use of nuclear, chemical, or biological weapons would make the events

of 11 September pale in comparison. The mass casualties resulting from a large-scale WMD attack against US urban centres has been the most important issue exercising the collective minds of American national security agencies post-11 September. A leaked US intelligence report in March 2002 estimated that a ten kiloton nuclear device (of similar yield to the Hiroshima bomb) detonated in lower Manhattan would kill over one hundred thousand people instantly, poison several hundred thousand people with radiation sickness, and level all infrastructure standing within one kilometre of the blast's epicentre (Gellman 2002). An extensive attack against an urban centre with an acutely lethal chemical weapon such as the nerve agent sarin could potentially kill thousands and render the surrounding area a heavily contaminated zone for an extended period of time. While slower in its impact, a successful large-scale attempt to target densely populated centres with a highly contagious BW agent such as smallpox would trigger an epidemic of unparalleled scope in the modern era.

On balance, the likelihood of a terrorist organisation using WMD has increased in the wake of the 11 September attacks for two reasons. First, the events of 11 September exposed—much more dramatically than did the 1993 World Trade Centre attack and the 1995 Oklahoma City bombing—the vulnerability of open societies like the United States to large-scale terrorist strikes. The Al Qaeda operatives who carried out the 11 September attacks were inserted into the US, received flight school training in the US, coordinated their pre-attack planning in the US, hijacked the airliners from US airports, and successfully struck high value targets on American soil without warning. To be sure, any terrorist group with a serious grudge against the United States and its democratic allies will take heart from the events of 11 September. While the United States and allies including Australia have taken some significant steps to bolster early warning and crisis response capabilities (see, for example, Gellman 2002; Connolly 2002; and Hill 2002), their cities will continue to remain extremely vulnerable to terrorist attacks involving WMD.⁶

Second, the events of 11 September set an entirely new benchmark, or threshold, for future terrorist attacks. There can be little doubt that the motivation to 'surpass 11 September' will be a strong incentive for future terrorist groups contemplating the use of WMD. Never before had thousands been killed in a single terrorist attack. That the most powerful country in the international system was the target merely added potency to its psychological impact. As Jenkins (2001: 4) has argued, the events of 11 September created 'a new level of destruction toward which other terrorists will strive'. Rather than being cowed by the 2001 attacks, the Bush administration responded forcefully by declaring a 'War on Terrorism' and expelling Al Qaeda from its home base in Afghanistan. Yet, it is far less certain whether the United States would be able to cope with a massive WMD strike against a key urban centre such as Los Angeles, with fatalities ranging in the tens of thousands. Would the US public be willing to maintain its support for America's global strategic commitments following such an attack? The US public may well conclude that the benefits flowing from American global hegemony are far outweighed by the costs of being a terrorist target. In this scenario, it is certainly conceivable that

public pressure for the United States to return to its pre-1941 isolationist policy would be too intense for any administration to resist. The subsequent unravelling of America's strategic alliances in the Asia-Pacific, Europe, and the Middle East would inject a degree of instability into international relations not witnessed since the end of the Cold War. Some terrorist groups could well judge that this possibility more than justifies any endeavour to launch a large-scale WMD assault along the lines sketched above.

Conclusion

Given the high stakes involved, it is all too easy to exaggerate possible scenarios involving terrorists using WMD. Yet it is equally easy to dismiss possible threat scenarios as being unduly alarmist. As the head of the United Nation's Terrorism Prevention Branch has remarked, the greatest challenge in evaluating the WMD terrorist threat is 'walking the fine line between fear and paranoia on the one hand, and prudence and disbelief on the other' (Schmid 2000: 108).

One of the most prevalent features in mainstream discussions of WMD terrorism has been the conflation of motive and capability. All too often observers assume that simply because terrorist groups are motivated to acquire WMD they will be successful in doing so. A related assumption is that once terrorists gain access to WMD materials they will, ipso facto, be able to build a weapon and deliver it against assigned targets. The prevalence of this approach has meant that insufficient attention has been paid to addressing the key issue of accessibility to nuclear, chemical, and biological weapons on the part of terrorist groups and the likelihood of such groups actually using WMD. Consequently, the challenging nature of assessing the threat of WMD terrorism has frequently been overlooked in much of the academic literature. Simply accepting at face value the hypothesis that WMD terrorism is only 'a matter of time' is no substitute for detailed and measured threat assessment. As I have argued, the issue is complex and not one that lends itself to hard and fast conclusions.

On the one hand, I demonstrated that it remains very difficult for all but the most technologically advanced terrorist organisations to successfully weaponise nuclear material and CW and BW agents for delivery against targets. This is particularly the case with respect to nuclear weapons, but also holds true for chemical and biological weapons. In the case of biological weapons—which have become the most feared category of WMD in terms of likely terrorist use—although the requisite material for devising BW agents is widely available, the skill and expertise for effectively weaponising a BW agent is still seemingly beyond terrorist groups. Overall, acquiring WMD capabilities for delivery against targets is a lot harder for terrorists than is generally acknowledged in the literature.

On the other hand, however, it is clear that contemporary terrorists have fewer moral scruples about initiating mass casualty attacks targeting civilian populations than the terrorists of yesteryear. Since the end of the Cold War, terrorism has become far more lethal in its scope due to the increasingly indiscriminate violence sanctioned by new terrorist groups such as Al Qaeda. In short, contrary to the view

held in some quarters, terrorists of today are far more likely to use WMD (assuming they can weaponise capabilities) than those in the past. As I have argued, this trend will only be strengthened in the wake of the 11 September 2001 attacks which graphically underscored the vulnerability of open societies like the United States to mass casualty attacks, while setting a new threshold for future terrorist attacks worldwide.

Notes

1. Nuclear terrorism was the primary concern during the Cold War period. The United States devoted considerable resources to putting in place contingency plans specifically designed to counter this threat. Between 1975 and 1981 alone it is estimated that the US Nuclear Emergency Search Team (a specialist unit attached to the Department of Energy) was tasked with investigating *plausible* threats involving nuclear devices in no less than eight separate major urban centres. See Richelson (2002).
2. Existing examples of exaggerated scepticism about the WMD terrorist threat range from dismissing the threat as 'somewhat fanciful' (Spear 1997: 114–15) to overlooking it through omission (see, for instance, Butfoy 2001; and Martin 2002).
3. CW agents rely on the toxic properties of chemical substances, rather than explosive properties, to inflict physical and physiological effects on an enemy. Similarly, BW agents rely on their innate properties rather than any explosive power to cause casualties. But unlike CW agents, BW agents exploit naturally occurring and genetically modified infectious diseases by spreading them among the target population.
4. For instance, one of the most basic CW choking agents, phosgene, is widely used in the international chemical industry as a chlorinating substance.
5. This is not to say that much cruder systems of delivery could not be effective in causing significant casualties among a target population. One possible 'delivery system' that has been canvassed in sections of the literature is the 'suicide sneezer' who is deliberately infected with a lethal and highly contagious BW agent and charged with the mission of circulating among the target population. See Zilinskas (2001: 441).
6. A recent study commissioned by the Council on Foreign Relations and chaired by former US Senators Gary Hart and Warren Rudman concluded that 'A year after [11 September], America remains dangerously unprepared to prevent and respond to a catastrophic terrorist attack on US soil'. See Mintz (2002).

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