

**United States Senate Committee on Homeland Security and Governmental Affairs
Hearing on “Nuclear Terrorism: Assessing the Threat to the Homeland”**

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**Testimony of Gary Anthony Ackerman, Research Director, National Consortium
for the Study of Terrorism and Responses to Terrorism (START)¹**

“For man does not even know his hour: like fish caught in a fatal net, like birds seized in a snare, so are men caught in the moment of disaster when it falls upon them suddenly.”

Ecclesiastes 9:12

Chairman Lieberman, Ranking Member Collins and esteemed Members of the Committee, I would like to thank you for inviting me to speak today on the threat of nuclear terrorism. While it may not currently constitute the most likely threat to U.S. security from non-state actors, the prospect of terrorists detonating a nuclear device on American soil sometime within the next quarter century is real and growing. Such a calamitous attack on the homeland would represent a “game-changing” event far exceeding the impact of 9/11 on the nation. Besides the obvious physical devastation and catastrophic loss of life, a successful act of nuclear terrorism would forever change the way the world conceives of security and undermine many of the tenets upon which our democracy is based. It would represent the apogee of individual destructive capacity, and in a sense the “consumerization” of the ultimate military power.

For thousands of years the harm potential of a single act by an individual or small group unrelated to a broader political entity was limited to the range of a sword, spear or bow.² The invention of gunpowder and then TNT expanded the scale of destruction to the hundreds and recently the insidious use of our own infrastructures against us on September 11, 2001 boosted the harm capacity even further. Yet at no time in human history has there been the ability for a cabal of hateful fanatics, unfettered from the constraints of a state, to destroy cities or kill hundreds of thousands in a single cataclysmic act. And this eventuality is far from a sideline in the nuclear weapons debate – a survey conducted by Senator Richard Lugar in 2005³ and supported by recent work of

¹ I would like to thank Erin McNerney and Matthew Rhodes for their invaluable assistance in gathering materials for my testimony and also Charles Blair, Cheryl Loeb and Gary Lafree who were gracious enough to provide feedback on short notice. Nonetheless, any errors or omissions are my own. Furthermore, my statement today represents my personal opinions and not those of the National Consortium for the Study of Terrorism and Responses to Terrorism, the University of Maryland, or the U.S. Department of homeland Security.

² Poisoning or contamination were fairly common tactics in antediluvian warfare, but their efficacy was usually limited to a single food or water source, and even then often relied on a fair amount of luck or the assistance of pathogenic microorganisms.

³ Richard J. Lugar, *The Lugar Survey On Proliferation Threats and Responses* (June 2005). Accessed from <<http://lugar.senate.gov/reports/NPSurvey.pdf>> on March 18, 2008.

my own showed that 79% of the experts who responded believed that terrorists as opposed to governments would be the most likely perpetrators if nuclear weapons were to be used before 2015. For all these reasons, we cannot afford to wait for the first nuclear terrorist attack to occur before we act against the threat, and I commend the Committee for being proactive in this regard.

While there are many dimensions of nuclear terrorism, today I will focus on the so-called “demand side” of the threat, which includes the identities, motives and capabilities of potential perpetrators of a nuclear attack. I will not delve into the vulnerability of fissile materials or the consequences of a nuclear attack, except insofar as they inform the decisions and actions of the perpetrators themselves. I will also restrict my comments to the detonation of a fission or fusion explosive in the American homeland, leaving other types of related but qualitatively different events, including radiological terrorism or the potential for terrorists to instigate inter-state nuclear war through deception, aside for the moment. Furthermore, in the interest of discouraging entrenched patterns of thinking, during the course of my remarks I will also refer to several “Black Swan” events,⁴ a term used to describe those events, which although highly improbable, would have the effect of completely upsetting existing trends and expectations.

The Threat Today

When considering nuclear terrorism, the question of “why” precedes the question of “who”, since only a small subset of terrorists would even consider using such devastating weapons. In order to determine who the most likely perpetrators of nuclear weapons terrorism are, we therefore need to understand the motivational incentives and disincentives for non-state actors to acquire and use nuclear weapons, a subject that has often been overshadowed by assessments of terrorist capabilities.⁵ This is a complex subject that has been discussed previously by several experts in congressional testimony going back to that of Brian Jenkins in 1975. I will not engage in a lengthy discussion of basic issues of intent, but there are a few points about terrorist motivations that are worth reiterating.

1. While the kinetic and thermal effects of nuclear weapons are capable of inflicting unrivalled carnage, making nuclear bombs the consummate mass-casualty weapon, the majority of terrorist attacks are carried out for a multiplicity of motives, so one should not assume that the desire to inflict mass casualties is

⁴ Nicholas Taleb, *The Black Swan: How the improbable rules the world and why we don't know it* (New York, NY: Random House, 2007).

⁵ Jerrold Post maintains that, “absent a clear understanding of the adversary’s intentions, the strategies and tactics developed [to counter them] are based primarily on knowledge of terrorists [sic] technological capabilities and give insufficient weight to psychological motivations” - Jerrold Post, “Prospects for Nuclear Terrorism: Psychological Motivations and Constraints” in P. Levanthal and Y. Alexander, *Preventing Nuclear Terrorism* (Lexington, MA.: Lexington Books, 1987), p. 91. Gavin Cameron has even asserted that “the real driving force behind the heightened danger of nuclear terrorism lies not with the increased opportunities for micro-proliferation, but rather with the changing nature of political violence and the psychological and organizational characteristics of terrorism itself” – Gavin Cameron, *Nuclear Terrorism: A Threat Assessment for the 21st Century* (New York: St. Martin’s Press, Inc., 1999), p. 152.

necessarily the sole, or even predominant, motive for resorting to the nuclear option. Motives that can be equally important, depending on the circumstances, include: a) the inordinate psychological impact such an attack would have on the American public; b) the enormous economic, political and social instability that would follow an attack; c) the unrivalled physical destruction of our infrastructure and contamination of vital areas; and d) the state-like prestige that the perpetrators might expect to obtain from demonstrating a nuclear capability. There may also be non-instrumental reasons for using nuclear weapons, such as a fetishistic predisposition for things nuclear or radiological, or even an extreme form of defensive aggression wherein a group perceives its own imminent destruction (or that of those it purports to represent) and thus resorts to the most violent measures imaginable as a “swan song.”

2. There are a number of factors that do not directly portend the use of nuclear weapons in particular, but might exacerbate any existing imperatives. For example, there is the notion that in order for a terrorist group to remain relevant to its various audiences and ensure attention for its cause, terrorist decision makers may feel compelled to outdo the destruction wrought by previous attacks. Especially in the wake of such attacks as those of September 11, 2001, these escalatory pressures imply operations of considerable magnitude. It has also been suggested that groups exhibiting certain structural characteristics might be more likely to engage in acts of violence as extreme as nuclear terrorism. Some of these allegedly pernicious traits include: control by megalomaniacal or sadistic, but nonetheless charismatic and authoritarian, leaders; isolation from the broader society, with little display of concern for outgroups; an intentional focus on recruiting technical or scientifically skilled members; and a record of innovation and excessive risk-taking.⁶
3. Besides any disincentives on the supply side that might arise from difficulties in obtaining and successfully deploying a nuclear weapon, many experts have alleged that the use of weapons as destructive and reviled as nuclear weapons would alienate the supporters and perceived constituency of any terrorist group. The argument therefore becomes: those groups motivated by religion, which are focused on cosmic as opposed to mortal concerns, would be far more willing to engage in attacks involving mass casualties and hence would be more prone to use nuclear weapons or other means of mass destruction.⁷ The situation, however,

⁶These factors are drawn from a combination of Jonathan B. Tucker, “Lessons from the Case Studies,” in *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*, ed. by idem (Cambridge, MA: M.I.T., 2000), pp. 255-63; J. K. Campbell, “On Not Understanding the Problem, in Hype or Reality?: The “New Terrorism” and Mass Casualty Attacks”, ed. Brad Roberts (Alexandria, VA.: Chemical and Biological Arms Control Institute, 2000) pp., 35-39; and Brian Jackson, “Technology Acquisition by Terrorist Groups,” *Studies in Conflict and Terrorism*, 24:3 (2001), p. 203. Many of these factors are related to a group’s capabilities for engaging in nuclear terrorism, leading to the obvious observation that, as well as motives driving capabilities, on occasion capabilities can reciprocally influence a terrorist’s intentions.

⁷ Bruce Hoffman, *Inside Terrorism* (New York: Columbia University, 1998), p. 94; Gavin Cameron, “WMD Terrorism in the United States,” *Nonproliferation Review*, 7:1 (2000), pp. 169-70; Nadine Gurr and

is more complex. Not all religious terrorists are equally likely to pursue mass destruction—many religiously motivated terrorist organizations have political components, represent constituencies that are well-defined geographically (and thus are subject to retribution), or depend on financial or logistical support from parties whose views may not be quite as radical as their own. Moreover, it is the theological and cultural content of the particular strand of religious belief which is of greatest significance,⁸ rather than the mere fact that a group has a religious bent. Ideologies most conducive to the pursuit of catastrophic violence are those that reflect an apocalyptic millenarian character, in which an irremediably corrupt world must be purged to make way for a utopian future, as well as those that simultaneously emphasize the capacity for purification from sins through sacrificial acts of violence.⁹ One must bear in mind, however, that possessing an ideology with a religious or apocalyptic character may at most be a contributing factor to any desire to engage in nuclear terrorism, and is certainly not determinative.

4. On the one hand, we should all realize that what constitutes success for a state-level nuclear weapons program is not necessarily the same for non-state actors. For example, terrorists might regard a partial nuclear “fizzle” as a sufficient result for their needs, since it would still have more explosive power than almost any conceivable conventional attack. On the other hand, the possession of nuclear weapons might lead terrorists to behave more like states than we would expect, especially when their particular constellation of motives are more suited to pursuing nuclear weapons not for use, but in the hope of deterring, blackmailing or coercing their enemies.

Once we understand the motives associated with the possession and use of nuclear weapons, we can then combine these with capability factors to create a profile of the most likely perpetrators. Even if a terrorist group was to overcome the primary obstacle of obtaining an intact nuclear weapon or sufficient amounts of fissile material, they would still require substantial technical expertise, fairly large financial resources and a secure and developed logistical network to successfully deploy a nuclear weapon, capabilities possessed by only a relatively small number of groups. In fact, recent work conducted by Victor Asal, Karl Rethemeyer and me,¹⁰ has yielded through statistical analysis the important indicator that the more highly-networked a terrorist group is (including the number and nature of its alliances with other terrorist groups), the more likely it is to pursue the use of CBRN weapons.

Benjamin Cole, *The New Face of Terrorism: Threats from Weapons of Mass Destruction* (London: I. B. Tauris, 2002).

⁸ Daniel S. Gressang IV, “Audience and Message: Assessing Terrorist WMD Potential” *Terrorism and Political Violence*, 13:3 (2001), pp. 83-106.

⁹ Gary A. Ackerman and Jeffrey M. Bale, *How Serious is the “WMD Terrorism” Threat?: Terrorist Motivations and Capabilities for Using Chemical, Biological, Radiological, and Nuclear (CBRN) Weapons*. Report for Los Alamos National Laboratory (2004), pp. 29-30; Cameron 1999 op. cit. p. 80-3.

¹⁰ Victor Asal, Gary Ackerman and Karl Rethemeyer. *Connections Can Be Toxic: Terrorist Organizational Factors and the Pursuit and Use of CBRN Terrorism*. (2008). Submitted for publication.

At present, the universe of non-state actors seeking to acquire and use nuclear weapons appears to be confined to violent jihadists, a movement exemplified by the al-Qa`ida network, and one that is growing in size and scope and spawning a host of radical offshoots and followers. In a survey I recently conducted,¹¹ almost three-quarters of the experts polled ranked Sunni jihadists as the most likely of 13 types of actors to successfully perpetrate a catastrophic WMD attack within the next ten years. Al-Qa`ida, for one, has hardly been shy about its nuclear ambitions. Since the late 1990s, at least ten statements advocating the possession or use of nuclear weapons have emanated from this quarter, ranging from Usama Bin Ladin's 1998 announcement that the possession of nuclear weapons is a "religious duty"¹² to counter the infidels, through the lengthy 2003 fatwa by a radical Saudi cleric legitimizing the use of WMD against the West,¹³ to the impassioned call by Abu Hamza al-Muhajir (Zarqawi's successor as leader of al-Qa`ida in Iraq) in October 2006 for nuclear scientists and explosives experts to join him in his jihad.¹⁴ This has not all been bluster and propaganda – there have been at least a dozen reports of jihadist attempts to acquire nuclear weapons, fissile material or technical knowledge extending back to the early 1990s.¹⁵ While only a handful of these have been confirmed (the most striking of which is the 2001 testimony of Jamal Ahmed al-Fadl), when taken together with the strategic and religious justifications and the production of online technical manuals, there is evidence of a prolonged and enduring interest in nuclear weapons by jihadists. As far as their capabilities are concerned, the Presidential Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction reported in March 2005 that by October 2001 the U.S. intelligence community assessed al-Qa`ida as being capable of producing at least a "crude" improvised nuclear device (IND) if it secured access to highly enriched uranium (HEU) or plutonium.¹⁶ We should also bear in mind that there is a precedent for a small group of skilled technicians to have success once they possessed the requisite fissile material – more than 30 years ago (using 1970s technology) the South African government managed to produce a working nuclear weapon using only a few dozen personnel (if one counts those who worked on the weapon as opposed to enrichment).¹⁷

Although in the short-term at least, the most likely perpetrators of nuclear violence will stem from operationally sophisticated members of the Sunni or Shi'i jihadist milieu, in the longer-term, they may be joined by other groups of extremists who limn the

¹¹ Gary Ackerman. *Delphi Exercise on Jihadists and WMD*. Conducted January-March 2008.

¹² "Transcript of interview with Usama bin Ladin," *Time* (December 24, 1998).

¹³ Nasir bin Hamd al-Fahd, *A Treatise on the Legal Status of Using Weapons of Mass Destruction Against Infidels* (May 2003), accessed from <<http://www.carnegieendowment.org/static/npp/fatwa.pdf>>.

¹⁴ Middle East Media Research Institute, "Abu Hamza Al-Muhajir: American Military Bases are an Ideal Environment for Trying Out Biological and Dirty Bombs," *MEMRI Special Dispatch Series, No. 1309* (October 6, 2006).

¹⁵ This includes four reports that al-Qa`ida actually succeeded in obtaining one or more weapons, although none of these have been corroborated and are discredited by most experts. See *Chart: Al-Qa`ida's WMD Activities*, WMD Terrorism Research Program, James Martin Center for Nonproliferation Studies (2005), accessed at <http://cns.miis.edu/pubs/other/sjm_cht.htm> on March 30, 2008.

¹⁶ Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, *Report to the President* (Washington, DC: WMD Commission, 2005), pp. 267, 71, 92.

¹⁷ Roy E. Horton III, "Out of (South) Africa: Pretoria's Nuclear Weapons Experience," *USAF Institute for National Security Studies, Occasional Paper #27* (August 1999).

ideological and structural arcs I have associated with nuclear terrorism, including perhaps radical right-wing groups (especially those components espousing extremist Christian beliefs),¹⁸ or even conceivably a vengeance-seeking group representing a heavily brutalized ethnic community.

There are at least two Black Swans in this regard. The first is the appearance of an as-yet-unidentified unorthodox religious cult with apocalyptic tendencies, such as Aum Shinrikyo, the Covenant, the Sword, and the Arm of the Lord or R.I.S.E., since one can conceive of an affinity between the “the relentless impulse toward world-rejecting purification”¹⁹ displayed by such groups and the levels of “cathartic” destruction only achievable using nuclear weapons. The trouble is that it is incredibly difficult to proactively detect the one or two true threats amongst the literally thousands of obscure religious groups operating worldwide today. For example, take the Japanese doomsday cult Aum Shinrikyo, the only terrorist group besides al-Qa`ida about which we have concrete evidence of the pursuit of nuclear weapons. It has been stated before this committee that at the time of its March 1995 sarin attack on the Tokyo subway, its activities were completely unknown to U.S. intelligence agencies.²⁰ While our intelligence capabilities have undoubtedly improved since then, as non-traditional religious groups proliferate, the decreasing signal to noise ratio of the truly dangerous to the merely quirky fringe groups will continue to complicate early detection.

A second Black Swan relating to the demand side of the threat which exists today is the bugbear of opportunism. A terrorist group who would not otherwise be interested in pursuing nuclear weapons may be propelled to consider the nuclear option more seriously by happenstance. For example, governmental collapse in a nuclear weapons state, or stumbling across a willing insider could provide increased scope for a terrorist group’s procurement of intact nuclear weapons and thus might precipitate for the first time the consideration of using, or at least possessing, a nuclear device.

Evolution of the Threat

Nuclear weapons will not be the first choice (or perhaps even the twentieth) of most terrorists, and even for the few who do proceed down this path, many technical, supply-side and even strategic hurdles persist, making it easier and more ‘cost effective’ for terrorists to resort to alternative means. The chances of al-Qa`ida or any other terrorist group detonating a nuclear weapon on the National Mall tomorrow morning may be greater than zero, but not much greater, indeed they are far lower than almost any other type of attack our terrorist enemies could unleash. But what about next year, or in five

¹⁸ For instance, *The Turner Diaries*, a novel written by the former leader of the National Alliance, William Pierce and which has had considerable influence on many right-wingers, describes racist “patriots” destroying cities and other targets with nuclear weapons - Andrew Macdonald [pseudonym for Pierce], *The Turner Diaries: A Novel* (Hillsboro, W.V.: National Vanguard, 1999; originally published 1980).

¹⁹ Robert J. Lifton, *Destroying the World to Save It: Aum Shinrikyo, Apocalyptic Violence, and the New Global Terrorism*. (New York: Metropolitan Books, 1999), p. 204.

²⁰ U.S. Congress, Senate Committee on Governmental Affairs, Permanent Subcommittee on Investigations. *Staff Statement, Hearings on Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo* (October 31, 1995).

years time? History is replete with cautionary tales warning against basing threat assessments on static analyses of an opponent's motivations and capabilities. After all, if their actions over the past decade have taught us anything, it is that terrorists are audaciously nimble operators who can adapt through reinvention and are prepared to persevere to attain their goals. At the same time, the global system in which they operate is not standing still – the political, social and, perhaps most importantly, technological landscape is continually reshaping itself into novel and unexpected topologies that can present both obstacles and opportunities for would-be nuclear terrorists. I will now offer a few thoughts on how the threat of nuclear terrorism is evolving and how it might respond to global dynamics.

1. The first of these concerns the terrorist learning curve. While knowledge of the precise specifications and tricks of the trade involved in nuclear weapons production can (and should) continue to be kept secret, the diffusion of broader knowledge and skill sets relevant to nuclear weapons (such as metallurgy, explosives engineering and precision machining) is inevitable. The information revolution has crossed the entire globe and disaffected youths in even the most underdeveloped countries can take technical courses online. Not to mention the increasing radicalization occurring within the developed world, where the latest technology and institutions of higher learning are widely available. Moreover, even the most closely-guarded nuclear technologies can slip out of state control, as the AQ Khan network amply demonstrated. Following the dictum of “where there's a will, there's a way,” what all of this means is that a lot more of the terrorists of tomorrow are likely to be more technically proficient than those of today, allowing for the accumulation (even if through trial-and-error) of nuclear knowledge and skills amongst radicals. Finding gainful employment for the former weapons scientists of nuclear-armed states may no longer be nearly as effective as it is today, or at least it is unlikely to be sufficient. As an initial indicator of this trend, one needs look no further than the online materials produced and disseminated by the purveyors of jihad. While there are thousands of jihadist websites, only a small number deal with operational issues and there are but a handful of manuals and other documents that deal explicitly with nuclear weapons. An analysis of these texts by Sammy Salama²¹ has, however, revealed significant advances in the understanding of nuclear issues within the general jihadist community. Although even the most comprehensive of such texts, the 2005 “Nuclear Preparation Encyclopedia,”²² is riddled with technical errors and provides insufficient detail for the construction of a viable weapon, it evidences a significant improvement in quality over earlier texts that appeared in 2003-2004. So, while the average jihadi might not yet be able to access the knowledge

²¹ Sammy Salama and Lydia Hansell, “Does Intent Equal Capability? Al Qa`ida and Weapons of Mass Destruction,” *Nonproliferation Review* 12:3 (November 2005).

²² This manual first appeared on the *al-Firdaws* jihadi website in 2005 and consists of 287 pages divided into 14 chapters. The author is a jihadist calling himself Layth al-Islam (Lion of Islam) who claims to have spent two years surveying the open sources for information on nuclear physics - Layth al-Islam, “Nuclear Preparation Encyclopedia,” *al-Firdaws* (October 6, 2005).

required to build a bomb, he now knows a lot more about critical mass and nuclear warhead design than he did a few short years ago.

2. Several commentators have astutely argued that although al-Qa`ida ideologues and leaders are willing to launch a nuclear attack, they would demur for pragmatic reasons since they realize that such a horrendous act might drive away less radical members of the Ummah,²³ at a time when the number of supporters of the jihad is growing. They support this “they won’t fix it if it ain’t broke” analogy by emphasizing the non-monolithic nature of the contemporary jihad, by pointing towards the relatively small number of jihadist statements on WMD and by highlighting the fact that jihadists feel they need to justify the use of WMD in the first place. However, there is a different, less sanguine view of events. From this alternate perspective, the progression of jihadist statements described above represents the erosion, whether intentional or organic, of existing Islamic norms against mass killing on the scale that would result from a nuclear weapon. Evidence to support this view can be found in the distinct change of tone from characterizing nuclear weapons as defensive in nature in Usama bin Ladin’s early statements to portraying them as offensive weapons necessary for the jihad to make “the crusader enemy beg on his knee that he does not want more strikes.”²⁴ The upper limits on allowable casualties proclaimed by jihadists also seem to be on the rise. In 2002, Sulaiman Abu Ghaith, Usama bin Laden’s former official press spokesman, claimed the right for jihadis “to kill four million Americans,”²⁵ but only one year later, in his fatwa declaring the use of WMD obligatory, Nasir al-Fahd put the number of Americans that it is permissible to kill without further debate at 10 million.²⁶ The jihadist community continues to discuss both sides of this issue, as shown by the April 2007 debate on an al-Qa`ida-linked website,²⁷ but my point is that one cannot assume that jihadist planners will feel constrained by a nuclear weapon’s potentially alienating effects. After all, there is every indication that support for al-Qa`ida continues to grow despite the fact that the September 11 attacks killed thousands of people (including women and Muslims).
3. The most prominent Black Swan related to the evolution of nuclear terrorism would be technological. At present the one insurmountable obstacle for a would-be nuclear terrorist is the production of fissile material, which makes it necessary to acquire either weapons usable material or an intact weapon from a state source. While I am currently aware of no viable technology which would allow even the

²³ Jerry Mark Long. *Strategic Culture, Al-Qaida, and Weapons of Mass Destruction*. Science Applications International Corporation report prepared for Defense Threat Reduction Agency (November 2006), pp.24.

²⁴ Al-Qa`ida member Abu Muhammad al-Ablaj, quoted in James J. F. Forest. “The Final Act: Ideologies of Catastrophic Terror,” *Threat Convergence Plenary Paper*, Fund for Peace (November 2006), p.6.

²⁵ Middle East Media Research Institute. ““Why we fight America: Al-Qa`ida Spokesman Explains September 11 and Declares Intentions to Kill 4 Million Americans with Weapons of Mass Destruction” *MEMRI Special Dispatch Series No. 388*. (June 12, 2002).

²⁶ al-Fahd, *op. cit.*, p.8.

²⁷ The exchange occurred on the Islamist website *al-Firdaws*. See Middle East Media Research Institute “Is it Legitimate to Use Nuclear Weapons Against the West? A Debate on an Islamist Forum” *MEMRI Special Dispatch Series, No. 1538* (April 12, 2007).

most sophisticated of terrorists to enrich their own uranium without detection, there is always the slim possibility that a technological breakthrough sometime in the next decade or two might make indigenous enrichment feasible. If so, this could change many groups' calculations with respect to the efficacy of nuclear weapons. If nuclear weapons in this context act either as what a so-called disruptive or revolutionary technology as opposed to a sustaining technology,²⁸ (which *prima facie* indications suggest) then changes in terrorist behavior can be both swift and comprehensive, i.e., the transition to using or acquiring nuclear weapons as the strategic weapon of choice can be both sudden and permanent. Another Black Swan to consider, albeit a welcome one, would be a rapid decrease in the threat brought about by a moderation of the jihadist movement globally or the elimination of the ideological and operational leaders of this movement without the emergence of competent replacements.

Recommendations for Effective Public Policy Measures to Counter the Demand Side of the Threat

Within any society, there will always be some people dissatisfied with the status quo. A very small subset of these angry and alienated individuals may embark on violent, terrorist campaigns for change, in some cases aiming globally. An even tinier subset of these non-state actors with specific ideological, structural, and operational attributes may seek nuclear weapons.²⁹ The first line of defense on the demand side of the threat is therefore to identify our adversaries and detect their intentions to use nuclear weapons long before their plans can have any chance of success. For this we must rely on the services of our intelligence and law enforcement agencies. More than enough has been said about intelligence reform in recent years and I will not dwell on this topic except to say that while efforts to keep nuclear weapons and materials out of the hands of terrorists should continue, it is also worthwhile to pay more attention to the identity and behavior of the potential perpetrators themselves, as well as the web of active and passive facilitators who would be necessary for the success of any nuclear endeavor. Efforts throughout the government have been initiated to perform this task, but these often receive far less attention and resources than the latest technologies for detecting radioactive materials. A dedicated program of net assessment (using standardized threat assessment methods) to detect those groups and individuals of greatest concern would enable us to avoid the nasty surprise of a homegrown Aum Shinrikyo delivering a lethal package. Moreover, successful efforts in this regard will require much greater international collaboration in intelligence sharing, law enforcement, and prosecution – developments more likely to occur if global perceptions of nuclear terrorism threats converge.

²⁸ For more information, see, for example, Joseph L. Bower and Clayton M. Christensen. "Disruptive Technologies: Catching the Wave" *Harvard Business Review* (January-February 1995).

²⁹ Perhaps the most frightening possibility would be the development of technology or the dissolution of state power in a region to the point where a single disgruntled individual would be able to produce or acquire a working nuclear weapon. Since there are far more hateful, delusional and solipsistic individuals than organized groups in this world, the latter situation would indeed be deserving of the label of a nuclear nightmare.

A topic that has received no small amount of attention in recent years is the extent to which we can deter terrorist behavior.³⁰ In this regard, it is far from certain that those terrorists willing to resort to nuclear weapons could be deterred from using them by the threat of retribution.³¹ Yet the one saving grace is that terrorists cannot produce their own fissile material. This means that, except in the case of a direct assault on nuclear storage sites, those pursuing a nuclear weapon capability must rely on the assistance of others, whether these be government leaders, insiders at a nuclear facility, or illicit traffickers. It is these potential facilitators of nuclear terrorism whose actions we can deter. We must ensure that they continue to have sufficiently powerful disincentives that they refrain from actively assisting terrorists to acquire weapons, weapons-usable material or detailed technical knowledge. The most obvious way to do this is to credibly demonstrate that their participation in any part of the nuclear chain will be identified (which relates to my previous point) and that retribution will be swift and certain.³² This effort includes the United States maintaining high standards of nuclear forensics and attribution.

However, this approach is not the only side of the equation to which we must pay attention – we need to be cognizant that political and other actions by the United States and its allies can influence the calculations of potential facilitators, especially those who have an existing ideological affinity for the terrorist cause, but are not active participants. Bolstering international nonproliferation norms and taboos against the use of nuclear weapons and internationally vilifying terrorists who have attempted to obtain nuclear weapons may have little impact directly on the behavior of the terrorists themselves, but might go some way towards encouraging others (including criminals, states and scientists) to refrain from making it easier for terrorists to acquire nuclear weapons.³³ Also, before engaging in major new foreign policy interventions it would be worthwhile, as part of our considerations, to gauge their likely effects on the facilitator population. For instance we might seek to avoid or reorient those actions which would be likely to galvanize large numbers of Muslim facilitators into feeling that they are obligated to take a more active role in the jihad. As an example of the type of facilitation we want to prevent, we have reports of at least two Pakistani nuclear scientists who met with bin Ladin during his time in Afghanistan (prior to 9/11) to advise him about nuclear weapons. We should calibrate our actions where possible to ensure that such behavior remains the exception rather than the rule.

³⁰ For a detailed explanation see Lewis A. Dunn, “Can al Qaeda Be Deterred from Using Nuclear Weapons?” *Center for the Study of Weapons of Mass Destruction Occasional Paper 3* (Washington, DC: National Defense University Press, 2005) and Brad Roberts, “Deterrence and WMD Terrorism: Calibrating its Potential Contributions to Risk Reduction” *Institute for Defense Analysis Paper P-4231* (June 2007).

³¹ They may be deterrable by denial, in other words convinced that a nuclear attack would not succeed or would not yield the consequences they seek. See Roberts, op. cit.

³² It is interesting to note that sentences for those who have already been apprehended for illicit smuggling of nuclear or radiological materials have been rather modest, less than ten years for even egregious traffickers. Moreover, AQ Khan and his cohorts do not seem to have suffered any serious repercussions.

³³ One can argue that public awareness of nuclear weapons issues, especially among the younger generation, declined after the end of the Cold War.

Now I turn to recommendations that challenge us to expand our perspectives with regards to nuclear terrorism. In addition to remaining open to the possibility of Black Swans, including those already mentioned, we must unfortunately reacquaint ourselves with the Cold War notion of “thinking about the unthinkable.” The analytical and policy focus at the moment rests almost exclusively on the questions of whether terrorists will succeed in acquiring a nuclear weapons capability and how to prevent them from doing so. These are obviously key issues, but they should not distract us from considering additional important questions. For example, if a nuclear weapon is obtained by a particular set of terrorists, would they automatically detonate it or seek to employ it for non-explosive (i.e. coercive or deterrent) purposes? Also, what kind of precedent would a successful (or unsuccessful) nuclear attack set for future behavior by other groups? Another worthwhile issue to consider, suggested by Charles Blair,³⁴ is that if jihadists do eventually succeed in acquiring nuclear weapons, they would face many of the same command and control dilemmas as a state would, including the decision whether to predelegate to field operatives the authorization to detonate or, alternatively, whether to maintain centralized control (for example, by keeping key components with the leadership until shortly before detonation). The decisions of terrorists in this regard might play out very differently to those of states and could have vital implications for our policy response. For example, if we were to find out that al-Qa`ida has a nuclear weapon, should we immediately launch a preemptive strike to decapitate its leadership in the Federally Administered Tribal Areas of Pakistan (a logical option if their central command retains operational control of the weapon)? Or would such an action merely ensure the immediate use of the weapon by operational commanders with predelegated detonation authority, who might otherwise have delayed their attack and thereby given our security forces more time to interdict them? The answer might differ depending on exactly which group of jihadists obtains a weapon, but the point is that we should consider and analyze such issues and our options far in advance of the President receiving the news that terrorists have the bomb and we find ourselves in the midst of a crisis.

At a more fundamental level, we (quite thankfully) have little empirical evidence to guide us in dealing with a nuclear-armed non-state opponent – in social science speak we have a sample size of zero for variation in the dependent variable of nuclear terrorism. This means that we are essentially in the dark about the actual behavior a nuclear terrorist would exhibit and we have to resort to informed speculation based on what we know about how terrorists make decisions in general or how state actors have constructed nuclear policies in the past. However, it is possible that elements of the nuclear terrorism problem may not even be amenable to this kind of analysis. They may lie either in the domain of complex systems,³⁵ in which patterns can emerge and be perceived in retrospect but cannot be predicted, or the domain of chaotic systems, in which cause and

³⁴ Charles Blair. *Islamist Command and Control of Nuclear Weapons*. Center for Terrorism and Intelligence Studies. Unpublished report (2007).

³⁵ For an application of these concepts to the realm of terrorism, see Nancy K. Hayden, “The Complexity of Terrorism: Social and Behavioral Understanding Trends for the Future” in Magnus Ranstorp (ed.) *Mapping Terrorism Research: State of the Art, Gaps and Future Direction* (New York: Routledge, 2007).

effect cannot be discerned.³⁶ If a threat or potential threat like nuclear terrorism is situated in the complex domain, the better strategy is not to attempt to predict the specifics of an outcome, but rather to acquire information about the threat through a process of probing³⁷ or “spoofing” the system. Similarly, if aspects of the nuclear terrorism issue are part of a chaotic system (such as the possibility of a terrorist group stumbling upon a “loose nuke”), the best response may be to act proactively in order to restructure the environment so that dealing with the threat becomes more tractable.³⁸ We need to incorporate these ideas into our strategies for countering nuclear terrorism, beginning with an investigation into which aspects of the problem are amenable to traditional intelligence analysis and which aspects require novel, non-linear approaches.

Conclusion

Several commentators have produced somewhat startling estimates of the likelihood of nuclear terrorism (some suggest more than a 50% probability within ten years),³⁹ while others have been more conservative.⁴⁰ A significant portion of the likelihood of a successful use of a nuclear weapon by terrorists is obviously determined by supply side factors (access to intact weapons or weapons-usable material) upon which I will defer to my colleagues with greater expertise. So, although I will not offer a numerical estimate of the overall threat today, I will state my belief that, at least amongst certain of the more fanatic subsets of our terrorist adversaries, the motivation to use nuclear weapons against the United States certainly exists and shows no signs of diminishing within the coming decades. It can therefore be expected that, barring some dramatic change in either radical ideologies or the amount of fissile material worldwide, we will see additional attempts by terrorists to acquire and perhaps even use nuclear weapons on American soil.

I would like to thank the Committee once again for giving me the opportunity to share some of my thoughts with you today and I am happy to make myself available to discuss any of these issues in greater detail.

³⁶ At least since the work of Kurt Gödel, philosophers and mathematicians have known that truth in some systems cannot be attained. Such concepts have only recently, however, begun to enter the social sciences and policy community, with notions of formal complexity and “wicked” problems.

³⁷ Akin to the echolocation of a bat, “probing” involves taking positive action within a system with the express purpose of observing the reactions of other elements of the system and thus of gaining information which is not otherwise obtainable. An example within the realm of our discussion would be to covertly “leak” or inject a non-genuine, yet plausible and easy-to-make recipe for creating a nerve agent into jihadist circles. It could be constructed so as to provide specific signatures (such as a peculiar ingredient or process) that could be observed in the broader system. Counterterrorism authorities could then trace the movement of the recipe through jihadist virtual and physical networks, thus increasing their information about the dissemination of this CBRN knowledge, and also identify any would-be CBRN terrorists who might try to follow the recipe. Similar probes might be constructed to investigate nuclear terrorism.

³⁸ For an excellent summary of these dynamics, see C.F. Kurtz and D.J. Snowden, “The new dynamics of strategy: sense-making in a complex and complicated world” *IBM Systems Journal*, 42:3 (2003).

³⁹ Graham Allison, *Nuclear Terrorism: the Ultimate Preventable Catastrophe* (New York: Henry Holt, 2004).

⁴⁰ Matthew Bunn has placed the danger at 5% and David Albright at 1%. See J. Sterngold. “Assessing the Risk on Nuclear Terrorism; Experts Differ on Likelihood of ‘Dirty Bomb’ Attack” *San Francisco Chronicle* (April 18, 2004). The experts participating in the Lugar Survey, on average view the prospects of nuclear terrorism by 2010 as less than 17% and by 2015 as less than 30% - Lugar, op. cit., pp. 13-15.