1. Counter-terrorism is fundamentally concerned with countering ideas, theologies and political groups, whereas counter-proliferation involves the control of acquisition of technology, substances and expertise. Both, however, are concerned with preventing certain outcomes, but an under-explored area is how the nexus and synergy between these two worlds might be better employed in countering the possibility of a terrorist attack using chemical, biological, radiological or nuclear (CBRN) weapons.

2. The term CBRN may be preferable to the more widely-known one of weapons of mass destruction (WMD), as it has the advantage of being more explicit in differentiating between the different weapons included under the name. The latter term is also potentially misleading, as it concentrates upon the ‘mass destruction’ created as a consequence of attack, and it may be that only radiological or nuclear weapons have sufficiently destructive power to really qualify under the term. On the other hand, the term WMD is well recognized by the public and gains political attention as a result, and it may therefore be essential when analysing the CBRN threat.

3. All methods of CBRN terrorism are designed to cause mass casualties and/or disruption, and all are intended to express a particular motive or agenda. When looking at the possible scenarios for a CBRN terrorist attack, it is important to note
that there is evidence that chemical and biological terrorism has already been tried, and although there have not been any terrorist attacks using radiological or nuclear weapons, their use has been considered and justified by Islamic extremists.

4. The possibility of a CBRN terrorist attack and the mass panic that this would create has become a major cultural preoccupation in the West. However, it is possible that such an attack may not necessarily be a ‘transformational’ event, in the way that 9/11 transformed concepts of what a terrorist attack might be, but rather part of a process of habituation. We have, for example, seen chemical attacks become relatively common in Iraq, and the initial shock created has dissipated. Would this process of acclimatization be the case in the instance of a CBRN attack in a western city? If so, this may not be entirely a negative development, since the key aim of terrorist attacks is, of course, terror. A population less traumatized by attacks may be more resilient.

5. Although most discussions of CBRN terrorism tend to focus upon al-Qaeda, there are potential threats from other less radical and less well-resourced organizations. Timing is also significant, as the planning for a particular event may take years, meaning that understanding motivations becomes paramount in order to identify potential threats. It is important to look at intangible factors and the possibility that, along with traditional targets such as major cities, ethnic or national symbols such as sporting events or national embassies may all be potential targets for attack.

6. International cooperation is essential in order to counter CBRN terrorist threats. This cooperation should not just be focused upon a US-led effort but instead should be a collective global effort. The United States does, however, play an important and valued role and its contribution is essential in all efforts to counter the threat posed by CBRN terrorism. It may well be that the United States adopts, by implication a natural leadership role.

8. Are certain terrorist ideologies, theologies and/or strategic goals generically predisposed to CBRN weapons? Why do particular groups such as al-Qaeda seek to acquire them? The nature of terrorist attacks has changed from the terrorism
witnessed in 1980s. The events of 9/11 have generated a new brand of terrorism, in which terrorist groups are prepared to inflict mass civilian casualties. This type of terrorism has been repeated in 2002 in Bali, Madrid in 2004, Mumbai 2006 and repeatedly in sectarian violence in Iraq. The question we need to ask is how likely are terrorist groups to use CBRN when other methods may be comparatively simply?

9. Over the past 25 years terrorist attacks have reliably caused injury, death and chaos, mainly through conventional methods. Exceptions to non-CBRN use have been Aum Shinrikyo’s CBRN experiments with anthrax and sarin in the mid 1980s, and the mailing of anthrax-contaminated letters in September/October 2001. Terrorist organizations now recognise that the use of CBRN can disrupt, complicate emergency services ability to respond, provoke mass media interest, concern the public and put political pressure on target governments.

10. It should also be borne in mind that mass casualty attacks may not involve CBRN, and CBRN use may not result in mass casualties. Whilst some forms of CBRN have the potential of causing mass casualties, the more likely applications will not necessarily result in this. CBRN may therefore be useful to terrorist groups primarily as a psychological weapon rather than a destructive one. Indeed, for terrorists, CBRN use introduces significant levels of difficulty in acquisition and in achieving mass casualties. Nevertheless, there is an increasing potential for terrorist groups to use CBRN ‘hybrids’ such as a combination of explosive and CBRN material to cause mass casualty/ mass effect.

11. What then is the likelihood of a CBRN mass casualty attack by an extremist group such as Al Qaeda? To date, intelligence shows little indication that groups such as Al Qaeda have an interest in acquiring or operating a sophisticated CBRN agent. Nor is it likely that any state or organized crime group would regard it as prudent to provide a terrorist group with CBRN material. Nonetheless, evidence has been found that Al Qaeda had been preparing and contemplating a nuclear or radiological attack, but this must also be balanced against the recognized problems created by storage, transportation and employment of a CBRN device. This is a complex process and potentially lethal to a user. In addition to this there is the heightened possibility of detection by authorities before a CBRN capability could be
employed. Due to these problems, radiological and nuclear attacks seem unlikely, and it is recognized that there is a higher probability of terrorist use of chemical weapons.

12. When looking at terrorist motivations, we also need to consider the impact of group psychological pressure, which can remove more usual rational actor potential. The groups most likely to contemplate mass casualty CBRN attacks are probably those with extreme religious, anarchist, right wing or cult beliefs. In particular, groups who believe that extreme measures are needed to defend Islam from the west, with an ideology of dehumanization, or those seeking blind revenge, will be drawn towards CBRN weapons.

13. Such is the psychology of terrorist groups that might predispose them to see CBRN weapons, but given the strong pattern of terrorist reliance on bombs and bullets, what technological advantages do non-conventional weapons have? The answer to this is readily available, particularly in the field of chemical weapons: these are the ‘low hanging fruit’. In other words, they are readily available and have the potential to cause mass effect.

14. There are two types of agents. Classic chemical warfare agents are readily available from most scientific labs, can be easily dispersed and could be used in a public place such as a shopping mall. Such attacks are present difficulties for the police and first responders, and for this reason these agents appeal as weapons of terror. The second type, industrial chemicals, involves a real possibility of large industrial plants being targeted by an attack. Information about the location of these sites is readily available over the internet, security on these sites can be minimal, and it is very difficult to police the sites due to their large number, dispersion and ease of accessibility. Attacks on these sites could cause considerable casualties as they are large and the possibility of contamination is high. Any attack requires minimal amount of training to orchestrate.

15. The growth and migration of industry to China, India, South Korea and the Middle East where regulatory measures are less stringent exacerbates this problem. New technology also makes the possibility of an attack more likely and easier as
there are more opportunities for individuals to gain training in turn creating a broader pool of technically skilled recruits for terrorist groups.

16. Turning to the threat of bio-terrorism, there are a huge number of agents to consider, including traditional agents such as naturally occurring micro-organisms or toxins with the potential to be weaponised; enhanced agents such as antibiotic resistant bacteria; modified traditional agents; previously unrecognized pathogens which are naturally occurring in origin yet may be a national security threat; and novel pathogens engineered in the laboratory.

17. The threat is compounded by the fact that all life science research is dual use; research with a legitimate scientific purpose can almost always be misused to pose a threat to public health and or national security. As with all elements of the CBRN terrorist threat, the internet is important, as knowledge about biological materials and how to use these materials is readily available. As the technology is more available, so the likelihood of use becomes heightened. Infectious diseases will always be with us and because of this there is always the possibility of biological agents escaping by accident.

18. As yet there is no evidence that states have transferred biological materials, technology or complete delivery systems to terrorist groups or non-state actors. Despite this there is still a large amount of concern as to the provision of knowledge to terrorist organisations by independent actors. This concern is compounded by the recognition that in many technologically advanced countries the employment market is overcrowded with qualified scientists each competing for employment; this situation provides an incentive to scientists to share their information with non-state actors/ terrorist groups.

19. Turning to nuclear and radiological weapons, some argue that of all the weapons categorized under the heading CBRN, these are least likely to be used in a terrorist attack, as the materials are difficult to manufacture or obtain, highly dangerous, carry a high risk of contamination and are difficult to disperse. This is particularly the case with nuclear weapons, which therefore pose a low-risk but high-consequence threat, and so of the two, radiological materials pose the greatest risk.
Radiological weapons are less difficult to obtain and their use could still induce mass panic amongst the general public.

20. The role of networked organisations in supporting contemporary terrorism has acquired renewed prominence since 9/11 there has been a rise in networked organizations, and use of the internet in such networks is prominent. Today, virtually every terrorist group has an internet presence, and websites increase daily. The internet is seen as a key vehicle for the radicalization of violence. There are a variety of views as to how to confront this phenomenon and there is considerable debate as to whether it is better to monitor this activity or shut it down as any limits to the provision of information would test civil liberties.

21. Terrorists have also changed their financing methods over time. Post 9/11, there has been less use of the formal sector as the financing of cells has been through petty crimes, and the Jihadi movement has been financed through al-Qaeda. The experience of 9/11 reveals that much of financing for the attacks came from US bank accounts. Terrorists use a variety of mechanisms to raise and move funds. These range from state sponsorship through to kidnapping and extortion, credit card fraud through to charitable donations. Money is stored in formal bank accounts, informal value and transfer systems, trade diversions or cash. Cash has become the primary mechanism for the transfer of funds with there being less evidence of money being exchanged through financial markets.

22. To date, the countering of this phenomenon has been based almost solely on financial institutions, and there have been significant misunderstandings and broad generalisations regarding network activity. Previous assessments of terrorist financing have been wrong: terrorist networking mechanisms are continuously evolving and transforming as their organizations are finding new ways of using the internet and transferring funds. As a result, counter-terrorism efforts need to change and adapt to face this new challenge. Efforts should now be made to change and produce new evidence based analysis. There is consensus that there still needs to be progress in enhancing these norms and action should still be taken to track down and confiscate the financial assets of individuals or entities.
23. The case of the AQ Khan network can illustrate what nuclear black markets mean to the trade in nuclear related expertise, technologies, components or material that is being pursued for non-peaceful purposes, mostly by covert or secretive means. This trade is not necessarily illegal, but is designed to exploit existing loopholes in national export regulations.

24. Proliferation networks are not hierarchically structured, and the Khan network evolved over time from a state-controlled enterprise to a largely private criminal one. AQ Khan could not be characterised strictly as either a government-sponsored representative or private businessman acting independently; he was both. Many of his dealings were private business transactions rather than government ones. In conducting his business, moreover, it is hard to separate Khan the individual from the global network he led. He was the deal-maker, but often the network appeared to act autonomously, driven as much by Khan’s business partners as by Khan himself.

25. In assessing AQ Khan’s operation and similar black-market operations in Iraq, Pakistan and Iran, it can be concluded that all relied on similar methods of black market procurement. These methods included the systematic use of embassies abroad and sending material home through diplomatic pouches; a high price paid to all suppliers; keeping a step ahead of export controls; critical components hidden within a long list of useless material; multiple connections and buyers for a given item; the use of front companies; falsifying end users to evade national export controls; multiple intermediaries and transshipment points to obscure the end user; and the involvement of fellow nationals living overseas, and extensive use of friends and contacts.

26. The Khan enterprise was unique in its ability to provide nearly the entire array of materials and services required to produce highly-enriched uranium. In seeking to pre-empt proliferation trends in the future, concerned governments should anticipate new ways in which black market suppliers may integrate their services. Khan’s actions blurred the lines distinguishing private criminality from state authorized activity. This should be borne in mind when addressing future threats. The Khan enterprise demonstrated the use of advancements in technology and the difficulty
faced by the international community in countering the ease with which international arms traffickers can now add CBRN technology to their list of weapons for sale.

27. How can counter-proliferation regimes be better adapted to non-state actors and their networks? The counter-proliferation community needs to consider policies that offer the best chance to flexibly exploit the strengths of current and new partnerships, and allow continuous transformation and retooling of capabilities, people and processes. Some argue that there is a need to work closely with the private sector and local governments to manage the WMD terrorist threat, to the point where a terrorist would be relatively disappointed by the cost of doing business and by the impact of their attacks. Initial measures need to be accelerated. In particular there is a need to develop and practice effective risk resolution processes and to put into place and exercise ‘red light- green light’ economic zones. Counter-proliferation must act in a dynamic and prioritized way, and UN Resolution 1540 may present a real opportunity to work with and inform industry, the business community, academia and the public. This is recognized to be critical but not easy.

28. However, most of the initiatives on CBRN terrorism tend to be evaluated in terms of the nuclear problem. The global community needs to differentiate between chemical, biological, nuclear and radiological weapons, as this may produce conclusions or implications for policy implementation. An example of this perceived focus upon nuclear terrorism is the PSI, which serves as a useful initiative to address nuclear issues but has less value with respect to chemical and especially biological weapons.

29. When addressing the preventative measures against chemical and biological terrorists, there is a need to focus less upon the development of materials and equipment and more upon the spread of commercial and scientific knowledge. There is also a need to re-examine the difficulties encountered in implementing preventative measures. Some argue the best way to counter this is to look at chemical and biological weapons separately.

30. How well connected are counter-proliferation and counter-terrorism agencies in and between governments? CBRN terrorism involves both high-impact and low-
impact events, and in order to address potential terrorist threats, a ‘three dimensional analysis’ is required. This will entail clear understanding of vulnerability and of both high and low impact scenarios, in order to find the most efficient way to respond to threats. In addition, the international community’s response required further elaboration and study. Above all, it is essential to respond to public perceptions, as the societal impact and resilience of the public against CBRN terrorism is the hardest to quantify. This is an area in which further work needs to be done.

31. Inside government, the security, policy and law-enforcement communities are often working separately. Outside of government, there are many organisations involved in countering terrorist use of CBRN. To be successful, it is essential to involve all groups in the same discussion. Analysts need to consult NGOs, academia, the private sector, the general public and the media. Government-to-government relations depend upon different relationships such as allies and partners, military coalitions and trade alliances. It is important to be aware of the advantages that other groups can bring. There are always ways in which communities can help each other and the notion of working within regions carries much potential.

32. Counter-terrorist and counter-proliferation organizations need to develop an understanding and working practices that go beyond threat analysis. Both communities need to understand the motivations of terrorist leaderships and to understand the support infrastructure within terrorist organizations. Analysts should be establishing detailed information about groups, why they opt for certain courses over others, and who is advising them. This is not an easy task as it is very difficult gain accurate information about the ideology, intent and actions of terrorists. It is hard to differentiate between what is done and what is said, as much of the intelligence information is received in retrospect.

33. Outside government, in the wider international community, it is increasingly important to correctly identify where current practice is effective and where it is lacking. At the moment, it appears that once events are in motion, the international community is relatively good at grasping the immediate nature of the attack, and consequently in the development of consequence modelling and vulnerability assessments. The question of attribution is less well-developed. It is possible to
identify culprits, but not always to understand how they fit into a larger context. The question of understanding motivation and intent is more poorly-developed still. There is a need to differentiate between what is technically feasible with that which is likely to occur, and to move away from a cultural bias as to what we expect terrorists to do and what we believe will happen again.

34. There is no single answer in determining motivations and intent, but a number of potential pitfalls can be identified. A key pitfall is complacency, or failing to move out of the comfort zone of looking only at what we are familiar with, and to look at intelligence information from all groups. A second is cultural bias, or the assumption that terrorists will act along certain definable lines; a third is paranoia, in the sense of failing to recognize that vulnerability and threat are not the same.

35. The nexus between counter-terrorism and counter-proliferation has been under-analysed. For this reason, there is now a need to look in greater depth at the role of counter-terrorism and non-state actors to determine what the CT/CP strategy will look like. Who are the perpetrators and what would the consequences of a CBRN attack be to force us to take action?

37. It is important for the international community to avoid assuming that terrorists will follow the taboo against CBRN use as they have in the past. If we can acknowledge the nexus between counter-terrorism and counter-proliferation we may be able to do something about it. Availability of tools and technologies makes this relationship difficult. Not much material is required to orchestrate a CBRN attack, a fact compounded by the dual use nature of all life sciences. Anti-Western terrorism seeks to provoke a collapse of the West.

38. It is both essential and vital to ensure that the public have confidence in governments’ actions and that the public play an active part in defending against terrorism. The concept of ‘deterrence by denial’ is a softer approach, which can be adopted along with other strategies. It is essential to have faith in the resilience of the public and to encourage the public to carry on as normal. It is believed that this is the only way to remove the potency of any potential attack. A future strategy needs to be as security focused as possible whilst also making it as democratic as possible.
39. There are three main concerns for future strategy, namely:
   a. Worst-case analysis and the tendency to rubbish it. The impact of the media’s presentation of events should not be dismissed or underestimated.
   b. The public must be informed of counter-terrorism/counter-proliferation strategy. This is a difficult task as much of the information known is based on classified government intelligence information.
   c. Policy makers need to engage with academia. Some argue that academics are more in touch with the public than the policy community.

40. Above all, the international community needs to produce an coordinated counter-proliferation/counter-terrorism strategy which offers a controlled and proportionate response. Such a strategy must have common standards and definitions and intelligence sharing. There is a need to build upon existing counter-proliferation norms and that it may be necessary to adopt a more confrontational approach and establish a robust self help organization to enhance existing norms. In identifying perpetrators, we need to remember that absence of evidence is not evidence of absence.

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June 2007

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