

Global Terrorism and Nuclear Proliferation after 9/11 (ARI)

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Theme: Arguably, the more likely route by which terrorists might gain access to nuclear or other WMD capabilities is not through the possible collaboration between 'rogue states' and terrorist groups but through theft from improperly-secured sites in countries like Pakistan.

Summary: The two main routes by which a terrorist group could acquire a nuclear weapon are: (1) *transfer*, that is, the deliberate hand off of a weapon from a nuclear state to a terrorist group; and (2) *leakage*, an unauthorised transfer or theft of a weapon from an inadequately secured site. Although after 9/11 the nightmare scenario focused on the possible collaboration between 'rogue states' and terrorist groups, this paper argues that, in fact, the more likely route by which terrorists might gain access to nuclear or other WMD capabilities is through the accidental *leakage* (that is, theft) of dangerous materials and technologies from inadequately-secured sites, primarily in Russia and Pakistan.

Analysis: One month after the 9/11 terrorist attacks on New York and Washington, the US government received intelligence from a CIA source codenamed 'Dragonfly' that al-Qaeda had somehow acquired a 10-kiloton nuclear weapon from the former Soviet arsenal and smuggled the device into New York City. The White House reportedly ordered Nuclear Emergency Support Teams to the city to search for a possible weapon using mobile radiation detectors. The federal government did not notify New York's Mayor, Rudolph Giuliani. Vice President Cheney and several hundred federal employees were evacuated from Washington. According to Allison, the US government found the intelligence 'credible for good reasons. Did former Soviet stockpiles include a large number of 10-kiloton weapons? Yes. Could the Russian government account for all its nuclear bombs? No. Could al-Qaeda have acquired one? Yes. Could it have smuggled a nuclear weapon through border controls and into a US city? Yes'. Though this intelligence report thankfully turned out to be false, it was in accord with the fear of many US officials immediately after 9/11 that al-Qaeda would attempt a second act of catastrophic terrorism.

After 9/11, the conventional wisdom was that 'everything has changed' and 'the world will never be the same'. Nonetheless, for all the talk of change, the events of that day did not alter the structure of international relations. Indeed, the attacks led not to a transformation of the pre-9/11 international order but to its resounding *affirmation*. That was reflected in the emergence of a broad international coalition against al-Qaeda in particular and terrorism more generally.

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But although 9/11 did not change the international system, it did precipitate a redefinition of threat. The Bush Administration declared that the greatest threat to the US was posed by 'the *nexus* of terrorists and weapons of mass destruction'. This linkage between terrorism and nuclear proliferation was reinforced by the fact that the primary countries of proliferation concern (Iran, Iraq, Libya, Syria and North Korea) had also been designated state sponsors of terrorism by the US Department of State.

Though the 'nexus' concept originated in the decade before 9/11, it drove the US policy debate after 9/11. The nightmare scenario focused on the possible collaboration between 'rogue states' and terrorist groups. A White House report in September 2002 declared that the threats posed to the US in the post-9/11 era derived from the very character of these new adversaries –'unpredictable rogue states' and terrorist groups that cannot be deterred–. The White House document asserted that mere possession of weapons of mass destruction (or WMD) by 'rogue states' was unacceptable because their unstable, radical leaders might deliberately *transfer* or hand off such weapons to terrorist groups. That scenario was central to the Bush Administration's case for a preventive war in Iraq to disarm the Saddam Hussein regime of its unconventional arsenal. Yet, as I will discuss, the more likely route by which terrorists might gain access to nuclear or other WMD capabilities would be through the accidental *leakage* (that is, theft) of dangerous materials and technologies from inadequately-secured sites, primarily in Russia and Pakistan. Let me provide some historical context to our present debates and concerns.

Before the mid-1990s, the orthodox view was that terrorist groups were *not* motivated to carry out operations with the explicit goal of inflicting maximum casualties. Based upon empirical evidence from the 1970s and 1980s, the widely held belief among Western experts was that national self-determination or ethnic-separatist groups (like the IRA) that employed terrorism thought that mass-casualty attacks would be counterproductive because they would generate a popular backlash against their cause. Even radical groups, such as the Red Brigades in Italy and 'professional' terrorists, such as Carlos 'the Jackal' and Abu Nidal, conformed to this 'traditional' model of terrorism in which extraordinary means were incompatible with limited ends. The conventional wisdom was articulated by Bryan Jenkins of the RAND Corporation who famously observed: 'Terrorists want a lot of people watching and a lot of people listening and not a lot of people dead'.

Developments in the 1990s did not overturn that conventional wisdom but did call its underlying assumptions into question. A major impetus behind this reassessment were three terrorist attacks not linked to a concrete political agenda and explicitly intended to inflict maximum civilian casualties: (1) in February 1993 the attack on the World Trade Center, when Islamic radicals bombed one tower in the hope of toppling it into the other; (2) in March 1995 the Japanese cult Aum Shinrikyo attacked the Tokyo subway system with nerve gas, killing a dozen persons and injuring an additional 3,700; and (3) in April 1995 when two anti-government, Christian white supremacists detonated a truck bomb to destroy the US federal office building in Oklahoma City, killing 168 people. Terrorism expert Bruce Hoffman observes that two other unsuccessful terrorist attempts, which failed to generate public attention precisely because they *were* unsuccessful, augured the new era of mass-casualty terrorism –an abortive terrorist plot in 1986 to bring down a Pan Am jet, hijacked in Karachi, in downtown Tel Aviv, and a failed attempt by the Armed Islamic Group in 1994 to likewise crash an Air France jet, hijacked in Algiers, into the Eiffel Tower–. The increasing lethality of terrorism promoted the emerging linkage of the terrorism and proliferation agendas. This new focus was evident in the controversial US cruise missile strikes in 1998 on the al-Shifa pharmaceutical plant in Khartoum, Sudan, in

retaliation for the bombing of the US embassies in Kenya and Tanzania by an al-Qaeda cell; the Clinton Administration alleged that the plant was controlled by the bin Laden organisation and was intended to produce chemical weapons.

In 1999 a congressional commission concluded that 'previous beliefs about the restraint on terrorist use of chemical, biological, radiological, and nuclear devices may be disappearing'. The commission argued that 'the most likely' terrorist groups to use WMD were 'fundamentalist or apocalyptic religious organizations, cults, and extreme single-issue groups...'

But there is a gap between the terrorists' *intention* and their ability to acquire WMD *capabilities*. In the few recorded cases where terrorists attempted to use WMD, technical and environmental hurdles impeded the effective dissemination of toxins. For example, Aum Shinrikyo failed on nine occasions to carry out a bio-attack because either the botulinum agents they grew were not toxic or the aerosol sprayers used to spread anthrax clogged and became inoperative. Moreover, when Aum switched over in frustration from bio-agents to nerve gas, the terrorist group resorted to plastic trash bags with poked-out holes to disseminate the sarin gas in the Tokyo attack. The October 2001 anthrax attack on the US Senate and two other sites killed five people and was an additional psychological blow to a nation that only a month earlier had suffered 9/11. Most ominous about the attack was that the toxic agent was highly sophisticated in design. It was absolutely not the work of an amateur, though its mode of dissemination via the postal system limited the number of persons exposed.

This experience points to the important distinction that must be drawn between WMD terrorism and catastrophic terrorism. There has been a tendency in our public debate to use the two terms synonymously. Yet *conventional* attacks, not involving WMD capabilities, can have catastrophic consequences. A former US official described the hijacked commercial airliners loaded with jet fuel that struck the World Trade Center towers and the Pentagon on 9/11 as a poor man's cruise missiles with chemical warheads.

A terrorist attack using a weapon of mass destruction is less likely than a conventional attack. And it would be far less lethal than a WMD attack carried out by a state. Again, the congressional commission of 1999 concluded: '[The] capabilities required to annihilate large numbers of persons –that is, to achieve a genuinely mass-casualty chemical and biological weapon or nuclear/radiological device– appear, at least for now, to be beyond the reach not only of the vast majority of existent terrorist organizations but also of many established nation-states'. That assessment could change if terrorists gain access to technologies, particularly in the biological realm, that would permit the effective dissemination of a toxin over a broad geographical area. In the absence of such a capability, the impact of a chemical, biological, or radiological attack on the US homeland would likely be economic and psychological.

Facing difficult barriers to manufacturing their own WMD, terrorists would more plausibly strike vulnerable *conventional* targets to achieve a truly mass-casualty attack. Among the many such soft targets are chemical plants on the outskirts of major American and European cities and the railroad tank cars that pass through urban areas loaded with dangerous chemicals. Two particular chemicals used for widespread industrial purposes are phosgene and chlorine, which were employed during World War I to produce chemical weapons. A recent study extrapolating from that World War I experience to the present

noted: 'Whereas a chemical attack during World War I used a few hundred pounds of lethal chemicals, a toxic release by terrorists could involve hundreds of *tons* of material with a death toll in the range of 100,000 to 300,000 people, more than would be killed by a low yield nuclear weapon'.

Nuclear terrorism is most likely to take the form of so-called 'dirty bombs' (also referred to as radiation dispersal devices, or RDDs). The immediate casualties from such an attack would result from the blast effect of the device's conventional explosive rather than its radioactive core. The number of victims resulting from a dirty bomb's radiological effects would depend on a number of factors. The most significant is the ability of the device to aerosolise the radioactive material –that is to turn it into a fine spray in order to cause further human contamination through dissemination by wind–. Though casualty estimates derived from models of 'dirty bomb' attacks vary significantly, they are of a limited scale. Indeed, a report from the US National Defense University concluded, 'contrary to popular beliefs, RDDs are not weapons of mass destruction'. The consequences of a 'dirty bomb' attack would be primarily economic, social and psychological, as local, state, and federal governments undertake a lengthy and expensive clean-up. Civilians would likely avoid areas they consider contaminated even when that clean-up process has been completed.

Though the acquisition of WMD capabilities poses a challenge, terrorist groups remain strongly interested in getting their hands on WMD. According to US intelligence 'nearly 40 terrorist organizations, insurgencies or cults [that] have used, possessed, or expressed an interest in chemical, biological, radiological, or nuclear agents or weapons...'. Osama bin Laden declared that obtaining nuclear weapons is a 'religious duty'.

The former British Prime Minister Tony Blair declared that the only constraints on al-Qaeda were practical and technical, not political or moral. What then are the routes by which a terrorist group could acquire a nuclear weapon? Before turning to the two main pathways, let me briefly address a third route that receives much popular attention: the possibility that a terrorist group could actually construct its own nuclear weapon. There is a widespread belief the only real constraint on a non-state actor's ability to construct a nuclear weapon is mere access to nuclear material. Many experts argue that terrorists could build a bomb (such as that dropped on Hiroshima) based on illicitly obtained highly enriched uranium. But as nuclear physicist and former weapons designer Stephen Younger authoritatively writes in his recent book, *The Bomb: A Short History*: '[N]uclear weapons development still requires the resources of a nation-state'.

So putting that possibility aside, the two main routes by which a terrorist group could acquire a nuclear weapon are: (1) *transfer*, that is, the deliberate hand off of a weapon from a nuclear state to a terrorist group; and (2) *leakage*, an unauthorised transfer or theft of a weapon from an inadequately secured site.

The 'nexus' concept –that is, the linking of nuclear proliferation and terrorism– was central to the Bush Administration's case for preventive war to topple the Saddam Hussein regime. Vice President Cheney and other Administration officials accused Saddam of having had direct links to al-Qaeda. The commonly attributed motivation for a 'rogue regime' to hand off a nuclear weapon or technology to a terrorist group is a convergence of strategic interest between them. Yet even when a state-sponsorship link exists, as between Iran and Hezbollah, major constraints exert a powerful deterrent effect. For the transferring state, such an illicit transfer would run the extraordinary risk of a devastating US retaliatory response, if discovered.

The only strategic interest that could plausibly justify the risk of a state to non-state transfer would be regime survival itself. Consider the controversial National Intelligence Estimate of October 2002 on Iraq. It concluded that Saddam Hussein, 'if sufficiently desperate... might decide that the extreme step of assisting the Islamist terrorists in conducting a [WMD] attack against the United States would be his last chance to exact vengeance by taking a large number of victims with him'. Ironically, the course upon which the Bush Administration was about to embark –that is, a preventive war of regime change driven by the post-9/11 nexus of proliferation and terrorism– was the very scenario in which a 'desperate' Saddam Hussein would most plausibly hand off unconventional capabilities to a terrorist group.

Another possible motivation for WMD transfer to a non-state actor, cited with respect to impoverished North Korea, is economic. North Korea's status as an economic basket case with an advanced nuclear weapons programme creates a chilling conjunction of dire need and dangerous capabilities. Past experience makes it a cause of concern since the Kim Jong Il regime has relied on illicit activities –from passing counterfeit money to selling drugs and ballistic missiles– to maintain power. North Korea has engaged in covert nuclear commerce on the *state-to-state* level: with Syria, a prototype nuclear reactor that Israel bombed in September 2007; and with Burma, where suspicions of nuclear cooperation has prompted the Obama Administration to express growing concern. As a former US official warned, a desperate, economically destitute North Korea 'could be willing to sell anything [to anyone] if the price is right'.

Though the deliberate *transfer* scenario focused on Iran and North Korea has dominated the post-9/11 security debate, the more likely route by which terrorists might gain access to nuclear or other WMD capabilities would be through unintended *leakage* of dangerous materials and technologies from inadequately secured sites. This concern centres primarily on two countries –Russia and Pakistan. Russia has an enormous legacy nuclear force and infrastructure from the Cold War–. Pakistan is rapidly expanding its nuclear arsenal. Incredibly, Pakistan will likely overtake the UK to become the world's fifth nuclear power behind the US, Russia, China and France. Moreover, with China's announced plan to provide to two civilian nuclear-power reactors to Pakistan, the scope of the potential leakage problem will expand dramatically as Pakistan increases its production of fissile material. In 2004, the existence of a nuclear smuggling ring headed by A.Q. Khan, the so-called father of Pakistan's nuclear weapons programme, was publicly confirmed. In a tearful 'confession' on Pakistani television, Khan stated that his network had transferred nuclear components to Iran, Libya, and North Korea over a 15 year period, but that the government had not authorised these illicit activities.

But even more disturbing than the leakage from the A.Q. Khan network to unpredictable states was a reported meeting of Pakistani nuclear scientists with Osama bin Laden only weeks before 9/11. The scientists were supporter of the Taliban's ultra-orthodox version of Islamic rule and jihadist causes, and they expressed the belief that Pakistan's nuclear capability is 'the property of the whole Muslim community'. The episode underscored al-Qaeda's driving intention to carry out mass-casualty attacks employing still more powerful unconventional weapons.

The Islamabad government responded to the embarrassing revelations about the Khan network by instituting additional measures to ensure the physical security of the country's nuclear stockpile against theft and unauthorised use. When questioned about the threat of

Pakistani nuclear weapons falling into the hands of the Taliban or al-Qaeda, President Obama expressed confidence that 'we can make sure that Pakistan's nuclear arsenal is secure, primarily... because the Pakistani army... recognizes the hazards of those weapons falling into the wrong hands. We've got strong military-to-military consultation and cooperation'. That assurance notwithstanding, Stephen Cohen, a Pakistan expert at the Brookings Institution, warned that the system of nuclear safeguards 'could be circumvented in a determined conspiracy'.

Since 9/11, the Cold War concept of deterrence has been revised to address the threats of a new era. The principal routes to nuclear acquisition by a terrorist group –*transfer* and *leakage*– have been countered by updated variants of traditional deterrence. They are *deterrence by punishment* and *deterrence by denial*.

Though the transfer scenario drove the US security debate after 9/11, the Bush Administration did not issue a deterrent threat until the North Korean nuclear test in October 2006. President Bush declared that the US 'would not tolerate' North Korea to separate plutonium from its research reactor that had been the focus of US-North Korean negotiations. But the Kim Jong Il regime flouted that notional 'red line' without consequence. Through its reprocessing of nuclear fuel rods to separate plutonium, North Korea greatly increased its stock of weapons-grade fissile. Only after North Korea actually conducted a test and became a self-proclaimed nuclear weapon state did President Bush enunciate a declaratory policy of deterrence by punishment: 'The transfer of nuclear weapons or material by North Korea to states or non-state entities would be considered a grave threat to the United States, and we would hold North Korea *fully accountable* for the consequences of such action'. While Bush's statement specifically referenced North Korea, the Administration subsequently broadened that formulation into a general policy. Yet the difficulty of enforcing red lines was evidenced in 2007, after the North Korean nuclear test and the Bush Administration's deterrent threat, when Pyongyang conducted a *state-to-state transfer* with Syria by providing a prototype nuclear reactor. That Syrian reactor site was bombed by Israel in September 2007.

The Obama Administration's *Nuclear Posture Review* of 2010 included a verbatim repetition of the Bush policy on transfer: 'Renewing the US commitment to hold fully accountable any state, terrorist group, or other non-state actor that supports or enables terrorist efforts to obtain or use weapons of mass destruction, whether by facilitating, financing, or providing expertise or safe haven for such efforts'. But what precisely does 'fully accountable' mean in practice? To the dismay of arms control proponents who hold that the sole purpose of nuclear weapons should be to deter other states' nuclear weapons, the Obama Administration's *calculated ambiguity* left open 'the option of using nuclear weapons against foes that might threaten the United States with biological or chemical weapons or transfer nuclear material to terrorists'. An alternative to calculated ambiguity would address the post-9/11 concerns about North Korea and Iran by establishing an explicit red line: the deliberate transfer of WMD capabilities by a *state to a non-state actor* would trigger a non-nuclear, regime-changing response from the US. Such a stance, which goes beyond current US declaratory policy, could prove an effective form of *deterrence by punishment*. This policy would, of course, complement international efforts to prevent hostile states from acquiring nuclear and other WMD capabilities in the first place.

The vast majority of work done in the nonproliferation area to counter nuclear terrorism falls under the rubric of *deterrence by denial*. These measures comprise a wide range of activities: export controls to limit access to technology; physical security at sensitive sites to lockdown fissile material to prevent illicit diversion. A cornerstone of this strategy has been the Cooperative Threat Reduction initiative, commonly referred to as the Nunn-Lugar programme, which was established in 1991 in response to the proliferation dangers created by the breakup of the Soviet Union. Under the Nunn-Lugar programme, the US has provided financial assistance to the Soviet successor states to secure weapons-grade fissile material and to redirect thousands of scientists and engineers from WMD-related to civilian work. The Obama Administration has proposed expanding this approach beyond its original focus on the former Soviet Union to other regions worldwide. The global lockdown of nuclear materials will be the focus of the Seoul Nuclear Security Summit in 2012. Another important aspect of deterrence by denial is the interdiction of contraband cargoes containing WMD technologies through the multinational Proliferation Security Initiative, of which Spain is a member.

A highly contentious issue relating to nuclear leakage is whether, as with transfer, potentially negligent states, such as Pakistan, should be held 'fully accountable'. Technical advances in the area of nuclear forensics –so-called 'attribution' technology– will increasingly permit experts to determine the *source* of fissile material should an attack occur. Toward that goal, the Bush Administration established the National Technical Nuclear Forensics Center within the Department of Homeland Security in 2006. According to the Department of Homeland Security, 'Nuclear forensics may support attribution efforts that serve to bolster US defenses against nuclear threats, across a wide spectrum, by *encouraging* nations to ensure the security of their nuclear and radiological materials or weapons to help prevent unwitting transfers to third parties through loss of control'.

But should states be encouraged or even threatened to safeguard nuclear materials? A highly controversial proposal would extend the deterrent threat to these countries by enunciating a policy of 'expanded deterrence' under which the country of origin of the fissile material used in a nuclear terrorist strike on the US homeland would be held responsible. Yet despite improving attribution capabilities, the US might be unable to determine the source of the material after an attack, and would not want to retaliate against a negligent state, such as Russia, which has a large nuclear weapons stockpile of its own. Furthermore, opponents of this policy of so-called 'expanded deterrence' argue that 'threatening retaliation against countries like Russia and Pakistan in response to terrorist attacks stemming from lax security practices is unwise. It undercuts efforts to work cooperatively with those states to improve their nuclear security; dissuades those states from informing others if they discover that their nuclear weapons or materials are ever stolen, thus undermining any efforts to recover them; and makes it difficult to work with those states in the aftermath of an attack to prevent further detonations'.

Yet a calculatedly ambiguous deterrent threat –'in the event of a nuclear attack, the country of origin will be taken into account in determining the US response'– would not commit the US to a retaliatory response against the country of origin. The aim would be to compel countries that need to improve fissile material security to do more to deny terrorists access to nuclear and other WMD capabilities. The deterrent threat would complement the offer of political and economic inducements to these states to implement effective safeguard programmes.

To counter the threat of nuclear leakage from Pakistan, the US has implemented a policy of deterrence by denial through a US\$100 million programme to secure Pakistan's nuclear laboratories and weapons (for example, by separating warheads from missiles). Yet US officials remain concerned about foreign-trained scientists who support radical Islamic causes infiltrating Pakistan's nuclear establishment –and, more broadly, about the remote (but not unthinkable) possibility of an acute regime-threatening political crisis during which nuclear security is breached and a warhead falls into the hands of Islamic extremists–. Indeed, in the aftermath of the unilateral US military strike on Osama bin Laden's compound in Abbottabad that violated Pakistani sovereignty, the Pakistanis perceive a similar US commando threat to their nuclear arsenal. Hence, in a statement to parliament after the bin Laden raid, the Pakistani Prime Minister Yusuf Raza Gilani warned, 'Any attack against Pakistan's *strategic assets* [code for the country's nuclear arsenal] whether overt or covert will find a matching response. Pakistan reserves the right to retaliate with full force'. That Gilani also used the speech to reaffirm Pakistan's strategic relationship with the US is a reflection of the political tension inherent in the relationship. The prognosis is that US Administrations will pursue *deterrence by denial* through continued engagement with the Islamabad government, even as Washington and Islamabad view one another both as a partner and a threat.

Conclusion: Pakistan today embodies the nexus of proliferation and terrorism. The main conclusion that I would like to close on is this: *effective strategies on the state level are the prerequisite for meeting threats from non-state actors*. We may think of Osama bin Laden as a non-state actor. But, on that moonless night last May when the Navy Seals attacked his compound, the al-Qaeda leader was hiding out in a *state*. Through the mechanisms I have discussed today, policymakers can create effective leverage to affect the conduct of states. If successfully implemented, state-focused strategies will not end non-state threats, but they will take us far in achieving that ultimate goal.

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