Fourth Wave of Deterrence: Revisiting Application in the Age of Nuclear Terrorism

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The concept of deterrence can be simply explained as the use of threat to convince others to desist from initiating some course of action. A threat serves as a deterrent to the extent that it convinces its adversary not to carry out the intended action because of the exorbitant costs and losses that it would incur. A policy of deterrence generally refers to threats of military retaliation directed by one state to another in an attempt to prevent the other state from resorting to the threat of use of military force in pursuit of its foreign policy goals. In this context, as long as nuclear weapons are around, even in small numbers, deterrence is the safest policy to deal with them. This was true during the Cold War, and it appears to be even truer today.

The concept of deterrence was put forward by Bernard Brodie at the beginning of the nuclear age in 1945, when in a paper he summed up the concept of the nuclear era as, 'Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them.' A credible nuclear deterrent, Bernard Brodie wrote

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NB: The views expressed in this article are those of the author in his personal capacity and do not carry any personal endorsement.

in 1959,[1] must be always at the ready, yet never used. A year later, he was joined by Robert Oppenheimer[2]: 'It did not take atomic weapons to make man want peace. But the atomic bomb was the turn of the screw. It has made the prospect of war unendurable.'

A successful nuclear deterrent implies that a country safeguards its ability to retaliate, either by responding before its own weapons are destroyed or by ensuring a second strike capability.

Deterrence theory gained bigger prominence as a military strategy during the Cold War and it enumerates that nuclear weapons are intended to deter other states from attacking with their nuclear weapons, through the promise of retaliation and possibly Mutually Assured Destruction (MAD). Nuclear deterrence can also be applied to an attack by conventional forces; for example, the doctrine of massive retaliation threatened to launch US nuclear weapons in response to Soviet attacks. The connotation was that an inferior nuclear force, by virtue of its extreme destructive power, could deter a more powerful adversary, provided that this force could be protected against destruction by a surprise attack. A successful nuclear deterrent implies that a country safeguards its ability to retaliate, either by responding before its own weapons are destroyed or by ensuring a second strike capability. The most common form of deterrence practised by nuclear weapon states, as opposed to the extreme mutually assured destruction (MAD) form of deterrence is the concept of minimum deterrence in which a state possesses no more nuclear weapons than is necessary to deter an adversary from attacking.

The global security environment has deteriorated over a period of time especially due to the increased security threat from terrorist activities. Global War on Terrorism (GWOT) has led to a shift in the concept of deterrence from the MAD to the third and fourth wave of deterrence. The three waves of deterrence were propounded by Robert Jervis in his book *Deterrence Theory Revisited*.[3] The initial (first) wave of deterrence theory came after World War II in response to the invention of the atom bomb. The second wave emerged during the 1950s and 1960s and it applied tools like *game theory* to develop much of what became conventional wisdom about nuclear strategy. The third wave, also referred to as *Rational*

Deterrence Theory (RDT), gained prominence during the 1970s and 1980s and witnessed a series of shifts in declaratory policy and actual nuclear targeting strategies. The third wave used statistical and case study methods to empirically test deterrence theory, mainly against cases of conventional deterrence. The first three waves dealt with the traditional inter-state conflicts. The fourth wave covered the current real-world developments in terms of terrorism. Jeffrey W. Knopf, in his work, 'The Fourth Wave in Deterrence Research'[4] theorised that 'the roots of fourth wave could be traced to the collapse of the Soviet Union. By the second half of the 1990s, studies began appearing that focused on post-Cold War deterrence, including some important pre-9/11 attempts to think about how to deter terrorism involving Weapons of Mass Destruction (WMD). The terrorist attacks of September 11, 2001 created a much greater impetus for efforts to re-examine deterrence. The attacks not only raised obvious questions about whether it would be possible to deter non-state actors willing to commit suicide for their cause. They also accentuated concerns about WMD-seeking rogue states. In response, the George W. Bush administration announced a new *doctrine of preemption*. The bulk of the fourth wave deterrence is concerned with the challenges of deterring WMD seeking rogue states and terrorists.' This wave reflected a change from a focus on relatively symmetrical situations of mutual deterrence to a greater concern with what have come to be called asymmetric threats. Fourth wave deterrence is being elaborated subsequently in the article. In response to these new challenges, the nations are reviewing their National Security Strategies, doctrines, and instruments of both conventional and nuclear deterrence. However, the most important consensus is that deterrence remains viable and relevant, even in dealing with terrorism. Most of the nuclear states have catered for measures against the use of WMD by state-sponsored terrorists in their nuclear policies. Let us have a look at the deterrence as articulated by the prominent nuclear states in their nuclear strategy and doctrines, especially in context of state-sponsored terrorism, viz., the US, Russia, France, the UK, and India.

The United States Nuclear Strategy and Doctrine

The US Department of Defence had published a Doctrine for Joint Nuclear Operations in 2005 citing the eight circumstances[5] under which commanders of US forces could request the use of nuclear weapons. These are as follows:

1. An enemy using or threatening to use WMD against the US, multinational, or alliance forces or civilian population.
2. To prevent an imminent biological attack.
3. To attack enemy WMD or its deep-hardened bunkers containing WMD that could be used to target the US or its allies.
4. To stop potentially overwhelming conventional enemy forces.
5. To rapidly end a war on favourable US terms.
6. To ensure the US and international operations are successful.
7. To show the US intent and capability to use nuclear weapons to deter the enemy from using WMD.
8. To react to enemy-supplied WMD use by proxies against the US and international forces or civilians.

In 2010, the then US President Barack Obama in Nuclear Posture Review announced a new policy that is much stricter about when the US would order a nuclear strike. However, the US strategic posture endorses the continuance of the centrality of nuclear deterrence. Its emphasis is shifting from 'one size fits all' nuclear deterrence to a more 'tailored deterrence' capable of handling threats from state-sponsored terrorist networks, non-state actors and to cater for other contingencies.

The US through its National Security Strategy Document of February 2105 has confirmed its commitment towards preventing the spread and use of WMD. In the document, the US has articulated that, 'no threat poses as grave a danger to our security and well-being as the potential use of nuclear weapons and materials by irresponsible states or terrorists. We, therefore, seek the peace and security of a world without nuclear weapons. As long as nuclear weapons exist, the United States must invest the resources necessary to maintain—without testing—a safe, secure, and effective nuclear deterrent that preserves strategic stability. However, reducing the threat requires us to constantly reinforce the

basic bargain of the Nuclear Non-Proliferation Treaty, which commits nuclear weapons states to reduce their stockpiles while non-nuclear weapons states remain committed to using nuclear energy only for peaceful purposes. For our part, we are reducing the role and number of nuclear weapons through New Strategic Arms Reduction Treaty (START) and our own strategy. We will continue to push for the entry into force of important multilateral agreements like the Comprehensive Nuclear Test-Ban Treaty and the various regional nuclear weapons-free zone protocols, as well as the creation of a Fissile Material Cut off Treaty. Vigilance is required to stop countries and non-state actors from developing or acquiring nuclear, chemical, or biological weapons, or the materials to build them.'

Russia's Nuclear Strategy

On the last day of 2015, the Russian President Vladimir Putin put his signature on the decree adopting Russia's new National Security Strategy up to 2020, updating the existing strategic planning document, which established the country's national priorities until 2020. According to Mark Galeotti, a Professor of Global Affairs at New York University's Centre for Global Affairs, this National Security Strategy, which was approved by the President back in 2009, was a rather short list of priorities and apparently needed an update due to the changing environment Russia has found itself in.[6] According to Russia's National Security Strategy up to 2020, 'preconditions have been formed for the reliable pre-emption of internal and external threats to national security, as well as for the dynamic development and transformation of Russia into a world leader with regards to the level of technological progress, quality of life, and influence over global affairs.' Regarding its nuclear strategy, the document has stated that Russia may be ready to discuss curbing its nuclear potential, but only based on mutual agreements and multilateral talks. Curtailing Russia's nuclear potential will only occur if it were also to *contribute to the creation of appropriate conditions that will enable a reduction of nuclear weapons, without damaging international security and strategic stability.* At the same time, Russia plans to prevent any military conflicts by maintaining its

nuclear capabilities as a deterrent, but would resort to the military option only if all other non-military options had failed.

Russia's current nuclear strategy, to some extent, can be gauged in the military doctrine of the Russian Federation. Nuclear deterrence continues to remain central to its political and nuclear strategy. It continues to develop and modernise its nuclear capability. The doctrine points out a number of actions seen as constituting 'external dangers' to the Russian Federation, including, 'movement of NATO infrastructure closer to Russia's borders, the militarisation of space, spread of WMD, missiles and missile technology, increase in the number of nuclear states and spread of international terrorism.'

According to the doctrine, Russia reserves the right to use nuclear weapons in response to the use of nuclear and other types of WMD against it or its allies, and also in case of aggression against it with the use of conventional weapons when the very existence of the state is threatened. However, the strategy allows the use of military force only in cases when other measures to *protect the national interests* are ineffective.

French and United Kingdom's Strategy Against Nuclear Terrorism

In January 2006, French President Jacques Chirac said, 'France was prepared to launch a nuclear strike against any country that sponsors a terrorist attack against French interests.' He said that his country's nuclear arsenal had been reconfigured to include the ability to make a tactical strike in retaliation for terrorism. 'The leaders of states, who would use terrorist means against us, as well as those who would envision using. . . weapons of mass destruction, must understand that they would lay themselves open to a firm and fitting response on our part… The flexibility and reaction of our strategic forces allow us to respond directly against the centres of power. . . All of our nuclear forces have been configured in this spirit.'[7] Chirac's comments came during a flurry of diplomatic efforts by France, Britain, Germany, and the US to stop Iran from pursuing contested elements of its nuclear programme.

Every two years since 2005, the United Nations General Assembly has adopted a resolution submitted by France on 'preventing the acquisition

by terrorists of radioactive materials and sources'.[8] Each year since 2002, France has also co-sponsored a resolution introduced by India, entitled 'Measures to prevent terrorists from acquiring weapons of mass destruction.' The particular threat that stems from nuclear terrorism is also addressed in the United Nations Global Counter-Terrorism Strategy. The Counter-Terrorism Implementation Task Force, which was created in 2005 and reports to the United Nations Secretary General, put in place a working group (of which the *International Atomic Energy Agency* (IAEA) is a member) which is more specifically responsible for 'Preventing and Responding to WMD Terrorist Attacks'. France is a party to thirteen sectoral conventions in the field of counter-terrorism negotiated at the United Nations. Furthermore, on 11 September 2013, it ratified the 2005 Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT), which defines new offences covering both the use of nuclear and radioactive materials and strengthens cooperation between states. France advocates the universalisation of these conventions, which form a full and coherent counter-terrorism framework, and proposes assistance to this end to states which so request. France has also been taking part in the Global Initiative to Combat Nuclear Terrorism (GICNT) since its creation in 2006. It has particularly focused on work to identify best practices in the area of detecting materials, preventing radiological or nuclear attacks, and lessening the consequences of a possible attack.

In March 2012, the UK government launched a new National Counter-Proliferation Strategy for 2012–2015. Driven by the key risks identified in its National Security Strategy, the UK has committed to take a number of measures to reduce proliferation risks. First among these is denying access to chemical, biological, radiological or nuclear materials, and expertise by terrorists. The UK would also assist other states in strengthening their counter-proliferation measures. But the importance of the GICNT remains a key part of UK's fight against nuclear terrorism, which it joined when it was launched in 2006, along with 12 other countries. Its mission is to strengthen global capacity to prevent, detect and respond to nuclear terrorism by conducting multilateral activities that strengthen the plans, policies, procedures, and interoperability of partner nations.

Indian Nuclear Doctrine

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India had to tread the nuclear pathway due to the constantly emerging threats from its two nuclear-armed neighbours, namely, China and Pakistan. To reiterate its noble and moral high ground stance that nuclear weapons are for deterrence and not 'war fighting', Indian nuclear doctrine rests on the principle of No First Use (NFU) and maintaining a Credible Minimum Deterrence. India's peace-time posture aims at convincing any potential aggressor that:

- Any threat of use of nuclear weapons against India shall invoke measures to counter the threat.
- Any nuclear, biological or chemical attack on India and its forces anywhere, shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor.
- The fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any state or entity against India and its forces.
- India will not be the first to initiate a nuclear strike but will respond with massive retaliation, should deterrence fail.
- India will not resort to the use or threat of use of nuclear weapons against states that do not possess nuclear weapons, or are not aligned with nuclear weapons powers.

Thus, it has clearly emerged that both the US and Russia which cater for almost 90 per cent of all the nuclear weapons today have adopted adequate measures in their doctrines to deter the use of nuclear weapons by the state-sponsored terrorists/non-state actors. Similarly, India too has catered for deterrence against the use of WMD by rogue nations in its nuclear doctrine of January 2003. This may lead to the argument that there is no requirement by these nuclear states *per se* to review their nuclear deterrence policy. However, it would be in order to analyse whether there is a need to modify the application of nuclear deterrence owing to the intimidating new spectrum of global security threats including chemical, biological and radiological weapons, catastrophic terrorism, cyber warfare, etc.

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Nuclear Catastrophe by State-Sponsored Terrorists and its Prevention

State-sponsored terrorism and efforts to acquire and perhaps use WMD would be part of asymmetric responses by a rogue state against its superior adversary who enjoys an overwhelming military advantage against the others. The primary focus towards prevention of nuclear terrorism should be to prevent terrorists from obtaining such weapons in the first place. With respect to nuclear weapons, though not necessarily chemical or biological agents, terrorist organisations would require outside assistance. They do not have the capability to produce fissile materials, hence they will have to get hold of fissile material or an actual nuclear device that were manufactured elsewhere. This creates an opening, and indeed an urgent necessity, to deter third parties from assisting terror organisations in acquiring nuclear materials. There are several potential scenarios by which terrorists could acquire such materials. There could be deliberate transfer by a state or by sub-national actors acting without their government's knowledge. There could also be inadvertent leakage from inadequately secured facilities, through either theft by outsiders or diversion to the black market by insiders. However, many analysts are skeptical of the deliberate transfer scenario and have supported their belief by a number of counter-arguments. First, because rogue regimes will find it hard to produce more than a handful of bombs initially, they are unlikely to give away such a scarce resource, which is also important for their own security. Second, any transfer would mean that the regime would no longer control the weapon and would face a risk that a non-state actor might turn the weapon against the regime itself. Finally, even if there is no way to guarantee that a rogue regime will be found out if it transfers WMD, there is also no way a state can be sure it will escape detection. The scale of the retaliation that might follow an act of WMD terrorism provides a powerful disincentive against taking the risk. Nonetheless, if the rogue state is highly risk acceptant, the

notion that it might get away with a surreptitious transfer might lead it to take the risk.

To prevent proliferation and nuclear catastrophe, there is a need for both the US and Russia to reduce the number of operationally deployed strategic nuclear warheads and delivery vehicles with verification to the levels set by the New Start Treaty to avoid any danger of accidental or unauthorised use of a nuclear weapon by state-sponsored terrorists. Further attention need to be paid towards the short-range tactical nuclear weapons which have more likelihood of falling into the wrong hands owing to their frequent mobilisation and forward deployment in the field areas. The US and Russia which led to the nuclear buildup for decades must continue to lead the build down too.

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It should be ensured on priority that nuclear materials are protected globally to limit any country's ability to reconstitute nuclear weapons, and prevent terrorists from acquiring the material to build a crude nuclear bomb. George P. Shultz, the US Secretary of state from 1982 to 1989, aptly brought out that, 'Nations can begin moving together toward a safer and more stable form of deterrence. Progress must be made through a joint enterprise among nations, recognising the need for greater cooperation, transparency and verification to create the global political environment for stability and enhanced mutual security.'[9] The UN Security Council Resolution 1540 already obligates all member states to develop and maintain 'appropriate, effective' measures to secure weapons and materials, but this obligation has unfortunately not been reinforced by specific, mandatory standards.

Graham Allison in his book, *Nuclear Terrorism: The Ultimate Preventable Catastrophe*,[10] asserted that the strategy to prevent nuclear terrorism must be to deny terrorists access to nuclear weapons or materials. He proposed

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a strategy for shaping a new international security order according to a doctrine of 'Three No's':

- **No Loose Nukes:** All nuclear weapons and weapons usable material must be secured, on the fastest possible timetable, as tightly as the gold in Fort Knox.
- **No New Nascent Nukes:** No nation must develop new capabilities to enrich uranium or reprocess plutonium.
- **No New Nuclear-Weapons States:** We must draw a line under the current eight and a half nuclear powers and say unambiguously, 'Stop. No more'.

It must be made clear to the nuclear states that they would be held as accountable for the nuclear weapons they create including the material from which such weapons could be made, as they are for the nuclear warheads their governments choose to deploy. In other words, if a rogue state uses or threatens to use a nuclear weapon provided by a friendly nuclear state, the *provider state* would be equally held responsible as the *user state* in terms of retaliatory actions are concerned. During the Cuban Missile Crisis of October 1962, the US discovered the Soviet Union attempting to sneak nuclear tipped missiles into Cuba. As the crisis unfolded, the strategists worried that the then Soviet President Khrushchev might transfer control of the nuclear arsenal in Cuba to the impulsive revolutionary named Fidel Castro. After careful deliberations, John F. Kennedy issued an unambiguous warning to Khrushchev and the Soviet Union. 'It shall be the policy of this nation to regard any nuclear missile launched from Cuba against any nation in the Western Hemisphere as an attack by the Soviet Union on the United States, requiring a full retaliatory response upon the Soviet Union.' Khrushchev well-understood what Kennedy was talking about the certain prospect of a full-scale nuclear war.[11] It may be right to assume that personal accountability for terrorist use of a nuclear weapon manufactured by a given state can deter the state's leader from selling weapons to terrorists. If leaders believe that they would be held accountable for their nuclear weapons even if those weapons are stolen, they would be better motivated to prevent the theft.

Detection and Forensics

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The question arises that for holding a state responsible for nuclear terrorism, some sort of proof would be required that the weapon detonated or in possession of the terrorists has originated from that particular state. This can be achieved by nuclear forensics. The production facilities that make fissile materials needed for a nuclear device, either highly enriched uranium (HEU) or plutonium, generally vary in the exact mix of isotopes in the materials produced at each facility. Analysis of radioactive fallout and debris after a nuclear detonation (or of materials found in an intercepted device) could determine the general isotopic composition and age of the fissile materials used to make the bomb. If there are samples of the fissile materials produced at various facilities, it might be possible to match the bomb materials to a sample to determine where the fissile materials initially came from. Even if it is not possible to establish a definite match, nuclear forensics should make it possible to rule out certain countries as the source of the nuclear materials.

Currently, the states that could plausibly choose to sell a nuclear bomb to terrorists or could lose a bomb wilfully/unwillingly are North Korea and Pakistan. The announced policy of nuclear accountability would warn the rogue nations unambiguously that the explosion of any nuclear weapon of their country's origin would be met with a full retaliatory response ensuring that it could never happen again.

The Fourth Wave of Deterrence

As mentioned earlier, the fourth wave deterrence was propounded by Jeffrey W. Knopf in his work, 'The Fourth Wave in Deterrence Research'.[12] The bulk of the fourth wave is concerned with the challenges of deterring rogue states and terrorists. Some analysts agreed with the George W. Bush administration that deterrence is not sufficiently reliable against rogue regimes. They were inclined to support Bush administration policies of building missile defences, being willing to use force preventively and

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pushing for regime change. These studies argued the pre-emption doctrine and other elements of Bush strategy would also tend to bolster deterrence. A forceful pre-emptive action has a deterrent effect of its own, not only on those that are near to committing an act, but also on those who are planning attacks in the longer term. It was felt that deterrence and preventive attack should be mutually reinforcing rather than working at cross-purposes, and deterrent threats must be balanced with assurances that the threat will not be implemented if the other actor refrains from challenging one's deterrent commitment. As several studies point out, 'if rogue regimes believe that a pre-emptive attack or effort to impose regime change is likely even if they refrain from using WMD, this only increases their incentives to acquire nuclear weapons as a deterrent and to use WMD first if they believe an attack is imminent or their regime is about to be overthrown.'[13] Even some analysts who have expressed support for policies of pre-emption or regime change have acknowledged that if not handled with maturity, these strategies can make proliferation or deterrence failure more likely.

The fourth wave research on deterring rogue states also agree that it does not make sense to rely on a single, 'one size fits all' deterrent posture. Three possible approaches to deterring terrorism have received the most attention. First, many of proposed approaches to deterrence are *indirect in nature*, intended to pressure third parties who facilitate terrorism rather than terrorist operatives themselves. Second is the concept of *deterrence by denial*. In contrast to *deterrence by punishment*, which threatens to inflict costs through retaliation after an attack, denial strategies aim to dissuade a potential attacker by convincing them that the effort will not succeed and they will be denied the benefits they hope to obtain. The third and most novel approach involves challenging terrorists' justifications for violence, an approach that has been labelled both deterrence by *counter-narrative* and by *delegitimisation*.[14]

Indirect Deterrence

Most of the major ideas for how to apply deterrence to terrorism appeared fairly soon after 9/11. In the book, published in 2002, by Paul Davis and Brian Jenkins of RAND, a terrorist network has been disaggregated into its component elements. As per their analysis, although the suicide terrorist who has hijacked an airplane is almost certainly beyond the reach of deterrence, other actors involved in the terrorist enterprise might not be. Citing the case in point of Al-Qaeda, they brought out:

> It is a mistake to think of influencing Al-Qaeda as though it were a single entity; rather, the targets of US influence are the many elements of the Al-Qaeda system, which comprises leaders, lieutenants, financiers, logisticians and other facilitators, foot soldiers, recruiters, supporting population segments, and religious or otherwise ideological figures. A particular leader may not be easily deterrable, but other elements of the system (e.g. state supporters or wealthy financiers living the good life while supporting Al-Qaeda in the shadows) may be.[15]

The various supporters and enablers of terrorism who are not themselves eager to sacrifice their own lives for the cause can be threatened with retaliation for their role in facilitating terrorist operations. The threatened response need not be lethal, and could involve financial sanctions or imprisonment. This approach is good example of 'indirect deterrence' which is not aimed at attackers themselves, but at third parties whose actions could affect the likelihood that a potential attacker can or will carry out an attack.

Deterrence by Denial

When a society can demonstrate the ability to withstand terrorism, it sends a message that using this tactic will not enable terrorist organisations to achieve their goals. Davis and Jenkins observed that 'even hardened terrorists dislike operational risk and may be deterred by uncertainty and risk'. This means that security measures and other steps to reduce the chances that terrorists can carry out a spectacular

attack also have deterrent effects. Terrorists 'may be willing to risk or give their lives, but not in futile attacks. Thus, better defensive measures can help to deter or deflect, even if they are decidedly imperfect.'[16] One way to deter terror a group is to ensure that there is doubt placed in the terrorist's mind that even if acts of terrorism are successfully conducted, the over all aims may not be achieved. Denial strategies can be implemented at the *tactical, operational*, and *strategic* levels. Efforts to improve homeland defences and increase operational risk produce tactical deterrence. At the operational level, the goal is 'denial of capability' that terrorists require for an on-going campaign of attacks. Here, denial and punishment can work in synergy. The indirect approach that threatens retaliation against third party enablers can contribute to a direct version of denial by preventing terrorist organisations from getting the resources they need, i.e. money, weapons materials, and safe havens. Finally, at the strategic level, deterrence by denial entails the 'denial of objectives', i.e. showing that terrorism will fail to achieve terrorist groups' end goals. It is especially important to avoid public and governmental over-reaction to terrorism, since manipulation of fear among the public or government officials is what enables terrorists to achieve their objectives. Deterrence by denial may also be possible by improving interdiction of WMD shipments or finding other ways to prevent transnational crime organisations from being able to profit from WMD smuggling.

Deterrence by Punishment

Some analysts believe that threats akin to the Cold War threat of massive retaliation are necessary to establish deterrence, and threats of retaliation could be effective as a direct deterrent against terrorism. There are several Israeli analysts who advocated this approach after drawing conclusions from their country's long experience as a target of terrorism. According to them, it is important to identify high-value targets, including family and supporters, which will cause even the most radical leaders to mull over the costs and benefits of their actions. The responses might have to be 'excessive' or 'disproportionate' in order to make the costs great

enough to deter further terrorism. It is also important to recognise that large-scale military retaliation is not the only possible way to implement a direct punishment strategy. Some propose that targeted killings of mid-level terrorist operatives could have a deterrent effect by increasing the personal risks for those who plan and prepare terrorist attacks but do not themselves conduct them. Others speculate that for terrorists who want to die for the cause, the threat to arrest and imprison them may be a greater deterrent than the threat to kill them. A terrorist may be willing to die for his cause but unwilling to spend the rest of his life in the unglamorous, isolated, largely forgotten role of a prisoner.[17] Some scholars propose initiating a counter-value response, viz., retaliation against societal targets in response to a WMD terrorism. Both the territory and population with which terrorist groups identify could be threatened.

Deterrence by Public Backlash

Knopf observed that for all terrorist groups, sympathy and support among its communities is an important centre of gravity. For Al-Qaeda, support of Muslims is an important factor for waging the jihad. If Al-Qaeda leaders realised that key audiences would react negatively to their new attacks, this could serve as a source of restraint on terrorist behaviour. If Al-Qaeda's leaders come to anticipate that WMD use would hurt their cause, this might dissuade them from such a course. To increase the chances of such a backlash, analysts call for putting forward or eliciting challenges that could discredit the ideological justifications terrorists invoke for WMD acquisition or use. This can be done by encouraging declarations by Islamic clerics and other respected Muslim leaders that indiscriminate killing, as would result from WMD use, is illegitimate. This approach is often labelled as 'deterrence by counter-narrative' or 'deterrence by delegitimisation'.[18]

The end of the Cold War indicated that nuclear deterrence might no longer be needed, but prospects of WMD proliferation to rogue regimes and likelihood of state-sponsored terrorism resulting in mass casualties changed this initial optimism to a fear that, rather than being unnecessary, nuclear deterrence might no longer be practical.

Conclusion

The end of the Cold War indicated that nuclear deterrence might no longer be needed, but prospects of WMD proliferation to rogue regimes and likelihood of state-sponsored terrorism resulting in mass casualties changed this initial optimism to a fear that, rather than being unnecessary, nuclear deterrence might no longer be practical. According to J.W. Knopf, there is widespread agreement that deterrence remains relevant and potentially usable even in today's environment. Fourth wave recommendations do not rely heavily on threatening nuclear retaliation. Instead, there is renewed interest in using deterrence by denial (especially against terrorism), while also retaining a role for deterrence by punishment. There is also extensive consideration of using not just non-nuclear but even non-military means as a basis for deterrence. The most novel example of this is deterrence by delegitimisation or counter-narrative, which involves trying to use information and discourse to convince terrorist groups that WMD terrorism will cause a backlash from within its intended support base.[19] The disappearance of the Soviet Union and emergence of new threats from rogue regimes and terrorism did not spell the end for deterrence as either a strategy or a subject of theorising. Instead, these developments have spurred a move toward a broader conception in which either military or non-military means, or a combination, could be considered part of a deterrence strategy.

Notes

1. Bernard Brodie, 'The Anatomy of Deterrence', *Missile Age*, Princeton: Princeton University Press, pp. 264–304.
2. Julius Robert Oppenheimer, an American physicist is among those who are often called the 'father of the atomic bomb' for their role in the *Manhattan Project*, the World War II project that developed the first nuclear weapons. These weapons ended the war with the atomic bombings of Hiroshima and Nagasaki.

3. Robert Jervis, 'Deterrence Theory Revisited', *World Politics*, Vol. 31, No. 2, January 1979.
4. JW Knopf, 'The Fourth Wave in Deterrence Research', *Contemporary Security Policy*, Vol. 31, No.1, April 2010.
5. JP 3-12, 'Doctrine for Joint Nuclear Operations' Chapter III: Theater Nuclear Operations, p. 47, 15 March 2005.
6. Mark Galeotti, 'Russia's New National Security Strategy: Familiar Themes, Gaudy Rhetoric', 4 January 2016, available athttp://warontherocks.com/2016/01/russias-new-national-security-strategy-familiar-themes-gaudy-rhetoric/, accessed on.
7. Molly Moore, 'Chirac: Nuclear Response to Terrorism Is Possible', *Washington Post Foreign Service*, 20 January 2006.
8. Available at http://www.francetnp.gouv.fr/nuclear-security-and-combating-nuclear?lang=fr#nb2, accessed on.
9. 'NTI: Deterrence in the Age of Nuclear Proliferation', 7 March 2011, available at http://www.nti.org/ analysis/ opinions/ deterrence-age-nuclear-proliferation/, accessed on.
10. Graham T. Allison, N*uclear Terrorism: The Ultimate Preventable Catastrophe,* August 2004.
11. Ibid.
12. Note 4.
13. Jasen J. Castillo, 'Nuclear Terrorism: Why Deterrence Still Matters', *Current History*, Vol. 102, No. 668, December 2003.
14. Note 4. p. 10.
15. Paul K. Davis and Brian Michael Jenkins, 'Deterrence and Influence in Counterterrorism: A Component in the War on al Qaeda' Santa Monica, CA: RAND, 2002, available at http://www.rand.org/pubs/monograph_reports/MR1619.html, accessed on.
16. Ibid, pp xii and 15.
17. Note 4. p. 16.
18. Ibid., p. 18.
19. Ibid., p. 27.