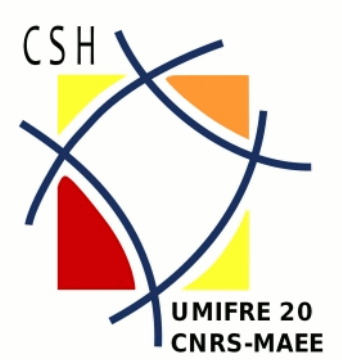

NUCLEAR DETERRENCE IN SECOND TIER NUCLEAR WEAPON STATES:

A CASE STUDY OF INDIA

Manpreet SETHI

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by

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SUMMARY

Nuclear deterrence today anchors the national security of all states that possess nuclear weapons. Certain principles or requirements of nuclear deterrence are the same for all such countries. For instance, the ability to threaten with 'unacceptable damage', or the ability to 'raise the costs' of an action that an adversary might want to take by threatening punishment that would make the act seem meaningless and even regrettable. But must every nuclear nation indulge in an exercise of large-scale warhead accumulation or yield refinements through nuclear testing, or creation of elaborate nuclear war fighting plans in order to claim credible deterrence? Can the practice of deterrence in the second tier states follow a different course?

The study examines the manner in which India is engaged in constructing a credible and stable deterrence relationship with two of its nuclear armed adversaries, Pakistan and China with an arsenal much smaller, and command and control structures far simpler than in any of the P-5 nations. Does this difference impact the nature of its nuclear deterrence? In its efforts at creating and sustaining credible nuclear deterrence should India necessarily be expected to follow the same path and rules as those of the P-5? Would it be compelled to build hundreds of warheads and a huge weapons infrastructure? Would a deterrence based on anything less not be credible or stable?

The study concludes that even countries with small nuclear arsenals behave no differently from states that possess several thousands of such weapons. The assumption that small nuclear arsenals and rudimentary command and control lend themselves to temptations of easy nuclear use is misplaced. Credible nuclear deterrence between India and Pakistan or India and China would hold on the same bases it has held elsewhere – fear of nuclear destruction, imposition of unacceptable damage, and the ability to rationally calculate and weigh the benefits against the costs of use of nuclear weapons.

Keywords: Nuclear deterrence, India, Pakistan, China, nuclear risk reduction

Table of Contents

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1 INTRODUCTION

Nuclear deterrence worldwide is in a state of flux. While it did appear for a few years after the end of the Cold War that nuclear weapons might lose some of their relevance[1], this hope proved to be short-lived. More recently, the idea of a nuclear weapons free world (NWFW) has gained some momentum as evident in the number of initiatives being offered across the world. [2] US President Barack Obama too expressed his support for nuclear disarmament in a speech in April 2009. However, at the operational level, international relations do not seem to be moving in any way towards loosening the stranglehold of nuclear weapons on national security strategies of the five established Nuclear Weapon States (NWS or the P-5) or the other known possessors of nuclear weapons. Nor has there been a reduction in nuclear threats and dangers. Rather, new ones such as nuclear proliferation from, by, and to non-state actors, and the risk of nuclear terrorism have been added to the traditional threats of vertical (increase in number of nuclear weapons) and horizontal (increase in number of states with nuclear weapons) proliferation.

During the long decades of the Cold War, nuclear deterrence primarily characterized the relationship between the two Superpowers – USA and USSR. Each of the ideological rivals supposedly kept the other from using its nuclear weapons by threatening retaliation that would cause a nuclear exchange certain to end in mutual assured destruction or MAD. This nuclear deterrence was premised on a large stockpile of nuclear warheads, fissile material and other

[1] Some scholars writing in the early 1990s referred to nuclear weapons as the "detritus of the Cold War", considered their continued existence a threat and advocated that it "was time to strip away the complex and arcane strategic theory of the Cold War and start from scratch". See L Wolfenstein, "End Nuclear Addiction", *Bulletin of Atomic Scientists*, vol. 47, no.4, 1991 and William Arkin, Durrant and Kristensen, "Nuclear Weapons headed for the trash", *Bulletin of Atomic Scientists*, vol. 47, no. 10, 1991.

[2] In the period 2007-09, there has been a revival of interest in nuclear disarmament triggered by the realization that nuclear weapons in the present security context are more of a liability than an asset. Some of the recent notable initiatives in this direction are the efforts being spearheaded by the Nuclear Threat Initiative's Nuclear Security project led by George Shultz, Henry Kissinger, William Perry and Sam Nunn, the Global Zero Project initiated by Bruce Blair, the Australian-Japan Commission and an effort by UK to examine the verification challenges for disarmament.

related weapons infrastructure. The arsenals were maintained in a ready to use mode on hair trigger alert. Elaborate surveillance and early warning systems ensured that the missiles could be launched at the earliest sign of a nuclear attack.

UK, France and China, the next three states to become nuclear weapons capable, however, did not build as large arsenals as those of the Superpowers. According to one estimate, the strategic nuclear weapons of all the three "put together accounted for less than about 10 percent of those of the United States and perhaps 7 per cent of those of the Soviet Union."[3] However, in the case of UK and France, one of the major reasons for this was their limited threat perception and the protection provided to them by their membership of NATO. In fact, for them the motivation for acquisition of a nuclear weapons capability had more to do with national prestige and assertion of their sovereignty than national security. Beijing, meanwhile, charted its own course towards building credible nuclear deterrence with a minimum capability, even lesser than that of UK and France. This was despite the fact that China faced nuclear threats from both the superpowers, making its threat perceptions far greater than those of UK or France. But, Beijing believed that nuclear deterrence could work with small arsenals and without having to follow the expensive routes followed by USA and USSR.

There was a decade long nuclear lull after China's conduct of the nuclear test except for India's detonation of a nuclear device (termed a peaceful nuclear experiment or PNE) in May 1974. Thereafter, in 1998, India and Pakistan conducted their nuclear tests for reasons that are well explained in various books and writings.[4] Less than a decade later, in 2006 and then again in early 2009, North Korea, which had earlier suspended its membership of the NPT, too conducted nuclear tests.

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[3] John Hopkins and Weixing Hu, ed., *Strategic Views from the Second Tier: The Nuclear Weapon Policies of France, Britain and China* (La Jolla, California, 1994), pp 3-4.

[4] For instance see Jasjit Singh, ed., *Nuclear India* (New Delhi: Knowledge World, 1998), George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 1999), Raj Chengappa, *Weapons of Peace* (New Delhi: Harper Collins, 2000), Amitabh Mattoo, ed., *India's Nuclear Deterrent* (New Delhi: Har Anand Publications, 1999).

Practice of Nuclear Deterrence by Second Tier Nuclear Weapon States

As the situation stands today, nuclear deterrence anchors the national security of what may be called ***second tier nuclear weapon states***. While some studies by Western scholars refer to the United Kingdom, France and China as second tier nuclear states[5], this study uses the term to describe India, Pakistan, Israel and North Korea for three reasons. Firstly, these are spatially displaced in time from what could be referred to as the first wave of nuclearization that subsided in 1964 after the conduct of a nuclear explosion by China. It was nearly three and a half decades after the Chinese test that India actually conducted five nuclear tests in May 1998. Pakistan followed suit a couple of weeks later. While Israel officially still maintains nuclear ambiguity, even though it is widely assumed to have a nuclear arsenal, North Korea first demonstrated its nuclear capability in October 2006 and then in April 2009. Secondly, these countries conducted their nuclear tests after 01 Jan 1967, the date set by the NPT to freeze new entrants into the nuclear weapons club. Therefore, despite having conducted nuclear tests, these states are denied the right to claim a legal status as NWS under the NPT even though they actually are states with nuclear weapons. Hence, they do fall into a category of their own and may be described as second tier nuclear states. And thirdly, their nuclear arsenals are of a much smaller size, limited composition and capability, and they exhibit a different force posture than those of the P-5. Of course, there is a wide disparity in numbers of nuclear warheads even amongst the NWS. While the US and Russia still have thousands of them, UK, France and China have only a few hundreds. Yet, even the smallest P-5 arsenal is far ahead of that of any second tier state in terms of its numbers, robustness, diversity, accuracy, and range and reliability of the warheads as well as the delivery systems.

Despite their distinct categorization on the above-identified parameters, the one factor, however, that is common to both the sets of nuclear capable states, the first and the second tiers, is the centrality of nuclear deterrence for national security[6]. But, obviously the *practice of*

[5] For instance, see Hopkins and Hu, n. 3. Amit Gupta, "India's Third Tier Nuclear State Dilemma" *Asian Survey*, vol. 41, no. 6, Nov-Dec 2001, pp. 1044-63.

[6] The term nuclear deterrence is used here loosely to also include nuclear coercion, compellence or blackmail even though literature on the subject makes a distinction among the three terms.

deterrence or the manner in which the 'power' of the nuclear weapons is sought to be exploited is different. For instance, North Korea simply practices existential deterrence. It seeks to deter by threatening to cause damage that would seem disproportionate in relation to the issue at stake and therefore considered unacceptable by the adversary. Israel, meanwhile, derives deterrence from an ambiguous nuclear posture since it has never confirmed or denied its possession of nuclear weapons. It banks on this uncertainty to deter the adversary. These modes of enforcing deterrence stand in stark contrast to the complex deterrence relationship that the Superpowers built during the Cold War. Their deterrence, as mentioned earlier, was premised on the production of a large number of warheads, creation of elaborate nuclear war plans including precise target identification, and the construction of sophisticated command and control mechanisms. The credibility and stability of their nuclear deterrence emanated from mutual assured destruction. A nuclear parity of sorts raised, almost equally, vulnerability for both sides in case of a nuclear conflict and hence kept the actual use of nuclear weapons at bay.

Given the technological constraints and paucity of resources (financial as well as of fissile material), this equation cannot apply in the case of the second tier states, particularly if they are seeking deterrence *vis-à-vis* an established NWS, such as between North Korea and the USA, or India and China. Even in case of deterrence between two second tier states, such as India and Pakistan, neither can hope to have in the foreseeable future either a disarming or decapitating first strike capability, or even a comparable survivable retaliatory capability that could inflict roughly equal damage to cause MAD. Therefore, India and Pakistan are constructing a nuclear deterrence relationship with nuclear warheads that are much fewer and of lower yields, arsenals that do not exist in a ready-to-use state, and command and control structures that are far less sophisticated than in any of the P-5 nations. Does this difference in nuclear capabilities affect the kind of nuclear deterrence that they would build? In their efforts at creating and sustaining credible nuclear deterrence should the second tier nuclear states necessarily be expected to follow the same path and rules as those of the P-5? Would they be compelled to build hundreds of warheads and huge weapons infrastructure? Would deterrence based on anything less not be credible or stable? Was the Kargil conflict and the military standoff in 2001-02 between India and Pakistan illustrative of deterrence success or failure?

How do second tier states with limited resources and capabilities expect their nuclear weapons to enforce nuclear deterrence? How can these states ensure deterrence credibility and stability with nuclear arsenals so different in character from the first tier NWS?

This monograph attempts to provide answers to these questions. Taking the case of India as the common denominator in the equation with Pakistan and China, the study examines the nature of the two nuclear dyads. It establishes that certain principles or requirements of nuclear deterrence are the same for all countries and that these constitute the necessary pre requisites for credible deterrence. For instance, one of the most important of these is the ability to threaten 'unacceptable damage', or the ability to 'raise the costs' of an action so that it does not seem worthwhile. Whether a country would need a large arsenal or few warheads, or megaton weapons or warheads of smaller yields, depends on the assessment/perception of what would be deemed unacceptable by the adversary. What would be unacceptable to the US is different from that of China or North Korea, who have different deterrence requirements. Such countries that seek to deter the US, which is perceived to have a low damage threshold, need an arsenal of a kind very different from what India needs to deter China. Every nuclear weapon state can arrive at its understanding of what would constitute credible deterrence based on an evaluation of the damage threshold of its specific adversary and the value of the stake involved that could prompt the use of a nuclear exchange. This assessment can reliably be made on the basis of a study of the country's strategic culture, nature of political system, type of historical experiences, level of economic development, intensity of threat perception, and value accorded to the issue at stake for which nuclear use may be considered thinkable. It flows from this logic, then, that not every nuclear nation must indulge in an exercise of large-scale warhead accumulation or yield refinements through nuclear testing, or creation of elaborate nuclear war fighting plans in order to claim credible deterrence. There could be other routes to achieving deterrence and nations can make individual choices in the matter.

Issues for Analysis

This study undertakes an analysis of India's nuclear strategy as it finds its own route to effective practice of nuclear deterrence. India is engaged in the process of establishing a viable

and stable deterrence relationship *vis-à-vis* its two nuclear-armed neighbours, Pakistan and China. In fact, unlike most P-5 states that in the post Cold War era do not necessarily have a specific target for their nuclear weapons but hold on to their arsenals as general insurance against future uncertainties, India has very real and specific threats from the nuclear arsenals of its adversaries. Chapters 2 and 3 of the monograph explore the nuances of the nuclear deterrence relationships between India and Pakistan and India and China. They explain the functioning of deterrence and evaluate its robustness, particularly given the many difficulties that trouble the bilateral relationships.

In fact, India's attempt at building credible deterrence is a unique exercise for more reasons than one and hence worthy of close examination. First, quite unlike the case of P-5 countries (except perhaps USA and China) India seeks a workable deterrent posture against two real nuclear powers with two different kinds of nuclear doctrines and capabilities. Secondly, India seeks nuclear deterrence with countries with which it shares common borders that are yet to be delineated to the satisfaction of both sides, making cross-border military ingressions an everyday affair. It has territorial disputes and a history of wars with both nations and, therefore, the possibility of deterrence breakdown is understandably high. Thirdly, another challenge unique to the Indian nuclear equations is that both its nuclear neighbours enjoy a robust mutual relationship of nuclear and missile proliferation. China is the only NWS to have not only handed over nuclear weapon material and designs to Pakistan but to also have conducted a nuclear test for Pakistan on its own test site in Lop Nor in 1983. Dr. Samar Mubarakmand, the Pakistani nuclear scientist in charge of nuclear tests, said as much in 1998.[7] Lastly, the dangers of political instability and growing power and reach of the radical tendencies in Pakistan do little to allay fears of nuclear war as a result of accident or unauthorized use.

Among the second tier nuclear weapon states identified by the study, the nuclear challenges faced by India are unique. They include not only nuclear armed states with whom deliberate nuclear war is a risk, but also the possibility of possession of destructive nuclear capability by influential and resourceful non-state actors acting with or without state complicity. How does India's nuclear strategy cater to this range of threats – one, against an

[7] Cited in *Gulf Today*, 19 May 1999.

established P-5 power (China); second, against a weaker conventional state but one which has a more offensive strategy and indulges in sub-conventional provocations from behind its nuclear weapons (Pakistan); and third, against non-state actors? What are the major attributes of India's nuclear doctrine? Chapter 4 of the monograph addresses these questions. It particularly highlights the doctrinal precepts of minimum nuclear deterrence and no first use (NFU) and also assesses whether India is likely to change any of these attributes with change in the nuclear behavior or capability of its adversaries. It identifies the basics of the nuclear capability and components of the nuclear arsenal that India would need to invest in for ensuring the credibility of its nuclear deterrence.

The final chapter focuses on the need for building nuclear security through nuclear risk reduction measures (NRRMs). Some kinds of risks are an inevitable accompaniment of nuclear weapons. Given that there is little possibility of the elimination of nuclear weapons in the three countries under study in the absence of a larger movement towards universal nuclear disarmament, it would be prudent for the two nuclear dyads to seriously consider and negotiate some nuclear confidence building measures. These would put in place mutually agreed norms of behavior and actions with a clear objective of engendering greater confidence in the bilateral deterrence relationships and reducing some kinds of risks even in the presence of nuclear weapons. As noted by one analyst[8],

> "CBMs enhance openness and transparency on issues of mutual concern to adversaries, alleviate their fears and anxiety, remove uncertainties and surprises, prevent pre-emptive actions out of miscalculations, reassure each other's intentions in pursuing security measures, enhance predictability in their behavior, and transform a competitive relationship into a cooperative relationship."

While none can dispute the requirement for NRRMs for enhancing nuclear security, the challenge, however, lies in negotiating and concluding them in the absence of a broader interlay of economic, cultural, social and political relationships. A prevalence of hostile perceptions, suspicion of intentions, and dissatisfaction over other's behavior hampers the conclusion of meaningful nuclear

[8] P. Sahadevan, "Competing Regional Interests, Conflict Formulation, and Conflict Management in South Asia", in P. Sahadevan, ed., *Conflict and Peacemaking in South Asia* (New Delhi: Lancers Books, 2001), pp 39-40.

CBMs. The final chapter, nevertheless, identifies some specific steps that could be taken in this direction as and when bilateral relations so permit.

There is no dearth of literature on nuclear deterrence or the examination of nuclear programmes and strategies of India, Pakistan and China. However, there are few studies that examine the functioning or practice of nuclear deterrence between two second tier states, such as India and Pakistan that share disputed borders but have completely different doctrines; or, between one established (China) and another second tier state (India) who also share disputed borders, have similar nuclear doctrines, but an asymmetry in nuclear capabilities and legal nuclear status; or, between a second tier state (India) that shares undecided borders with both its neighbours, who meanwhile, are each other's "all weather friend" and have a thriving proliferation relationship.

Some writings have, indeed, examined bits and pieces of these complex relationships. But, there is no single seamless study that identifies the complexities and challenges of such a deterrence relationship and proffers suggestions on how it could be made more stable and safe. This study, borne out of a post-doctoral fellowship granted to me by the *Centre de Sciences Humaines* (CSH), New Delhi, seeks to fill this critical void.

2 INDIA-PAKISTAN NUCLEAR DETERRENCE

The relationship of nuclear deterrence between India and Pakistan predates the overt demonstration of their nuclear capability in 1998. It may be recalled that India had conducted a peaceful nuclear experiment (PNE) in 1974. This was basically triggered by the demonstration of China's nuclear weapons capability in 1964 and the nuclear intimidation of India by the US in 1971, during the Indo-Pak conflict that led to the creation of Bangladesh, when the *USS Enterprise*, a nuclear armed aircraft carrier, was sailed into the Bay of Bengal. India's act in 1974 was considered by Islamabad as a demonstration of New Delhi's nuclear capability and intentions, even though India appeared to show far lesser clarity of purpose of its PNE, subsequent to the conduct of the experiment. Nevertheless, the PNE accelerated Pakistan's quest for its own nuclear weapons, a pursuit that had started in January 1972 when Zulfikar Ali Bhutto, the then Prime Minister of Pakistan, had convened a meeting of scientists and officials in Multan and called upon them to produce a nuclear bomb within five years.[9] Through the second half of the 1970s and all of 1980s, both countries developed latent nuclear weapons capability – India largely indigenously, and Pakistan with the help of AQ Khan who brought stolen designs of centrifuge technology for uranium enrichment from his years of work at URENCO in the Netherlands and with assistance from China who provided nuclear material, weapon design and even conducted a test on its own site.[10]

By the late 1980s, it was widely surmised that India and Pakistan had acquired a rudimentary nuclear weapons capability and were in a relationship of recessed deterrence[11] or

[9] For a chronology of Pakistan's nuclear developments, see Allison Smith, "Pakistan's Nuclear Chronology", at http://www.stimson.org/southasia.

[10] The USA was well aware of the Sino-Pak proliferation relationship. In fact, in September 1982, it had even suspended talks with China for helping Pakistan in trying to acquire nuclear weapons capability. In June 1984, Senator Cranston admitted that the State Department had hidden this information from the US Congress for the fear that it would stop $3.2 billion aid being given to Pakistan in the wake of the Soviet intervention in Afghanistan. *Times of India*, 22 June, 1984.

[11] The term 'recessed deterrence' is attributed to Air Cmde (Retd) Jasjit Singh and refers to the state where the country has the capability to build nuclear weapon but has not tested or combined the components to create a ready weapon.

non-weaponized deterrence[12]. On 28 January 1987, in an interview to Kuldip Nayyar, A Q Khan revealed that Pakistan has nuclear weapons to counter an Indian aggression.[13] Meanwhile, the first Indian nuclear weapon is believed to have come into existence sometime in the early 1990s. The nuclear weapons capability was subsequently overtly demonstrated in May 1998. This historic development generated an intense debate between the deterrence pessimists and optimists.[14] The former community of strategic analysts was dismayed at the tests that in their perception had not only rocked the non proliferation edifice but also would certainly result in a nuclear exchange between the two countries suffering from a deep rooted hostility. The most notable subscriber of this viewpoint was the US administration led by President Bill Clinton who described the South Asian region as the most dangerous flashpoint on earth and repeatedly called upon India and Pakistan to "cap, reduce and eliminate" their nuclear weapons capability.

On the other side of the spectrum were the optimists who found greater prospects for stability in an overtly weaponized and established deterrence relationship than in the earlier non-weaponized state. This group extrapolated that countries with nuclear weapons do not go to war with one another because of the extant threat of escalation of the conflict to the nuclear level. Therefore, the fear of a devastating nuclear war casts a constraining influence on the nations' behaviour. This supposition largely emanates from the experience of the Superpowers during the Cold War and the fact that they avoided every instance of crisis that could have brought them into direct conflict with another. In the rare instance of the Cuban missile crisis of 1962 when a nuclear confrontation appeared likely, the leadership on both sides were ready and willing to make compromises to avert an escalation.

[12] Ashley Tellis, *India's Nuclear Posture: From Recessed Deterrence to Ready Arsenal* (Santa Monica: RAND, 2002), pp 221-29. Tellis describes non-weaponized deterrence as a situation where all the discrete elements of the nuclear weapons system had been built but without conducting any nuclear test.

[13] For more on the interview see K. Subrahmanyam, "Indian Nuclear Policy – 1964-98", in Jasjit Singh, ed., *Nuclear India* (New Delhi: Knowledge World, 1998), p. 42.

[14] For a detailed reading of the two camps, see Rajesh Rajagopalan, *Second Strike: Arguments about Nuclear War in South Asia* (New Delhi: Viking, 2005), pp. 3-7.

In fact, the earliest occasion of two nuclear countries engaging in a direct war with one another was the Ussuri river conflict between China and Soviet Union in 1969. Triggered off by an ambush of Soviet troops by Chinese forces at Zhenbao (Damansky for the Soviets) island along the Sino-Soviet border, it led to the killing of 31 Russian soldiers. The Chinese action, which according to their accounts was in response to Soviet provocations along the border from mid-1960s onwards, was, in most likelihood, premised on the confidence they gained from their nuclear weapons capability demonstrated in 1964. According to one author, "Chinese leaders believed that the border clash was a *controllable military conflict* that served their larger domestic political purposes of mobilizing the Chinese people for further revolution."[15] However, there is no evidence to indicate that the Soviets shared a common perception about such a characterization of the conflict. Rather, Soviet leaders saw it as a crisis that merited the consideration of a number of military options, including a disarming strike on China's nuclear capability, an alternative for which they also probed the US. Washington remained ambiguous and both China and Russia refrained from taking any major provocative actions. The crisis finally wound down after the Chinese Premier Zhou Enlai categorically clarified to the Soviet Premier that China had no aggressive intentions and that its nuclear weapons posed no threat to USSR. As the crisis subsided, it revealed the overarching influence of nuclear weapons on two adversaries when both are in possession of these weapons of mass destruction (WMD).

Three other significant issues stand out from this experience. One, that when a relatively weaker power that also happens to harbour revisionist ambitions acquires nuclear weapons, its new status prompts it to believe that it can engage in a limited military confrontation with a more powerful adversary to make a situation more favorable for itself. Secondly, that with time and better understanding of the unique nature of nuclear weapons and deterrence, brash nuclear behavior often settles down into a more mature and constrained response to situations. Thirdly, once it is understood that nuclear weapons are essentially for deterrence and cannot rationally be employed in war-fighting, even countries with small

[15] David Ochmanek and Lowell H Schwartz, *The Challenge of Nuclear-Armed Regional Adversaries* (Santa Monica, CA: Rand Corporation, 2008), pp. 33-34. Emphasis added to highlight the perception.

nuclear arsenals behave no differently from states that possess several thousands of these WMD.

It is the aim of this chapter to test these three hypotheses in the context of Indo-Pak nuclear behaviour in order to understand the functioning of deterrence between two nuclear-armed neighbours who share a troubled history that casts a long shadow over their present, and who are still afflicted with long-standing territorial disputes. The uniqueness of their relationship as compared to the Sino-Soviet relationship is evident in the fact that while China and the USSR (as sovereign independent nations) were once close enough for the USSR to have nearly provided Beijing with a full nuclear weapon, India and Pakistan, ever since independence have stayed estranged and fought four bitter wars. Pakistan has always resented the weakness of its conventional military might *vis-à-vis* India and has constantly been in search of measures to bridge the asymmetry. Alliances with nations such as USA and China and large-scale acquisition of weapons have been some of these means. But the possession of nuclear weapons capability is deemed by Pakistani generals to have provided the country with the most effective and guaranteed mode of negating India's superiority in conventional weaponry.

Some of Pakistan's actions soon after the May 1998 nuclear tests were a reflection of the line of thought that nuclear weapons provided Pakistan with the immunity to foment sub-conventional conflict without the risk of a military response by a superior conventional force. In fact, Stephen Cohen, a noted American expert on Pakistan, had recorded in 1980 that Pakistani Generals argued that a nuclear capability "would provide the umbrella under which Pakistan could reopen the Kashmir issue; a Pakistan nuclear capability paralyses not only the Indian nuclear decision, but also Indian conventional forces…"[16] And that is exactly how Pakistan has put its nuclear status to use.

Several questions, however, arise regarding the functioning of nuclear deterrence when the weaker actor of a nuclear dyad harbours ambitions to use its nuclear weapons as a defensive shield from behind which to mount offensive sub-conventional conflict. For instance, do such assumptions make the practice of nuclear deterrence more difficult, dangerous and

[16] Subrahmanyam, n.13, pp 48-49.

fragile? Does the size of the arsenal have any implications for deterrence? Do other nuclear states, more notably, USA and China influence the Indo-Pak deterrence relationship? These are some of the questions worthy of close examination. The chapter explores them on the basis of the experiences of the Kargil conflict and Operation Parakram (the name given by India to the troop mobilization that occurred after the terrorist strike on the Indian Parliament on 13 December 2001), both of which tested Indo-Pak nuclear deterrence. These two instances hold several lessons not only for the two nations involved but also for the larger international community, closely observing the state of affairs in the region.

Initial Years of New Nuclear States: Learning the Art of Deterrence

The months immediately following the nuclear tests of May 1998 were interspersed with a lot of political rhetoric in India and Pakistan. Each claimed that it would not hesitate to use the newly acquired weapons if the need ever arose. Political leaders indulged in bombastic statements to threaten and caution the other country against undertaking any action that could be perceived as detrimental to the security of the other. However, in stark contrast with this posture was the initiation of a major confidence-building measure when the then Indian Prime Minister, Atal Behari Vajpayee, took the inaugural bus trip from Amritsar to Lahore. This culminated in the signing of a Memorandum of Understanding that included several nuclear risk reduction measures.[17]

However, before any substantive measures could be put to practice, some of the apprehensions of the Western strategic community, that had anyway assumed the worst from the new nuclear states, appeared to have come true. Just one year after the countries proclaimed their nuclear weapons capable status, the Pakistani Army launched a bold military adventure in the Kargil region of Jammu and Kashmir. Approximately 5,000 soldiers of the Pakistan Northern Light Infantry sneaked into India in the guise of *mujahidin* to seize strategic pieces of territory. The heights of Kargil, that were occupied by the infiltrators provided substantial sway over observation of all activities on the highway, that was the logistics lifeline

[17] For more on this, see chapter 5 of this study.

for the Indian troops stationed in Ladakh. By seizing this vantage point, it was Pakistan's intention to compel the Indian government to negotiate the future status of Kashmir.

Did its newly acquired nuclear status prompt Pakistan to launch this offensive? It is interesting to note that Benazir Bhutto had stated in an interview in 2003 that Gen Pervez Musharraf had shared the Kargil plan with her when she was Prime Minister before Pakistan went nuclear. She claimed that she had vetoed the plan, though she had gauged that the Army was quite convinced of the "brilliance of its military strategy".[18] According to other Pakistani writings on the Kargil conflict, it is clear that the military leaders of the country believed that their recently demonstrated nuclear capability would deter India from using its conventional military superiority against Pakistan and therefore, they had a free hand to execute tactics which involved slicing of thin slivers of Indian territory without running the risk of a major retaliatory offensive. Islamabad assumed that the Indians would find their military options checkmated by the presence of the threat of nuclear escalation and would prefer a negotiation to the risk of a nuclear exchange. In Pakistani perception, therefore, the country had effectively equalized the significant asymmetry in conventional capabilities of the two nations. Also, given that ever since May 1998, an anxious US had consistently described South Asia as a dangerous nuclear flashpoint, Pakistan hoped that Washington would not hesitate to intervene to resolve the crisis by urgently pressing for a ceasefire. This intervention, it was further assumed, would work in Pakistan's favour, because the extra-territorial powers would persuade New Delhi to accept the *fait accompli*, thereby allowing Pakistan to retain the slice of territory it had occupied.

However, things did not go according to Pakistan's plans since the response from India and the international community turned out to be very different from what Islamabad had anticipated. India's initial response was tentative. The Indian Army was unsure about the true identity of the unidentified people whose movement was reported. They were assumed to be unusually well-trained and armed irregulars and terrorists. However, the Indian response slowly became more resolute once the illegal occupants were identified as soldiers of the Pakistani

[18] For more on this, see Samina Ahmed, "Nuclear Weapons and the Kargil Crisis: How and What Have Pakistanis Learned?" in Lowell Dittmer, ed. *South Asia's Nuclear Security Dilemma: India, Pakistan and China* (London: M.E.Sharpe, Inc., 2005), p. 143.

army. Thereafter, the use of force was made in a carefully considered and calibrated fashion. India chose to confine itself to taking military action on its own side of the LoC with a clear objective of dislodging the Pakistani forces. This was a decision fraught with challenges since on the one hand, the Army had to face the disadvantage of the enemy occupying the heights even as its own troops trudged upwards towards them, and on the other hand, the Indian Air Force had to undertake high speed flights in not only a narrow air corridor but also in an airspace where it was fully exposed to the enemy. In the initial days of the air operations, the IAF did lose two aircrafts. Yet, at no point was an attempt made to widen the ambit of the conflict beyond the heights that had been occupied by the intruders.

Amidst the challenges in tactical operations, two strategic factors nevertheless worked in India's favour. Firstly, having insisted that the intruders were not its own troops but independent *mujahidin*, Islamabad was constrained to provide them with any logistic support to fight the Indian artillery barrages or air attacks. Secondly, once the international community realized the subterfuge, Pakistan was seen as the aggressor and was pressured, even by its traditional allies Washington and Beijing, to withdraw from the occupied heights. In fact, the US, which had shied away from assigning blame to a particular party for having initiated a crisis in previous wars between India and Pakistan, squarely condemned Pakistan's incursions and intentions across the LoC. In early June 1999, the US Assistant Secretary of State, Rick Inderfurth, made it clear that "the LoC has to be respected, (and) the intruders would have to first leave what they had occupied."[19] A more sympathetic American response might have emboldened Pakistan to carry on with its plans. China too counseled the then Pakistani Prime Minister, Nawaz Sharif, during his trip to Beijing in the midst of the crisis, to abandon the operation and withdraw from the Indian territory. Faced with escalating losses, economic sanctions, and diplomatic isolation, Sharif was compelled to reconsider the continuing military operations, even in the face of advice to the contrary by his own military commanders.

The military operations in Kargil ended in July 1999. But the nearly two-month long conflict provided enough experience for analysis and interpretation to the deterrence optimists and pessimists. While the latter worried about the possibility of a nuclear exchange in a

[19] Jaswant Singh, *A Call to Honour* (New Delhi: Rupa, 2000), p. 208.

relationship as prone to crisis as India-Pakistan, the former were quick to highlight the inherent stability in the relationship based on the manner in which the Kargil conflict was conducted and brought to a close. Indeed, the experience provided many lessons to the new nuclear nations. Pakistan realized that the acquisition of nuclear weapons had not granted it a *carte blanche* on disruptive actions across the border. Even though Pakistan wished to use its nuclear weapons as a shield to protect itself from a conventional conflict with India in response to its provocative sub-conventional swipes, it also realized that the presence of nuclear weapons in India placed limits on how far it could, or should go, so as not to breach the limits of Indian tolerance. At the same time, India realized the constraints that the presence of nuclear weapons in the adversary's arsenal cast on its own exercise of military options. Despite the widely prevalent domestic mood to strike at Pakistan across the LOC once the identity of the *mujahidins* as regular Pakistani soldiers was established beyond doubt, the Indian political leadership imposed upon its military to undertake operations in such a way that the threat of escalation was minimized. Therefore, even at the cost of suffering more casualties of its own military personnels, no strikes were authorized across the border, not even at the terrorist camps known to exist in Pakistan occupied Kashmir (PoK) or the infrastructure known to be used by them in support of their operations.

The restraint that nuclear weapons impose on national behaviour was again brought out on 13 December 2001 after the Pakistan-supported terrorist attack on the Indian Parliament. A strike against a potent symbol of democracy by Pakistan-supported terrorist groups *Lashkar-e Tayyeba* (LeT) and *Jaish-e Mohammad* (JeM), this incident yet again ignited aggressive sentiments in the Indian polity, public and military. Political voices, military advice and editorial opinion vociferously argued in favour of targeting terrorist training camps and other infrastructure in PoK. In a show of resolve, the political leadership did authorize the mobilization of military forces on the international border and the LOC in Kashmir. This was an exercise in compellence or coercive diplomacy by India. The Indian political leadership demanded that Pakistan put an immediate end to cross border terrorism and ban the organizations working from its soil against India's interests. Pakistan, however, denied any such involvement and instead amassed its own troops across the border. The international community watched with concern as Operation Parakram unfolded. At one time travel

advisories were also issued by some governments to indicate the seriousness of the situation between the two nuclear-armed nations that were confronting each other with fully mobilized militaries.

However, despite the high level of military preparedness, India and Pakistan did not actually go to war. While this is attributed to a range of reasons, including external influences, diplomatic parleys, economic considerations, the constraining influence of the presence of nuclear weapons is not something that can be overlooked. Neither side was able to discount the possibility of the conflict escalating to the nuclear level and leading to destruction far higher than anticipated. Therefore, after a yearlong mobilization, the war machinery was wound down.

The timing of the two incidents that rocked regional stability proves the first hypothesis mentioned earlier in the paper. It is evident that instances of military adventurism by a weaker adversary follow the acquisition of nuclear weapons. Both Kargil and the attack on the Indian Parliament took place within four years of May 1998. In both cases, Islamabad was emboldened to take the step in the belief that India's military prowess would not be able to come into play against Pakistan. Indeed, Indian decision-making had to take into account the presence of nuclear weapons and weigh its actions accordingly. New Delhi also realized that far from making the bilateral relationship stable, the presence of nuclear weapons in Pakistan's quiver would increase the incidence of proxy war and that the threshold of provocation for India would also have to be raised in order to avoid a war. In order to counter Pakistan's nuclear strategy of deterring even conventional war with its nuclear weapons, India realized that it would have to craft new rules and types of military actions that would not breach the adversary's perceived nuclear threshold.

Kargil proved to be an eye-opener for Pakistan. It exposed the limits to which Islamabad could hope to exploit the stability-instability paradox to keep India unstable.[20] Op *Parakram*, on

[20] In the case of the Cold War, the paradox had been used to describe nuclear stability at the level of the Superpower relations even as incidences of instability occurred among their allies. But, in the India-Pakistan context, it translates into stability in the nuclear relations between India and Pakistan, even as a proxy war fomented by Pakistan keeps the relationship unstable at lower levels of conflict.

the other hand, made India realize that conventional war could not be conducted in the same manner in the shadow of nuclear weapons as without them. New options needed to be considered and perfected. And this became especially necessary since nuclear deterrence could not be expected to obviate the possibility of conventional conflict, not until such a time when Pakistan would give up its strategy of offensive defence – a policy that was offensive at the sub conventional level and defensive at the nuclear level. Or until the two nuclear neighbours could satisfactorily resolve the reasons for their troubled relationship, which are far more deep-rooted than the territorial issue of Kashmir.[21]

Therefore, as long as Pakistan continues its policy of breeding terrorist violence and instability in India, it will also have to be careful to maintain the level of violence below a certain perceived threshold of India's tolerance. To that extent, it must be stated that Pakistan too has been forced to tailor its offensive sub-conventional strategy to accommodate the presence of Indian nuclear capability. This behavior supports the second hypothesis articulated at the beginning of the paper that with time and better comprehension of the unique dangers of nuclear weapons, countries begin to weigh costs and benefits of their actions differently. Consequently, nuclear machismo evident in the early years after the acquisition of a nuclear weapons capability does settle down eventually to a more sophisticated articulation of deterrence. Nevertheless, desirous of utilizing its nuclear weapons to counter the adversary's superior conventional capability, it is hardly surprising that Pakistan seeks to raise India's threshold of provocation by projecting a low threshold of its own nuclear use. Thus, nuclear weapons are used by Islamabad to hold India in the grip of a pincer where one prong can needle India with acts of terrorism even as the other checkmates the possibility of India's conventional retaliation by projecting that any conventional war could rapidly escalate into a nuclear exchange with all its concomitant implications for both the nations and beyond.

Nuclear deterrence, therefore, from the Pakistani perspective has provided the perfect foil for its conventional military inferiority. This obviously is not a comfortable situation for India

[21] In the author's view, Pakistan's sense of insecurity against India can only be overcome when a truly democratic Pakistan can develop a positive vision and development path for itself. For too long, Pakistan has built its identity on a negative perception of its asymmetry, a driver that does not allow it to focus on its own growth.

and it has led to a reconsideration of military options that could still be exercised by New Delhi while minimizing the chances of nuclear escalation. Limited war has been spelt out as one possible response to this situation. In a speech at a national security think tank in the year 2000, the then Defence Minister George Fernandes had articulated that the conduct of limited war by Indian armed forces could effectively address the threat of cross border terrorism without the risk of nuclear escalation. Unlike the conventional mode of large-scale offensives into Pakistani territory, a limited war would be restricted in scope and intent, thus averting the risk of breaching Pakistan's nuclear threshold. Military strikes could either be restricted in geographical depth and spread over time, or limited to very short, but deep and precise thrusts on specific targets on the territory of the adversay. In either case, the intention would be to remain well away from the expressed red lines of Pakistani nuclear threshold. It may be recalled that Gen Khalid Kidwai of the Strategic Plans Division, the organization in charge of Pakistan's strategic assets and policy, had in 2001 clearly articulated four red lines whose breach could trigger a nuclear response. These were: loss of large parts of territory (space threshold); sizeable destruction of land or air forces (military threshold); economic strangulation (economic threshold); and political destabilization or large-scale internal subversion (domestic destabilization threshold).

Indeed, limited war theoretically presents an option for military action even in a situation of nuclear overhang. The problem, however, lies in the fact that in the event of an outbreak of war, there can be no guarantee of it remaining limited. Moreover, perceptions on both sides of the border about whether the operations are "limited" or not can never be expected to be similar. Going back to the Sino-Soviet conflict of 1969, one can recall that what China believed to be a controllable border conflict did not appear the same to Moscow. Consequently, the possibility of events spinning out of control and leading to a nuclear exchange can never really cease to exist. However, paradoxically enough, it may be this danger of escalation and the fear of nuclear destruction that could significantly strengthen nuclear deterrence. The third hypothesis that this chapter seeks to test is that once it is understood that nuclear weapons are essentially for deterrence and cannot be rationally employed in war-fighting, even countries with small arsenals behave no differently from those with large nuclear stockpiles. This is substantiated in the following section that examines the manner in which

India and Pakistan are engaged in the process of establishing credible nuclear deterrence through the formulation of doctrinal precepts and the enhancement of capabilities.

Ten Years after the Explosions: Establishing Credible Deterrence

In May 2009, India and Pakistan completed eleven years of the possession of their nuclear weapons. The last eight years since Operation Parakram have been devoted in both nations to the establishment of credible nuclear deterrence. This is obviously a more demanding proposition than a deterrent relationship based merely on the premise that the very existence of nuclear weapons should be sufficient to keep war, including nuclear war, at bay. Credible deterrence clearly demands a capability that *establishes beyond doubt* that any nuclear use would evoke such punitive retaliation as to make any gains absolutely worthless. For ensuring this kind of deterrence, the survival of the nuclear arsenal is as important for the first user as it is for the country undertaking the retaliation. Pakistan recognizes this and hence has been engaged in acquiring capabilities and establishing systems that would ensure first use with second-strike capability. It believes that India could be deterred from using its superior nuclear forces against a small first use of nuclear weapon by Pakistan only if New Delhi was absolutely sure that even after taking an Indian retaliation, Islamabad would still be able to mount an effective second strike. Meanwhile, for India with its no first use posture, the need for a survivable nuclear capability – ranging from the weapon and the delivery system to the decision-maker and command and control apparatus – is absolutely critical. Not surprisingly, therefore, India and Pakistan have used these last few years in improving the ranges and accuracies of their missiles, and in the establishment of credible, survivable command and control organizations. The relative absence of nuclear rhetoric suggests a quiet maturity, as both grapple with the advantages and limitations of nuclear deterrence.

However, eight years (since the end of Operation Parakram) is too short a time to pronounce judgment on whether the two neighbours have managed to establish a successful deterrent relationship. It may be recalled that in the case of the Superpowers, even fifty years of living as nuclear states never really led to the pronouncement of a clear verdict that it was nuclear deterrence that had been the real keeper of peace. While several analysts do credit

nuclear weapons with having kept World War III at bay, many also question whether it was not the result of sheer good fortune.

It is true that there has been no war between India and Pakistan since the major mobilization in 2001-02. However, peace, if the absence of war may be so described, during this period has been edgy and disturbed by many terrorist attacks, the boldest of these being the one carried out in Mumbai on 26 November 2008. Of course, both nations have enhanced their understanding of nuclear deterrence and its interlinkages with conventional war. Pakistan realizes the limits of cross border terrorism it can fuel in the presence of nuclear weapons without triggering off some sort of a response. Even a limited war that may thus result, cannot be completely devoid of the risk of escalation. Therefore, it is inconceivable that either country would ever rationally consider it worthwhile to indulge in an action that has the potential of rocking the nuclear deterrence relationship. However, the possibility of deterrence breakdown can never be completely dismissed. A few scenarios, in fact, are worthy of consideration.

Political Instability in Pakistan

Given the state of Pakistani politics over the last few years, political instability is a cause of concern. While the military rule stands discredited and some sort of democracy has been restored, the democratic culture is yet to take firm roots. Of course, it can be argued that Pakistan has been at such crossroads before. But, the distinguishing factor this time, which adds to the sense of disquiet not just in India but even in the USA, is the presence of nuclear weapons with Pakistan. Traditionally, the Pakistani military, and particularly the Army, has always maintained supreme control over the country's nuclear programme and the arsenal, irrespective of the nature of the government. Soon after Pakistan declared itself a state with nuclear weapons, a military coup that brought General Musharraf to power established overt control of the military. The unity of command under President Musharraf was evident. However, the weakening of his position and the return of some sort of a fragile democracy to the country, as well as the growing political instability, with a proliferation of power centres – President, Prime Minister, Army, ISI, non-state actors – heightened the concerns over the safety and security of Pakistani nuclear weapons.

While there is little reason to believe that the military-dominated command and control of Pakistan's nuclear weapons would significantly alter even with an elected government, the possibility of the development of some scenarios would be worthwhile to consider carefully in order to avoid future surprises. One such situation could emerge after a period of prolonged political instability in the country leading to problems of governance and resulting in the military and democratic forces being pitted against one another. The possibility of the absence of law and order in several regions of the country and the spread of fundamentalist tendencies sympathetic to *jihadi* terrorism, could result in a situation where disruptive non-state elements are able to take unlawful hold of the nuclear arsenal. This could occur as a result of a forceful hijacking of the nuclear assets from storage sites or while in transit or as a result of the security forces in charge of the nuclear material or weapons voluntarily handing them over for money or because of their ideological support to the terrorist cause.

The Pakistani organization tasked with the security and safety of the country's nuclear assets, the Strategic Plans Division, has dismissed any such possibility by highlighting that the Pakistani nuclear arsenal is well under its control with no possibility of any loose nukes finding their way into terrorist hands. The SPD claims to have established formal oversight over strategic scientific organizations to insulate them from outside interference. Some 10,000 military personnel, subjected to periodic personnel reliability checks are believed to be employed in the security division headed by a two-star general. A separate security directorate for counter intelligence works under the SPD to coordinate with intelligence agencies on external threats, with the ISI forming the outermost security ring. Normally, one would expect these arrangements to hold even in times of political instability.

Nevertheless, concerns persist for three reasons: firstly, the presence of armed, motivated, foreign and national, religious terrorist organizations on Pakistani soil that are as anti-West or anti-India, as anti-establishment within Pakistan, and are known to desire acquisition of WMD[22]; secondly, the presence of Islamist sympathizers within the Pakistani

[22] It may be recalled that a couple of scientists of the Pakistani nuclear establishment had been contacted by Al Qaeda operatives to probe into the possibility of acquiring nuclear materials.

military, intelligence and scientific organizations who could constitute a threat from inside and facilitate leakage of nuclear material, technology or know-how to *jihadi* outfits; and thirdly, the likely continuance of remnants of the A Q Khan network who may use political instability to revive nuclear transfers for personal monetary gains. It would not be past the capability of sophisticated terrorist networks to use their monetary or personal influence to acquire nuclear weapon or fissile material if they so desired.

Given the above, two specific dangers stand out. The first and more probable one is that of radioactive nuclear material (highly enriched uranium or plutonium, both of which Pakistan produces and has stockpiles of) being acquired by a terrorist organization to be used along with conventional explosives to build a radiological dispersal device (RDD) or a 'dirty bomb'. This would certainly have a great psychological impact. It would cause massive disruptions and also impose a high cost of damage control, though it may not result in loss of life any greater than in case of use of conventional explosives. The second possibility, which is certainly a more difficult exercise, would be the acquisition and use of a full-fledged nuclear weapon by a non-state actor. This appears less probable for two reasons: one, because fissile cores and other components are physically separated in Pakistan, making ready, deliverable nuclear weapons unavailable; and two, because Pakistan claims to have some sort of locking mechanisms or safety devices on nuclear weapons to obviate the possibility of unauthorized use.

Of course, it is questionable whether nuclear or radiological terrorism would in any way serve the cause of terrorist organizations and not lead instead to their absolute alienation from their support base in the masses, or more decisive and concerted action from not just the victim nation, but from the larger international community. It is not within the scope of this paper to examine the rationale or possibility of the challenge of nuclear terror in any great detail, except to highlight the existence of a precarious situation in Pakistan and its impact on the nuclear deterrence relationship between the two nations.

Any use of nuclear weapon or RDD by terrorists would hold significant likelihood of deterrence breakdown between two neighbours that have long suffered an uneasy relationship because of Pakistan's proxy war against India. Classical nuclear deterrence cannot hold between a state and a non-state actor because the latter has no worthwhile stakes that could

be targeted or destroyed to threaten him with unacceptable punishment as a deterrent. However, if the non-state actor is actually working at the behest of a state, then, the applicability of deterrence changes. In the case of an act of nuclear terrorism against India, the probability of Pakistani involvement would be deemed to be very high based on past experience and evidence, and this would severely test the functioning of nuclear deterrence.

In order to obviate such a scenario leading to inadvertent deterrence breakdown, it is imperative that both sides take necessary actions – individually and jointly. For instance, it would be in the interest of the Pakistani state to maintain the tightest possible control over its nuclear assets, and in fact, demonstrate utmost responsibility in this period of domestic political instability to restore its credibility as a responsible nuclear power. Meanwhile, New Delhi must step up its border controls (on infiltration routes, ports and other entry points) and enhance civil defence preparedness for damage limitation in the unfortunate eventuality of the actual occurrence of the unthinkable. Both must also take meaningful nuclear risk reduction measures that are rooted in wider confidence building mechanisms between the nations. These are discussed in some detail in chapter 5 of the study.

Unauthorized Use of Nuclear Weapons

A second possible scenario for deterrence breakdown could occur as a result of un-authorized use of Pakistani nuclear weapons. This could happen in two ways. Firstly, as a result of a failure of the Pakistani command and control (C2) system. Given the small nuclear force and the Pakistani posture of first use, its C2 structure does require some pre-delegation of authority. For reasons of survivability too, geographic dispersion of the small arsenal is a necessity, which nevertheless brings its own challenges of effective and timely communication. As launch authority flows downward, the human factor becomes significant and any unauthorized launch of nuclear weapons, however remote, cannot be ruled out.

A second such eventuality could arise during a period of crisis. Let us assume, for instance, that there was another large scale terrorist attack on India that breached its tolerance level. The IAF was then directed to undertake precision strikes against some Pakistani targets.

This inadvertently destroys a part of Pakistani nuclear forces because they happened to be stored in a region targeted by Indian conventional forces without prior knowledge of their existence. Crisis situations such as this could lead to faulty decision-making without a verification of facts. Moreover, pressured by the thought of using its nuclear forces before they are lost to an Indian strike – the classic "use or lose" syndrome – might tempt some of the officers at the lower levels to take action without waiting for proper authorization from the higher command.

The possibility of such unauthorized use is greater from the Pakistani side since its C2 structure envisages greater delegation of authority. The Indian system, on the other hand, is just the reverse, where the political leadership retains strict control over not only the decision to use the weapon, but also prevents the military from taking physical custody of the arsenal unless specifically enabled by the National Command Authority headed by the Prime Minister.

In fact, interestingly, while Pakistan is believed to suffer from loose negative controls[23] that could lend themselves to unauthorized or miscalculated nuclear launch, India is perceived to have too tight a political control over its arsenal that raises the problem of positive controls[24] or the certainty that a nuclear launch will take place only when authorized. Both situations affect the credibility of nuclear deterrence and it is imperative that a judicious and optimum mix of controls is applied by both nations. This is particularly significant so that unnecessary pressures can be avoided on small nuclear arsenals and both can project far more reassuring profiles to one another. It is a proven fact from the Cold War experience that measures that seek to reassure the adversary that his nuclear arsenal is safe from a disarming or a decapitating strike serves to reduce the possibility of deterrence breakdown.

Nuclear War Triggered by Miscalculation

[23] The term negative controls in the nuclear lexicon refers to the assurance that nuclear weapons *would not* come into use unless specifically authorized by an authentic decision-maker.

[24] Positive controls, in contrast to negative controls, refers to the assurance that nuclear *would be* used when authorized.

Breakdown of nuclear deterrence could also result from a miscalculation of capabilities or similar responses. Such a possibility is quite feasible given the past record of the Pakistani military in planning and authorizing offensive ventures premised on a keen desire to alter its territorial status *vis-à-vis* India. In an attempt to distract attention from domestic unrest or genuinely believing that it could pull off a strategic success against Indian conventional forces, and deriving confidence from the recent and large acquisition of modern conventional weapons, Pakistani army could be expected to indulge in thinking along similar lines. The Pakistan Army, in any case, has a high self-image as the defender of the nation. In fact, even the organization theory identifies a set of parochial military interests and biases that lead senior officers to favour offensive doctrines, preventive wars, preemptive strikes, decisive counter-force options without thinking them through. Kargil was one such incidence and many Pakistani analysts, including retired military men, have criticized the flawed strategic thinking that led to it. And yet, there are several who blame the civilian government of the time for buckling under US pressure and denying the Pakistani military an opportunity to avenge past wrongs.

Conclusion

Immediately after the overt demonstration of its nuclear weapons capability, Pakistan did try to use its new status to seek several benefits it assumed would automatically accrue from the acquisition of nuclear weapons. Kargil, however, made it aware of the limitations of these assumptions. India too realized the deep and dangerous connection between conventional war and nuclear deterrence. The concept of limited war has since been espoused as one possible way of nullifying the Pakistani advantage of nuclear weapons being used as a leveller for India's conventional might. However, the absence of any major military confrontation between India and Pakistan since 2001-02 may be attributed in some measure to the presence of nuclear deterrence.

Indeed, the existence of nuclear weapons capabilities imposes its logic on decision-makers. Interestingly, in times of peace, national leaderships flaunt the advances in nuclear capabilities but in moments of crises, the fear of inadvertent escalation compels them to look

for ways not to use the capabilities at their disposal instead of finding ways to use them. The course of every crisis involving nuclear weapon states points to the fact that in moments of high tension, the decision-makers in these states have made all efforts, including compromises, to ensure nuclear restraint rather than nuclear pre-emption. This then explains the unwillingness of India to expand the scope and dimensions of conflict in 1999 and 2001 despite its conventional superiority and a widely prevalent sentiment to call Pakistan's nuclear bluff. In fact, the government in India at that time was of that of the right-wing BJP party that is perceived as a more chauvinistic and fundamentalist political party with a well known bellicose attitude towards Pakistan. The fact that notwithstanding the nature of the government in power India showed restraint does provide an indication of the influence of nuclear weapons on the conduct of conventional war. In fact, it may be recalled that in 1965, when nuclear weapons had not yet entered the strategic calculus of the two countries, a far weaker Indian army with a relatively weak political leadership had not shied away from horizontal escalation in response to Pakistan's Operation Gibraltar in Kashmir. Within a week of the Pakistani attack, India had opened a second front in the Punjab, threatening significant civilian and military assets. But in 1999, the Indian Air Force refrained even from crossing the LoC. Had it not decided to impose this constraint upon itself, the air force could have well interdicted Pakistani lines of communication and logistics and quickly ended the conflict. If it so desired, India also had the military and operational wherewithal to open another theatre of operation.

However, the mutual possession of nuclear weapons proved to be the critical determinant in controlling escalation. The same would prevail as long as 'rational and reasonable' governments are in control. Nuclear deterrence will be able to impose a sort of stability in the relationship. However, Pakistan will continue to exploit this stability at the nuclear level to indulge in acts of instability at the lower level. Nuclear deterrence, therefore, will tread on a knife's edge – largely stable but not immune to risks of breakdown. This is true of any deterrence relationship. But more true of the unique functioning of the deterrence between India and Pakistan, given their geographical proximity, historical hostility, and doctrinal differences that seek to derive different benefits from nuclear weapons.

In conclusion, a few realities about the unique Indo-Pak nuclear deterrence stand out:

- During the 1990s, there were a lot of misgivings among a majority of strategic analysts the world over that the introduction of nuclear weapons into a conflict-prone relationship would result in volatile consequences. One statement illustrative of this thought came in 1992 that "many of the political, technical, and situational roots of stable nuclear deterrence between the US and the Soviet Union may be absent in South Asia… There is a high risk of nuclear weapons being used."[25] This has been proved false.

- The assumption that small nuclear arsenals and rudimentary command and control would lend themselves more easily to temptations of nuclear use has also proved to be misplaced. Mutual deterrence based on the threat of punishment holds true irrespective of the size of the arsenal.

- It is a fact that nuclear deterrence imposes the same constraints on national behaviour of every possessor of nuclear weapons that is locked in a deterrent relationship with another nuclear capable state.

- Dangers arising from the possession of nuclear weapons are the same everywhere. The size of the arsenal has no major implication for deterrence stability.

- Credibility of deterrence depends mostly on the ability of the state to inflict unacceptable damage on the other, which in turn, is a function of the survivability, reliability and penetrability of the delivery systems, as also the projection of resolute political will to take the step when necessary. These factors are common to all nuclear weapon states and have no special bearing upon the functioning of nuclear deterrence between second tier nuclear capable states.

- Strategic balance based on nuclear weapons parity or superiority is irrelevant to the functioning of credible deterrence. What matters is the threat of nuclear war itself. This logic was established during the Cuban missile crisis when, despite the American nuclear numbers advantage over Russia, Washington's conclusion in the words of Mc George

[25] Lewis A. Dunn, Containing Nuclear Proliferation, *Adelphi Paper no. 263* (London: International Institute for Strategic Studies, 1991), p.4.

Bundy was, "We had to assume that in any nuclear exchange, no matter who started it, some of these missiles and bombers would get through with megaton bombs. Even one would be a disaster. We had no interest in any nuclear exchange other than to avoid it. The fact that our own strategic forces were very much larger gave us no comfort".[26] The same logic would apply to rational leaders in India and Pakistan too.

- Finally, credible nuclear deterrence between India and Pakistan would hold on the same bases it has held elsewhere – fear of nuclear destruction; imposition of unacceptable damage; and the ability to rationally calculate and weigh the benefits against the costs of a nuclear exchange. As long as a leadership, whatever be its orientation, is able to make this assessment in a rational and reasonable manner, nuclear deterrence would function.

[26] McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years*, (New York: Random House, 1988), p. 448.

3 INDIA-CHINA NUCLEAR DETERRENCE

It is a common perception that Indo-Pak nuclear deterrence is far more prone to breakdown as compared to the India-China nuclear equation. The latter is believed to enjoy a greater level of stability. This assumption arises from four prevailing realities. Firstly, despite the fact that China illegally occupies 48,000 sq km of Indian territory and lays claim to another 90,000 sq kms in Arunachal Pradesh and some other sectors, unlike Pakistan, Beijing does not resort to the open use of direct asymmetric warfare to fulfill its revisionist ambitions.[27] Therefore, while Pakistan's nuclear strategy of *offensive defence* carries the possibility of deterrence breakdown as a result of border skirmishes escalating to a larger conflict due to underlying anger and frustration at the constant terrorism inflicted on Indian society and nation, the possibility of a similar development between India and China is far less, even though alleged incursions are also made by the Chinese along the Line of Actual Control (LAC) with alarming frequency.

Secondly, India and China also have some nuclear doctrinal consonances that enhance deterrence stability. Like China, India too strives for minimum credible nuclear deterrence and has declared a 'retaliation only' policy that is premised on the capability to cause unacceptable damage with the help of survivable and reliable nuclear forces after the adversary's first use of nuclear weapons. Such a position, even if the declaratory pronouncements are not legal commitments, makes the nuclear doctrines of both countries stand apart from those of other NWS. Also, it makes their relationship more stable as it is deemed less prone to deterrence breakdown as a result of misperceptions or miscalculations in times of crisis. Any nuclear use would have to be a deliberately considered choice, which is largely assumed to be a non option for rational state actors.

Thirdly, most Chinese writings, quite similar to those in India too, perceive nuclear weapons as a political tool of deterrence. Both countries claim a defensive role for their nuclear

[27] China has fomented insurgencies in the north-eastern states of India. But its direct involvement in these has declined over the years. It has instead found a more effective means of keeping India preoccupied by using Pakistan, its strategic ally, to keep the Indian Army embroiled with Pak-fomented sub-conventional conflict through a high level of cross-border terrorism.

arsenal, projecting it as an effective instrument that would be used to safeguard their nation against possible nuclear coercion or blackmail through the use of the threat to impose a high cost on the aggressor, so that no gains appear worthwhile. Thus, both seek to exploit the *political* benefit of the nuclear weapon, albeit by suitably enhancing the military aspect of its nuclear capability.

Fourthly, China and India are focused on economic development and it is widely assumed that Beijing would not undertake revisionist activities that would distract it from this goal till such a time when it is able to secure a certain global pre-eminence for itself. India, in any case, has never expressed a desire to revise its territorial limits through military means.

However, notwithstanding these stabilizing elements, there are factors that also complicate the Indo-China relations. Firstly, China still does not officially recognize India as a nuclear weapon state and hence has refused to undertake any nuclear arms control or nuclear stability negotiations with New Delhi. Secondly, China's NFU is believed not to apply to territories that it claims as its own (which would include Aksai Chin and the state of Arunachal Pradesh). Thirdly, Beijing is engaged in a process of strategic modernization. Though these developments are perceived to be in response to US moves towards deployment of ballistic missile defence (BMD) and other policies such as those of pre emption and counter-proliferation, the upgradation of its nuclear capabilities do cause anxieties in India owing to lack of clarity about Chinese intentions.

Would its modernized and informationized strategic capabilities tempt China to alter its nuclear doctrine and strategy from the positions of minimum deterrence and no first use? Theoretically, a more mobile and survivable nuclear force (warhead/delivery/command and control) could provide China with the confidence to engage in 'limited nuclear war fighting' – a scenario in which it could use a small number of nuclear weapons on the adversary's military forces or sites and then deter retaliation against this action by threatening attacks over cities with far greater numbers and higher yields. Therefore, would a credible second-strike capability and the ability to impose intra-war deterrence tempt China to use nuclear weapons in the case of a crisis, especially with India? Would China consider using nuclear weapons in Arunachal Pradesh that it claims as its own territory? Or against other Indian targets to coerce India to

leave the region, or, yet again, to 'teach India a lesson'? Would China be deterred by the fact that it does not have a disarming capability with a first strike, and its action would certainly invoke a nuclear retaliation on some of its own cities? Would 'reunification' then be worth the damage and destruction of its own people? Would China's modernized nuclear capability give it the confidence to keep the border war "limited and local", or would it be willing to risk a wider war with India?

The chapter analyzes these questions by examining three parameters – China's nuclear doctrine; its ongoing strategic modernization; and the likely impact of the latter on the doctrine. The chapter further assesses the impact of these elements on deterrence credibility and stability between the two countries. On the basis of this examination, the paper explores the functioning of deterrence between two nuclear powers with different capabilities. While China is an established nuclear weapon state since 1964 with an arsenal robust enough to deter even the US, India is a new nuclear power that does not have a *de jure* nuclear status, and is still in the process of building credible deterrence. The chapter concludes that the establishment of credible nuclear deterrence wherein India develops a reliable and survivable capability to inflict 'unacceptable damage' on China would prove to be stabilizing for Indo-China relations and would significantly lower the possibility of war. In fact, given the near parity in their conventional forces, the likelihood of classical conventional war is low in any case. The threat of Mutual Assured Destruction (MAD) with the use of nuclear weapons would further reinforce that stability. Given this, if wars do break out as a result of military incursions (inadvertent or deliberate) into enemy territory, they are likely to be confined to the borders and unlikely to be able to bring about any actual territorial acquisitions or change of boundaries. In fact, as it appears, China has no inclination to agree to a border settlement with India in the near future – neither through negotiations nor through military means. It suits Chinese interest to leave the issue on the back burner and consequently keep India unsettled and unsure of true Chinese intentions even as it aggressively engages economically with the country.

China's Nuclear Doctrine

China defined and evolved its unique brand of nuclear deterrence at a time when the only predominant trend was the one being followed by the two Superpowers that emphasized accumulation of large numbers of nuclear warheads placed on hair trigger alert to cause mutual assured destruction.[28] And even more significantly, it did so at a time when nuclear arsenals of both the Superpowers were not only aimed at one another, but also individually at China. Despite this, Beijing rejected the need for a large nuclear arsenal or for a low level of launch readiness. It settled instead for a *defensive counter-strike role* for its small nuclear forces, their size being just enough to cause "unacceptable damage" to the adversary. These attributes of nuclear deterrence were an outgrowth of Mao's broader military thought and were based on no formal, systematic research on nuclear theory, unlike what had evolved in the US.

Some Western Sinologists have concluded after considerable research on Chinese attitudes towards nuclear weapons that the first generation of Chinese Communist leaders formed highly accurate assessments about the physical limitations of nuclear weapons and the political constraints of their use even when USA had a far greater nuclear force. Mark Ryan, for instance extrapolates that these attitudes "depended in part upon a measure of psychological realism, an ability to look clearly at both the enemy's and one's own advantages, disadvantages, hopes, fears and general psychological deportment etc to shape Chinese decisions on role of nuclear weapons."[29]

The Chinese nuclear arsenal, premised on this initial understanding as put forth by Mao in some public statements, largely remains the same even today. The most recent White Paper on National Defence of 2009 reiterates the same basic doctrinal attributes as expressed by Mao in his initial pronouncements. However, the assessment of present day Chinese thinking on nuclear weapons and strategies must also be made on the basis of an analysis of patterns in

[28] Some portions of this and the following sections of this chapter are drawn from Manpreet Sethi, "Fire in the Dragon" in Manpreet Sethi, *Nuclear Strategy: India's March Towards Credible Deterrence* (New Delhi: Knowledge World, 2009).

[29] Mark Ryan, *Chinese Attitude Towards Nuclear Weapons: China and the US during the Korean War* (New York: ME Sharpe, 1989), p. 179.

Chinese defence investments, strategic force deployments and arms control behaviour. The following paragraphs take up this examination, starting with two specific attributes of the Chinese nuclear doctrine.

Minimum Credible Deterrence

In keeping with the Chinese strategic culture of minimalism and ambiguity, Mao directed his country to steer clear of an excessive build-up of nuclear warheads in favour of an arsenal that would be just enough to inflict unacceptable damage. It was Mao's dictum to "build a few, keep the number small, make the quality high" and he is also cited to have stated, "Six are enough"[30]. In Western literature, this came to be described as minimum nuclear deterrence. This was premised on the use of nuclear weapon as a political tool of deterrence, which clearly obviated the need for nuclear superiority, or even parity. Consequently, China has aimed for a capability that would be sufficient to deter threats of nuclear use against itself.

Mao's rationale for such a doctrine was as much a result of circumstantial resource constraints of funds and fissile material, as the astute understanding that Washington would never risk a nuclear exchange with China. Rather, Beijing found greater wisdom in setting an "example of moderation and prudence on the moral high ground, and seemingly proved its theory that small defensively oriented arsenals at once provided deterrence, reassurance and stability".[31] Mutual vulnerability was believed to be good enough and China never strove for MAD. In fact, even in 1969, at the time of the Ussuri river conflict with the USSR – the first time ever that two neighbouring nuclear armed states engaged in armed conflict, and amid reports that the Soviets may be preparing for a disarming first strike against Chinese nuclear assets – Marshal Nie Rongzhen, in a report to the Central Committee concluded, "It is not an easy matter to use a nuclear weapon. When a country uses nuclear weapons to threaten another

[30] Litai Xue, "Evolution of China's Nuclear Strategy" in Hopkins and Hu, n. 3, p. 171.

[31] Bruce Blair, "General Zhu and Chinese Nuclear Preemption", *China Security*, issue 1, Autumn 2006, p. 16.

country, it places itself under the threat of the other country's nuclear weapons…"[32] The emphasis, therefore, was on building high-yield nuclear weapons for counter value targeting, so that destruction was assured even without accurate delivery systems. Consequently, the Chinese nuclear arsenal was never swayed by the Superpower logic of large nuclear stockpiles. It sought rather an assured counter strike capability against value targets as a powerful deterrent because the Chinese measure of the effectiveness of its arsenal was the adversary's psychological fear of suffering retaliation, rather than a calculation based on its own force structure. It was truly a case of achieving deterrence through punishment rather than through any pretension of being able to fight a nuclear war in which China could deny victory to the adversary.

However, it was only to be expected that with economic development and the concomitant easing of purse strings, as also techno-scientific advancements and change in threat perceptions and core interests, the nature of China's nuclear deterrent too would alter. China's development or acquisition of advanced strategic capabilities is driven as much by the new threats (such as the development and deployment of BMD by the US and its export to Taiwan), as by the logical progression of its economic prowess and techno-scientific expertise. Some Western experts on China describe this as *graduation from minimum to limited nuclear deterrence*. The essential difference lies in the fact that while minimum only required China to maintain a credible counter strike capability based on survivable nuclear forces, limited deterrence entails the possession of more sophisticated nuclear forces capable of controlling escalation during a conflict and bringing about intra-war deterrence.[33] This envisages a flexible nuclear response, including counterforce targeting, instead of basing deterrence on only counter-value punitive strikes. The emphasis, therefore, shifts to acquisition of "limited war-fighting capabilities, improved command and control and early warning systems, smaller, survivable, mobile, more accurate and diverse cruise and ballistic missile nuclear delivery

[32] As cited by Jeffrey Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge, Mass: MIT Press, 2007), p. 79.

[33] Alastair Iain Johnston, "Prospects for Chinese Nuclear Force Modernization: Limited Deterrence Versus Multilateral Arms Control," *China Quarterly*, June 1996, pp. 552-58; Alistair Iain Johnston, "China's New 'Old Thinking': The Concept of Limited Deterrence," *International Security*, vol. 20, no. 3, Winter 1995/96.

systems, possible abandonment of the NFU policy, and missile defense."[34] Some other analysts, however, such as Evan S Medeiros, have described these moves as being driven by "*sufficiency and effectiveness"*. It should be sufficient in size to resist enemy efforts to coerce China by threatening retaliation, and in case that fails, sufficient enough to survive an enemy's initial strike and effective enough to execute counter-attack and re-attack operations to inflict unacceptable damage, and to penetrate whatever defenses the enemy may employ.[35]

Irrespective of how it is described, China is certainly graduating to a higher level of strategic capability, given that it now has the economic wherewithal to transcend the 'minimum', and also the political context in the deployment of BMD in USA, and TMD in the theatres most relevant to Chinese security (Japan and Taiwan). The focus is to possess *credible deterrence* with acquisition of relevant capabilities – the fact that these could allow limited scope for nuclear war fighting to impose intra-war escalation control will be used to further the deterrent value of the weapon. Nevertheless, it is unlikely that China would build the kind of huge stockpiles that the Superpowers did during the Cold War. For China, the true value of the nuclear weapon rests in its being effectively used as a potent deterrent rather than its actual use in war, especially against the US, whose nuclear and conventional capabilities would far outrun Chinese capabilities, despite its modernization. Would the same, however, apply in the case of India? The issue is explored in the second half of this chapter. For the moment, let us look at another significant attribute of China's nuclear deterrent.

No First Use

After successfully testing a 15 kt implosion device in October 1964, the Chinese government issued a statement declaring that "China will never at any time or under any circumstances be the first to use nuclear weapons".[36] Among the five nuclear weapon states

[34] Bates Gill, James Mulvenon, Mark Stokes, "The Chinese Second Artillery Corps: Transition to Credible Deterrence", in Mulvenon, Andrew, N.D. Yang, eds. *The People's Liberation Army as an Organization: Reference,*volume V (2001), p. 548-49.

[35] Evan Medeiros, "Evolving Nuclear Doctrine", in Paul J Bolt and Albert Willner, eds. *China's Nuclear Future* (London: Lynne Rienner, 2006) p. 41.

[36] Statement of Government of PRC, 26 October, 1964.

recognized under the NPT, China is presently the only country that has a declared NFU doctrine.[37] China owes this concept too to Mao who crafted it as the best response to larger nuclear threats threatening China. While on one hand, he used the weapon to project a definite threat of retaliation that would cause unacceptable damage, on the other hand, through NFU, he sought to project reassurance and stability.[38]

Several Western analysts have criticized China's NFU for making a virtue out of necessity, since it never had an extensive and advanced early warning system or hardened command, control and communications infrastructure that could have accommodated launch on warning or launch under attack postures anyway. This viewpoint would be tested in the coming decades as China develops a more modern and informationized nuclear arsenal that would be capable of mounting pre-emptive nuclear strikes, while retaining a credible second-strike capability. Would it then abandon NFU? Some indications of this thinking are evident in Chinese writings and 'personal' statements of military men, primarily in the context of new threats to the survivability of Chinese nuclear forces as a result of advances in US BMD and non-nuclear precision strike capabilities. In any case, it may be recalled that there has been substantial domestic criticism of adoption of NFU, which has been described as an "unrealistic and inflexible operational doctrine" in Chinese military journals.[39]

Though party officials assert that the country's nuclear doctrine remains unchanged, one cannot discount the possibility that in case of a crisis over Taiwan, in which US involvement overwhelms China with its superior precision-guided weaponry delivered with the help of real time tactical intelligence, Beijing could be tempted to resort to first nuclear use. This temptation could grow with greater confidence in the mobility and survivability of its nuclear infrastructure that pushes China to believe that it could impose intra-war deterrence. It would certainly be greater against a weaker nuclear opponent such as India. Beijing has intelligently

[37] Russia abandoned its NFU position in 1993 sensing the weakness of its conventional forces.

[38] Immediately after its first test, China launched a "Nuclear Peace Offensive" that included the NFU, proposal for a ban on first use and recommendations for a multilateral conference to discuss abolition and destruction of nuclear weapons.

[39] Johnston, "China's New 'Old Thinking': The Concept of Limited Deterrence*", International Security*, vol. 20, no.3, Winter 1995-96, pp 21-23.

invested in increasing the survivability of its nuclear arsenal and Western analysts perceive a doctrinal shift towards additional operational flexibility. For instance, a US document on Chinese Military Power in 2003 noted: "Despite Beijing's NFU pledge, there are indications that some strategists are reconsidering the conditions under which Beijing would employ theatre nuclear weapons against US forces in the region."[40] A year later, a statement by Gen Chenghu provided further grist to the mill. In any case, there are references in Chinese military writings to demonstration strikes with conventionally armed nuclear missiles to signal China's resolve.[41] A counterforce nuclear strike might well be justified as "counter attack in self defense", a concept that has been upheld in WPND 2006 and was used earlier for other wars as well, including the one with India in 1962. A RAND Study of 2005 concluded that where use of force involves core interests such as sovereignty or territorial claims, Beijing "could claim military pre-emption as a strategically defensive act…"[42]

Implications of abandonment of NFU for India will be considered in the last section of the chapter. Meanwhile, *vis-à-vis* the US, pursuance of a declaratory NFU posture is and will remain the best course of action for Beijing. It would make little strategic sense to alter it, at least at the rhetorical level, since NFU does make China *appear* less belligerent and more internationally acceptable. It is also debatable whether first use would actually serve any purpose, and not prove to be suicidal instead. It would be better for China to enhance its nuclear deterrence through modernization of its conventional forces in order to keep the nuclear threshold as high as possible. Meanwhile, if the international community (particularly the USA) is serious about dealing with possible nuclear first use, it may be advisable to take up China's often-made offer to evolve a universal NFU treaty, thereby increasing the pressure of international opprobrium on anyone who resorts to the first use of nuclear weapons. For a country that lays a great score on its international image, this might constrain nuclear use.

[40] Lewis, n.32, p. 44.

[41] Medeiros, n.35, p. 61.

[42] Hans Kristensen, Robert Norris and Mathew G Mckinzie, *Chinese Nuclear Forces and US Nuclear War Planning* (Washington DC: FAS and NRDC, November 2006), p. 6.

Strategic Modernization and Capabilities

As stated earlier, China has been engaged in a conventional and nuclear modernization exercise over the last decade or so. The following paragraphs examine five specific areas, in which research and development as well as new deployments are underway.

Size and Capabilities

The growth in size and capability of China's nuclear arsenal is a result of greater resource availability (funds and fissile material) as also changing threat perceptions as a result of maturing US missile defences. In fact, by increasing the number of its warheads and strategic missiles and by developing countermeasures to saturate and defeat the missile defences, Beijing is responding to the US BMD as any adversary, who fears a degradation of its own deterrence, would have. However, China remains absolutely opaque on the numbers, except to state that it has the smallest arsenal among all the five NWS. Estimates of the number of its nuclear warheads vary from 200 to 450. For instance, the *Bulletin of Atomic Scientists* derives numbers on the basis of delivery vehicles to calculate that China deploys approximately 176 warheads (about 121 on land based missiles, none on SLBMs and 55 on nuclear capable aircraft). Along with some additional warheads in storage, the total is conservatively placed at 240.[43] However, some others report about 300 strategic and 150 tactical nuclear weapons. Meanwhile, a leaked DIA estimate from 1999 stated China's total nuclear inventory would increase to 358- 464 warheads by 2020.[44] Another source reveals plans to deploy 500 nuclear warheads by 2015, with 300 on MIRVed ICBMs and the rest on SLBMs.[45] US officialdom also

[43] Robert S Norris and Hans Kristensen, "Chinese Nuclear Forces, 2008", *Bulletin of Atomic Scientists*, vol.64, no.3, July-August 2008, pp 42-44.

[44] Kristensen *et al*, n. 42, p. 35-40.

[45] Centre for Non proliferation Studies, Monterey, "China's Nuclear Weapon Development, Modernization and Testing", *China Profiles*, http://www.nti.org/db/china.

predicts an increase of ICBMs from the present figure of about 20 to 75-100 by 2015, some of which would have multiple warheads.[46]

While these figures can only be guesstimates in the absence of any official data, that there will be a build-up of the arsenal should be expected since China cannot afford to let increasingly improving U.S. defensive and offensive capabilities degrade its deterrent. It would want to restore/buttress its own deterrence with a quantitative and qualitative increase in its arsenal. In any case, this appears imminent, given the increased financial resources and a reinforced commitment to the Second Artillery that is reported to have "gained higher prominence in Chinese defense planning and decision-making over the last decade. Its doctrine has been thoroughly updated, reflecting enhanced reliance on missile warfare by the PLA more generally."[47] Although Second Artillery makes up only four percent of PLA, it receives 15 per cent of defence budget and 20 per cent of total procurement budget.

Besides financial and political commitment, any substantive increase in the number of warheads would also require adequate fissile material, which according to some sources, should not really be a problem. In fact, according to National Resource Defence Council estimates, China should have enough fissile material stockpiles to double or even treble its nuclear warheads and even the RAND estimates find it feasible for the warheads to increase to anything between 600-1500. Several Western scholars have circulated the information that China had ceased to produce HEU in 1987 and plutonium in 1991[48], though China has never accepted or denied the veracity of such an assumption. However, it would be naïve to believe that the country would face any constraints on accumulation of fissile material for a stockpile it considered necessary. It could, in fact, be stated with certainty that China would join a fissile material cut-off treaty (FMCT) only after adequately 'securing' itself with fissile material.

[46] *Ibid*, p.2.

[47] Brad Roberts' book review of Jeffrey G Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age*, in *Arms Control Today*, May 2007.

[48] Blair, n. 31, p. 19.

Use of Space-based Capabilities for Deterrence

While professing support for the prevention of arms race in outer space (PAROS) in the Conference on Disarmament, it is evident that China is rapidly modernizing its space-based capabilities to strengthen its ability to directly attack the enemy's space-based infrastructure with anti-satellite (ASAT) weapons, or attack enemy's ground-based radars or other electronic components of the C4ISR structure. Having identified that the vulnerabilities of the US lie in their networked systems, Beijing has determined that a robust ASAT capability could counter America's "complex, exposed network of command, control, communications, and computer-based systems that provide intelligence [and] reconnaissance" to American forces.[49] In fact, it may not be a coincidence that the technical parameters of China's 11 January 2007 ASAT test, and the use of a phased array radar to guide a kinetic-kill vehicle toward a target (their own old weather satellite), traveling as fast as an ICBM would while entering the earth's atmosphere, were akin to those of a ballistic missile intercept and the test was conducted to send across a message. China has also developed high altitude EMP with nuclear device capable of exploding at 40 km altitude to paralyze electronic systems of the adversary. Also, in August 2006, a Chinese ground-based laser had blinded a US reconnaissance satellite over China. Indeed, the Chinese endeavour is to develop capabilities that could degrade the ability of US sensory and networking organs (surveillance, reconnaissance and intelligence assets in space). And it appears to be pursuing this in a determined fashion through the development of a range of technologies, including directed energy weapons and electronic attacks through sophisticated jamming technologies.

A White Paper entitled 'China's Space Activities in 2006' places China's space programme within the overall national development strategy and lays emphasis on more investment in basic research, planning for frontier technologies and leapfrogging

[49] According to a report prepared by Michael Pillsbury for the US Bipartisan China Economic and Security Review Commission that is based on the writings of 20 Chinese military strategists, there are three books and several dozen articles going back a decade that advocate development of ASAT to covertly shoot down satellites to send a deterrent message. As cited by Vago Muradian, "China's Mystery Satellites: US Gauges Beijing's ASAT Strategy", *Defense News*, 2 May 20 07.

development.[50] Expansion of space capabilities for reconnaissance, navigation, communications, targeting, so on and so forth is seen as equally important as counter-space, ASAT ones. As Ashley Tellis concludes,

> "…China's counter space efforts are diverse, comprehensive, rapidly improving, and deadly serious—exceeding even those of the Soviet Union at its peak. Taken together, Beijing's space denial programs leave no doubt that it is determined to negate the operational advantages accruing to Washington's space-enabled conventional military dominance."[51]

He, therefore, argues that China will continue to invest in space-denial technology rather than subscribe to any arms control agreement that eliminates its chances of asymmetrically defeating superior American military power. One PLA analyst, Wang Hucheng, articulated the same, "for countries that can never win a war with the United States by using the method of tanks and planes, attacking the U.S. space system may be an irresistible and most tempting choice."[52]

Improvement in Mobility and Survivability of Delivery Systems

The central feature of Chinese strategic modernization is introduction of mobile, solid propellant ballistic missiles to address survivability concerns. Concealment to enhance survivability was always central to Chinese nuclear deterrence. In the absence of mobile missiles, the Second Artillery built several launch sites near each cave, that housed missiles, and the commander was trained in guerrilla tactics to regularly move the missiles around. Subsequently, with mobile missiles too, combat units practice random rotation of missiles among launch sites, moving them along different land routes and maximizing the use of camouflage and night operations. The emphasis has also been on reducing the time required for fuelling the missiles and preparing the guidance system in order to reduce pre-launch

[50] *China's Space Activities in 2006* (Beijing: Information Office of the State Council of PRC, 12 October 2006).

[51] Ashley Tellis, "Punching the US Military's 'Soft Ribs': China's Anti-satellite Weapons Test in Strategic Perspective", *Carnegie Policy Brief*, no. 51, June 2007.

[52] *Ibid*.

exposure to pre-emptive attack. More recently, the Second Artillery is believed to have focused on training and readiness of operational units, rapid reaction, EW, and precision attacks. Exercises to test reliable communications, combat coordination, damage control, equipment repair and rapid launch have been conducted.[53]

However, China realizes the vulnerability of land-based missiles despite the best survivability measures. As was stated by Admiral Liu Huaqing, "In the face of a large scale nuclear attack, only less than 10 per cent of the coastal launching silos will survive, whereas submarines armed with ballistic missiles can use the surface of the sea to protect and cover themselves, preserve the nuclear offensive force and play a deterrent and containment role."[54] Hence the focus has been on sea-based deterrence for greater survivability, even though during the mid-1980s, the Chinese leadership had slowed investment in the SLBM/SSBN programmes following a spate of technical setbacks. One Xia class SSBN with 12 JL 1 missiles of 2150 kms range has been operational since 1988. But given its problems of high noise levels, radiation leaks and the ability to carry only SRBMs with single warhead, it was never considered a viable second strike deterrent.[55] In fact, some of the ongoing programmes were even cancelled in 1985, in an attempt to shift resources to long-term design efforts for a more advanced SSBN and accompanying missile.[56] These efforts are coming to fruition in present times. The first of the Jin class (Type 094) nuclear-powered submarines were sighted in January 2007 and also the new port facilities for these submarines at the Yulin naval base on Hainan Island in South China Sea. It is reported that the sea leg of the Chinese nuclear triad would credibly rest on Julang 2 (JL 2), a second generation SLBM to be deployed on the new submarine that is expected to

[53] Office of the Secretary of Defense, *The Military Power of the PRC, 2005* (Washington DC: OSD, 2006).

[54] As cited in J You, *The Armed Forces of China* (Canberra: Allen & Unwin, 1999), pp. 96-97.

[55] For more on this, see Lin Changshneg, "The Combat Power of China's Nuclear Submarine", as quoted in Andrew S Erickson, "China's Future Nuclear Submarine Force: Insights from Chinese Writings", *Naval War College Review*, Winter 2007.

[56] Lewis, n. 32, p. 70.

become operational before the end of this decade. Four to five of such submarines are estimated to carry 48-60 nuclear missiles.[57]

Meanwhile, 100 H-6 bombers, capable of carrying three bombs over 3,100 km, and about 30 Q-5 aircraft that could carry one bomb over 400 km have constituted the third leg of the Chinese triad. Though air delivery was the first delivery capability available with China, it was always considered the weakest, given the short-range of aircrafts and their inability to penetrate enemy air defenses. But China has begun inducting H-6K bombers, which now fitted with D-30-P2 engines of greater thrust power and reinforced fuselage structure have greater range and combat payload. Armed with long-range cruise missiles modeled on KH-55 of Russian origin with a range of 2,500 kms, the H-6K, though a subsonic bomber, is now believed to have the operational capability of effectively projecting nuclear deterrence.[58]

Development of MIRV Technology

While it is widely assumed that China presently does not deploy multiple warheads on a single missile, it reportedly has had the capability to do so for several years. A report in December 2002 announced the test of DF 21 MRBM with multiple warheads, a capability considered necessary to enhance China's nuclear deterrence against BMD.[59] China is known to have been miniaturizing warheads to make them lighter and easier to deploy in multiple numbers atop delivery systems. It has also been working on developing technical countermeasures to BMD. These include the use of chaff, decoys, stealth technologies, and maneuvering warheads. Some of these have been tested, though they are believed to be not yet deployed. Overall, the Second Artillery Corps, tasked with the threefold mission of deterrence, supporting conventional war with ballistic missile attacks, and nuclear

[57] Norris and Kristensen, n. 43, p. 44.

[58] Andrei Chang, "China Attains Aerial Nuclear Strategic Strike Capability", http://www.spacewar.com, 7 September 2007.

[59] "China Successfully Tests Multi-warhead Missiles", *Yomiuri Shimbun*, 8 February 2003.

counterattack, has adopted the principle of "first resist, then penetrate", implying that Chinese nuclear forces must be able to survive a first strike and then use countermeasures to penetrate the BMD.

Possibilities of Deterrence Breakdown

While it may be true that most of the Chinese moves towards strategic and conventional modernization are being undertaken keeping the US threat in view, they nevertheless impact the security perceptions of India. Given that the resolution of thorny issues of conflict are still pending between the two nations, it is hardly surprising that India closely monitors Chinese military advancements and is wary of the possible utilization of these capabilities against itself. In this context it becomes important to assess the chances of nuclear deterrence breakdown between India and China. What could possibly be some of the scenarios in which this could happen? The following paragraphs examine some of these hypothetical situations.

Inadvertent Escalation of a Border Skirmish

Given that the borders between India and China remain disputed over several areas, one cannot rule out the possibility of deliberate or inadvertent incursions, graduating into a larger conflict. The rather ambiguous nature of the line of actual control (LAC) has led to frequent allegations of incursions by both sides. These have normally been dealt with at the level of operational commanders. Theoretically though, the possibility of such an incident escalating to a higher level always exists. However, it is most likely that such flare-ups over unclear LAC would remain limited to border regions with both countries working hard to avoid any kind of larger conflict. In fact, unless China escalates deliberately either to prove a point, project power or teach a lesson, it is certain that Beijing will strive equally to keep the conflict local and limited.

Deliberate Nuclear War

Could China let a local border war escalate to a full-scale conventional conflict and then use its superior nuclear forces to inflict nuclear damage on military targets and enforce deterrence by threatening counter-value strikes? There can be no certain answers to this question. Arguments, in fact, can be made both in support and against such a possibility. For instance, on one hand, it could be said that China might risk a nuclear attack even at the cost of losing one or more of its own cities, for three reasons: one, India does not yet have the capability to target China's centers of gravity and Beijing may be willing to brook the loss of some of its peripheral cities in exchange of imposing, in its own assessment, far greater punishment on India; secondly, strategic modernization would provide Beijing with confidence that it could engage in an extent of nuclear war-fighting with India without suffering 'unacceptable damage to itself', by exercising escalation dominance and bringing about intra-war deterrence; and thirdly, China would do so if it found it necessary to sustain its great power image. International status and image is dear to the country and its leadership. It would not hesitate to reclaim what it considers its own in order to teach others a lesson.

On the other hand, it could also be argued that a more developed and globally integrated China should be easier to deter. Unlike Mao, who believed that his country was large and populous enough to survive a nuclear war and still carry on propagating Communism worldwide, modern China would have a weaker damage threshold and may not want to risk even a single city to Indian nuclear retaliation. Secondly, despite how it is perceived by the world, Chinese leadership is not a monolith. It should be expected that there would be dissenting views on use of nuclear weapons. And thirdly, given the present strong moral taboo against nuclear use, China may be deterred by fear of international outrage and moral repugnance against itself. Loss of international stature as a responsible, mature international player would be a concern.

For rational, reasonable governments, the decision to undertake a deliberate nuclear war is a difficult one, given that there could be nothing worth fighting over – not territory,

resources, or even prestige – at the cost of the loss that would have to be borne. The same constraints should apply for India and China too.

Accidental War

The presence of nuclear weapons creates the theoretical possibility of an accidental nuclear use as a result of human error or mechanical failure, or even unauthorized activation or launch of nuclear weapons. Such a probability is low in the India-China relationship, given that both maintain strict central control over their nuclear assets. Both exercise centralized control over all nuclear use decision-making and have eschewed delegative models that could, in fact, have ensured greater deterrence benefits through enhanced survivability if the controls were a little less stringent and more delegated. As described by Jeffrey Lewis, "Chinese leadership has implemented operational practices that sacrifice readiness to preserve central control".[60] In fact, the Chinese have been more concerned about accidental and unauthorized nuclear exchange rather than a deliberate nuclear war and this is reflected in their choice to invest in survivability measures that did not compromise party control of nuclear weapons. For instance, Chinese missiles are largely silo-based and even the mobile ones that are dispersed are not subject to regular patrols. In India and China, warheads are stored separately from missiles and until now China's lone SSBN never patrolled regularly.[61] China's operational practices also appear to emphasize safety and security of nuclear weapons even at the expense of pre-launch vulnerability.[62] Indian command and control too weighs in favour of negative rather than positive controls. Therefore, the risk of theft, accidental launch or uncontrollable escalation is negligible.

[60] Lewis, n.32, p. 81.

[61] *Ibid.*, p. 85.

[62] *Ibid.*, p. 200.

Conclusion

As is evident from the above examination, the Indian and Chinese nuclear doctrines and weapons capability trajectories demonstrate a close consonance. Both claim that the purpose of their nuclear weapon is an insurance against nuclear blackmail and coercion and hence eschew the need for first use. This enhances the stability of the nuclear dyad. However, China's build-up of a small but modern nuclear force that enforces deterrence by display of its warfighting capability does raise concerns for a relatively weaker nuclear India since the territorial disputes persist. While China's defensive orientation of its overall nuclear policy is somewhat reassuring and stabilizing, its acquisition of capabilities that promise flexibility of offensive nuclear action invokes concern over intentions.

These developments obviously impact India-China nuclear deterrence. An economically secure, politically more confident and militarily superior China could emerge as a satisfied power that may negotiate the border dispute with India. On the other hand, the same attributes might make China more belligerent and willing to engage in a conflict to settle the disputes militarily. The latter possibility propels India to engage in conventional and strategic modernization, quite similar to that of China. For the time being, the two share a relatively stable relationship. However, there can be no guarantee in proving or disproving how deterrence would function in future, though it might be said that as long as rationality prevails in a cost-benefit analysis of nuclear use, one could presume deterrence stability.

A few conclusions on Indo-China nuclear deterrence that may be drawn are:

- Both countries conceive of their nuclear weapons as a political tool of deterrence rather than an instrument of war fighting. Both also claim their primary use to guard themselves against nuclear blackmail or coercion.

- Owing to the above conceptualization, neither places undue emphasis on achieving superiority, or even parity in the number of nuclear weapons with nuclear powers superior to them.

- India uses the same logic to impose deterrence as China does. Both maintain that deterrence has less to do with size of the arsenal and more with the ability to cause damage that the adversary finds unacceptable.

- Therefore, both are engaged in building a credible nuclear deterrence based on enhanced mobility, reliability and survivability of their nuclear assets.

- Both have a declared position that they would not resort to the first use of nuclear weapons. They seek an assured second-strike capability (in the event of having to absorb the first use) in order to further reduce the possibility of deterrence breakdown between the two nations.

- The negotiation of mutually acceptable nuclear confidence building measures could lend further stability to the deterrence relationship.

4 INDIA'S STRATEGY FOR NUCLEAR DETERRENCE

It is well-known that India was a reluctant entrant into the game of nuclear deterrence. Since independence in 1947 until 1998, when the country finally decided to openly premise its national security on nuclear deterrence, India kept the option of weaponization open even as it hoped and strove to push the P-5 towards nuclear disarmament. Indian initiatives in this regard are many and well-documented.[63] The most notable among these, for the level at which it was presented and the comprehensive approach that it took, was the Action Plan presented before the UN General Assembly's Third Special Session on Disarmament in June 1988 by the then Prime Minister Rajiv Gandhi. However, caught as the world then was in the Cold War pincer, the initiative was not well-received and on his return from a disappointing trip to New York, Rajiv Gandhi was greeted at home with intelligence reports on the rapid progress that Pakistan was making in its own nuclear weapons programme, especially with the help of China. The prospects of a world, free of nuclear weapons, that had brightened considerably with the end of the Cold War proved to be illusory, even as India's threat perceptions from two nuclear armed neighbours working in collusion with one another from the late 1970s onwards brought home to India the need for openly establishing nuclear deterrence in order to safeguard itself from the prospects of nuclear coercion. The five tests carried out in the summer of May 1998 were a consequence of this realization.

Over the last decade or so India has been in the process of transforming the demonstrated nuclear weapons capability into credible nuclear deterrence. The tests served as an open announcement of the *existence* of the capability to the adversaries. In order to reinforce the credibility of this deterrence, the country has since been engaged in a number of other steps. Some of these include crafting a nuclear doctrine to clarify the role of the nuclear weapon in the overall security strategy, instituting adequate command and control systems,

[63] For a detailed description of India's initiatives at disarmament see Manpreet Sethi, "The Struggle for Nuclear Disarmament", in Singh, n. 13, pp75-95.

developing necessary delivery capabilities of requisite ranges and reliability factors, and ensuring the survivability of the necessary assets of the nuclear arsenal to carry out assured retaliation even after suffering a nuclear attack. This chapter examines some of these attributes of credible deterrence that India is moving towards.

India's Nuclear Doctrine

The most important step towards crafting a nuclear strategy is taken with the articulation of the nuclear doctrine. This communication, whether in the form of a written document or extrapolated from official or semi-official statements, provides the *raison d'être* for the possession of nuclear weapon for a nation, as also makes available the philosophy behind fundamental questions of when, how, and where the weapon would be used for national defence.[64] The doctrine is not a statement of account that calculates the cost of nuclear weapons. Nor is it an operational strategy or a set of tactical rules that describes the details of force deployment patterns. Instead the doctrine is a system of beliefs that

a) describes the utility of nuclear weapons, thereby, reflecting the worldview of the state and the purpose served by the acquisition of this lethal capability; and

b) identifies the manner in which the weapons would be employed to meet the purpose they have been acquired for. In performing this function, the doctrine provides direction on important issues pertaining to force posture, concept of operations, weapon deployment and circumstances of use.

Hence, the doctrine encapsulates the philosophy that is expected to guide national nuclear strategy. It provides pointers to the national leadership, both civilian and military, to decide the nature and size of the nuclear arsenal, including the necessary types, ranges and accuracies of delivery vehicles; the kind of command and control systems; the type of retaliation and the identification of targets; deployment status of the arsenal, so on and so forth. Therefore, at the domestic level, the doctrine helps formulate a strategy that can then

[64] For more on this argument see Manpreet Sethi, "Trumpet of the Elephant" in Sethi, n. 28.

translate into policy and action. At the same time, to the adversary, the doctrine provides a fair indication of how a nation intends to use its nuclear capability, at what stage of conflict nuclear weapons could come into play, and how they may be deployed. This clarity, for internal and external consumption, helps remove misperceptions, brings some transparency into an otherwise ambiguous situation and hence enhances deterrence stability.

India's first National Security Advisory Board (NSAB)[65], constituted soon after India declared itself a state with nuclear weapons, produced a draft nuclear doctrine within fifteen months of the conduct of the nuclear tests. On 17 August 1999, the body presented the document to the National Security Council which was then made available by the government to the public for scrutiny and debate.[66] The national and the international community were likewise taken by surprise not only by the uncharacteristic speed with which the task was undertaken, but also with the unexpected transparency that the then Indian government offered on a subject that in most countries is normally kept out of public purview.

The draft doctrine of the NSAB provided the essential starting point for the formulation of a coherent nuclear strategy. Subsequently, on 4 January 2003, the government issued a statement on the basis of a decision taken by the Cabinet Committee on Security which further amplified the doctrine and operational arrangements governing India's nuclear assets.[67] It largely retained most of the basic precepts of the draft nuclear doctrine, except for making a few changes. The following paragraphs identify and explain some of the major attributes of India's nuclear doctrine in relation to the threats it faces.

Role of Nuclear Weapons: Only for Deterrence

[65] The NSAB exists as an official body that is part of the National Security Council. It acts as a forum through which government decision making apparatus can draw on the advice and experience of appointed academics and retired civil servants and military officers. Members of the NSAB serve a term of two years.

[66] Reproduced as Appendix 1 of this study.

[67] Reproduced as Appendix 2 of this study.

Once the extent of the damage caused by the Little Boy and the Fat Man in Hiroshima and Nagasaki had been assessed, it led to the realization that the atomic weapon was not just another more lethal conventional weapon, but in a class of its own, it gave birth to the dilemma whether a weapon with such high destructive potential could be gainfully employed to achieve any political objective at all. In 1950, George Kennan framed the question that has resonated in every country that has acquired nuclear weapons:

> "Are we to rely upon weapons of mass destruction as an integral and vitally important component of our military strength, which we would expect to employ deliberately, immediately, and unhesitatingly in the event that we become involved in a military conflict with the Soviet Union? Or are we to retain such weapons in our national arsenal only as a deterrent to the use of similar weapons against ourselves and as a possible means of retaliation in case they are used?"[68]

India's choice of a role for its nuclear weapons is based on the second option offered by Kennan. The Indian nuclear doctrine is firmly rooted in the belief that nuclear weapons are a political instrument for deterrence and not a military tool for war fighting. In fact, going a step further, the NSAB nuclear doctrine envisages the possible use of the nuclear weapon only against the adversary's use of the same weapon and not against conventional weapons. This is in stark contrast to the doctrines articulated by NATO or Pakistan, who profess nuclear use against conventional weapons too on the ground that their weak position against superior conventional capabilities compels them to resort to the use of nuclear weapons to meaningfully deter a powerful adversary. As has been brought out in the second chapter of the study, for Pakistan, nuclear weapon is a strategic equalizer of the existing military asymmetry with India. For India, however, nuclear weapon has value as a deterrent only, mainly to safeguard itself against nuclear coercion and blackmail.

The CCS note of 2003 on the operationalization of the doctrine, however, widened the ambit of the use of India's nuclear weapons against other weapons of mass destruction such as chemical or biological weapons. This move was, in all probability, driven by two factors. One, the US nuclear posture review of 2001 had brought about the same change in the American

[68] As cited in Lawrence Freedman, *The Evolution of Nuclear Strategy*, Third Edition (New York: Palgrave Macmillan, 2003), p. 63.

nuclear doctrine and India appeared to have been influenced by this. Secondly, India had just wound up the long military stand-off with Pakistan that had kept the two countries in a state of mobilization, but at the end of which, India had little to show for its attempt at coercive diplomacy.[69] This change was then brought about to inject a measure of machismo into the doctrine.

The expansion of the role of nuclear weapons, nevertheless, has not necessarily added to the credibility of India's nuclear deterrence. In fact, it may be recalled that the international community has already outlawed the use of these two classes of WMD through the Chemical Weapons Convention and the Biological and Toxic Weapons Convention respectively. Countries signatory to the two conventions are supposed to have declared and destroyed their stockpiles of these categories of weapons. Therefore, India's adversaries should not normally be assumed to possess these weapons. Yet, in case India fears that they do, it can invoke its right to inspection of the suspected storage/production sites or facilities. Also it calls for thinking whether India's retaliation with its nuclear weapons to the adversary's use of chemical or biological weapons is a feasible or even a desirable proposition? Would this then not escalate the situation into a sure nuclear exchange? While it is beyond the scope of this paper to discuss this scenario at length, it may be said that conventional capabilities should be able to, or should be made able to, handle such a situation.

Contemporary threat perceptions, in fact, attribute greater probability of use of these WMD to non-state actors for whom proscriptive treaties are irrelevant. Against this class of actors, classical nuclear deterrence does not apply in any case and hence to state in the nuclear doctrine that nuclear weapons would be used against chemical and biological weapons is meaningless. A different cache of military and foreign policy tools is needed against them. Therefore, the expansion of the role of nuclear weapons to deter chemical or biological weapons holds little relevance for nuclear deterrence as required by India against its potential adversaries. For India, its nuclear weapons must perform the basic and limited task of deterring

[69] Strategic analysts like K. Subrahmanyam have argued that the economic burden inflicted on Pakistan by the full troop mobilization was also one of the objectives of Operation Parakram and this was achieved. However, the mobilization did not result in any substantive tangible gains.

possible nuclear use against itself. It is not required against conventional attacks or against use of other categories of WMD.

In fact, India's narrow articulation of nuclear weapons as a means of deterrence only against nuclear weapons actually accurately reflects its traditional abhorrence for nuclear weapons and the reluctant steps it took down this path. It underscores that India had consistently argued that nuclear disarmament, and not nuclear deterrence, can and must constitute the basis for lasting peace and security. But the absence of any substantive progress on this front coupled with a deteriorating regional security environment compelled India to acquire nuclear weapon, albeit only as a pure deterrent. As PM Vajpayee said soon after India's nuclear tests, New Delhi does not "intend to use these weapons for aggression or for mounting threats against any country; these are weapons of self defence to ensure that India is not subjected to nuclear threats or coercion."[70]

Number of Nuclear Weapons: Credible Minimum Deterrence

Given the above articulation of the principal role of India's nuclear force, the country's nuclear doctrine expresses the need for only 'credible minimum deterrence'. This is put forth as a dynamic concept and the doctrine refrains from identifying a particular number of warheads. It limits itself to extrapolating a concept of deterrence that is based on calculating the minimum number of weapons that would be necessary to credibly cause unacceptable damage to the adversary.

This calculation of the actual size and composition of the nuclear arsenal has to be derived from the nature of threats, their threshold of damage tolerance and one's own technological capabilities. Jaswant Singh, India's Foreign Minister in 1998 had said,

> "The minimum is not a fixed physical quantification. It is a policy approach dictated by and determined in the context of our security environment. There is no fixity. Therefore, as our

[70] Suo Motu Statement by Prime Minister Vajpayee in Parliament on 27 May 1998. As reproduced in *Strategic Digest* (New Delhi: IDSA), July 1998.

> security environment changes and alters and as new demands begin to be placed on it, our requirements too are bound to be evaluated."[71]

While the determination of CMD would change with a transformation in threat perceptions and technological developments of self and the adversary, it definitely need not seek superiority or even parity with an adversary's nuclear forces in number, yields or types of weapons. This concept subscribes to the logic stated by Kenneth Waltz several decades ago, "Forces designed for war fighting have to be compared with each other. Forces designed for war deterring need not be compared. The question is not whether one country has less than another, but whether it can do unacceptable damage to another…."[72] India, therefore, has freed itself of any requirement to seek a nuclear arsenal that would be equal to or superior to any of its adversaries. Instead, the focus has been on building sufficient and survivable nuclear forces that would be capable of causing a scale of destruction that would constitute unacceptable damage in the perception of the adversary.

Accordingly, for India, the focus shifts from accumulation of a huge stockpile of nuclear warheads to making the arsenal of a minimum size, capable of deterring the adversary. The credibility of this capability is derived from the reliable delivery of a predetermined number of warheads on a predetermined set of targets to cause unacceptable damage. This makes it imperative to ensure that sufficient warheads and delivery vehicles survive a first strike and be ready for retaliation. Hence, the need for survivability measures such as hardened silos, mobile launchers, deployment beyond the reach of hostile delivery systems, dispersion of the arsenal on a triad, and a pre-determined chain of succession for weapon release in case the primary decision maker is decapitated. It also calls for a considered calculation of what might constitute unacceptable damage for the adversary. As mentioned earlier, the damage tolerance threshold for different countries is quite different, since it is a cumulative result of the country's historical experiences (the greater the number of wars, higher the tolerance of pain), political system

[71] EAM's Speech in Parliament on 16 Dec 1998. Downloaded from http://www.meadev.gov.in.

[72] Kenneth Waltz as quoted by Gen Sundarji, *Blind Men of Hindoostan: Indo-Pak Nuclear War* (New Delhi: UBSPD Ltd, 1993), p. 68.

(military or autocratic system can accept greater damage than a democratic system), level of economic development (more advanced the country, lower its tolerance level), and the value ascribed to the issue at stake (greater the desire to acquire something, more the willingness to bear pain for it). An assessment of these factors can provide an indication of the kind and size of nuclear arsenal that would be required to enforce credible deterrence. It is on these parameters that India's assessment of its CMD rests.

Use of Nuclear Weapon: Retaliation only

Doctrines that ascribe a war-fighting role to nuclear weapons need to adopt aggressive postures that envisage their first use. During the Cold War, USA and USSR believed that a nuclear war could be fought and won and hence went on adding numbers and newer delivery capabilities in order to maintain an edge over the other, akin to their behaviour in the field of conventional weapons. India's nuclear doctrine, like that of China, stands at the other end of the spectrum since it subscribes to a 'no first use' (NFU) or a counter-strike posture. Designating the nuclear weapon for *deterrence only*, its nuclear strategy is further based on a *retaliation only* stance.

Until 1998, the only nations to have publicly adopted an NFU have been the USSR and China. The former had formally pledged itself to NFU in 1982 but abandoned it a decade later after Soviet disintegration in 1992 and the consequent degradation of Soviet conventional might. China had announced an NFU in 1964, but has since, made it conditional. In recent times, at least three conditions are surmised for first nuclear use: one, an attack on Chinese ICBMs; secondly, an attack on Chinese strategic hubs, such as Shanghai and other industrial and commercial centres; thirdly, territories claimed by China as its own.[73]

National declarations of NFU are greeted with skepticism. Several dismiss it as a declaratory position, which could well change in times of conflict. While technically one cannot refute this argument, it is equally true that if the doctrine is meant to help define a strategy and

[73] As explained by Dr. Srikanth Kondapalli, Professor, School of International Studies, JNU, New Delhi and a noted Indian expert on China in a private conversation with the author.

further guide policy and action, then it becomes evident that the NFU posture translates into a certain type of force structure and alert status on the basis of which the seriousness of the country's commitment can be judged. A first use stance necessitates retaining nuclear forces on hair trigger alert, in order to execute pre-emption. Warheads must exist in a ready state mated with missiles and on launch-on-warning or launch-under-attack states of alert. India's nuclear arsenal does not exist in this state. Dispersed in different locations and in the custodial control of different organizations, it provides an indication of the fact that India does not have a ready arsenal with which it could resort to pre-emptive nuclear use.

Meanwhile, there are several critics of NFU within India too. They allege that by subscribing to an NFU, India has ended up handing over initiative of offence to the adversary while accepting a defensive posture that will force India to suffer more damage and destruction than it would with a first use doctrine. However, these arguments do not stand up to scrutiny and a careful consideration establishes the benefits that accrue to India from the NFU. In fact, while this policy is not acceptable to Pakistan, for India the NFU posture makes eminent sense.

First, India does not envisage any situation in which it might have to use the nuclear weapon first. Since it is a status quo power with no territorial ambitions and not even the desire to assimilate its own areas under the rule of other nations through resort to military means, its nuclear weapons serve a purely deterrent function. In this context, the NFU seems most logical.

Secondly, India's subscription to NFU actually helps to stabilize a regional situation, where small nuclear forces could give rise to the temptation to launch a disarming (to the extent possible) first strike in case of a crisis. India's counter-strike doctrine removes this temptation not just for itself, but also for the adversary. In fact, the NFU goes to alleviate Pakistani insecurity, which, in turn, is beneficial for India, as it relieves pressure on its leaders for launching a pre-emptive strike. If Pakistan were constantly under the fear that an Indian nuclear strike was imminent, its own temptation to use its nuclear force would be higher. Therefore, for the sake of crisis stability, it is actually in the best interest of India to make its adversary feel more secure, rather than defensive and mistrustful of Indian nuclear intentions.

Thirdly, having nuclear forces on alert for first use not only raises the possibility of an accidental nuclear war based on a gross miscalculation, but also lowers the threshold of nuclear

war in a crisis situation. In the case of India and Pakistan, this amounts to courting trouble, given their geographical closeness, low warning time and frequent crises. Therefore, India's NFU actually brings stability to the nuclear equation. It allows for a policy of recessed deterrence that allows nuclear weapons and delivery vehicles to be developed and built, but to be stored separately, ready to be assembled only in the event of a crisis. This also precludes need for pre-delegation of authority for launch and hence minimizes risks of miscalculation and accidental attack.

It may be recalled that in the early years of the Cold War, the warheads in the arsenals of the USA and USSR were not routinely mated, nor necessarily co-located, with delivery systems. It was the subsequent development of safety features designed into modern warheads and the advent of sophisticated administrative controls on nuclear weapons that made higher alert levels possible. Ironically, however, after keeping their nuclear missiles on hair trigger alert for years, the two Superpowers found the best nuclear risk reduction measures in de-alerting these and separating warheads from delivery systems! De mating, de alerting and de targeting, the three steps taken by the superpowers for nuclear risk reduction and confidence building form a natural part of the NFU posture.

Without having to go through this cycle, India's nuclear doctrine accepts the adoption of NFU as more stabilizing, since nuclear forces need not be maintained on high alert status. In fact, for deterrence to be credible with a 'no first use' doctrine, it would only be necessary to have available all the relevant nuclear assets, though dispersed, as unassembled nuclear warheads under civilian control, and dedicated delivery systems kept either in storage or in readiness away from their operational areas—as long as they can be brought together as rapidly as required during a supreme emergency.

Control of Nuclear Weapons: In Civilian Hands

As per the Indian nuclear doctrine, there is strict civilian control over any decision to use nuclear weapon in conflict, as also over the custody of the nuclear warheads in peacetime. The ultimate decision is the responsibility of the Prime Minister, who is the head of the National Command Authority (NCA). The NCA comprises the Political Council (PC) which consists of the

PM and four other ministers (finance, defence, home, and external affairs) and the Executive Council that is headed by the National Security Advisor and comprises of military and civilian officials.[74]

While the nuclear force is maintained in the form of separated components, with the responsibilities for the command, custody, maintenance, integration, and use of the weapons clearly demarcated between the civilians and the military, the command over their use lies solely with the civilian leadership. In the remote contingency where deterrence breaks down and nuclear release orders are issued by the Prime Minister (or his designated successors as per a chain of command), the nuclear components would be integrated into a usable weapon system and custody transferred to the military, which would exercise sole responsibility for executing nuclear use options.

As is evident, the military does not have a predominant role in the Indian nuclear command and control system during peacetime. The decision of nuclear use, which is the prerogative of the PC, does not include the Chiefs of the three services on an institutionalized basis. The PC can request their presence if it so desires. In contrast to the Indian system, the presence of military leaders in Pakistan's nuclear command system is formally established in the Employment Control Committee that is tasked with the decision of nuclear use. Similarly, in the Chinese system too, while the Party has supreme authority of deciding nuclear use, most senior military officials are Party members as well.

Composition of the Decision-making Bodies for Nuclear Use in India, Pakistan and China

India	**Pakistan**	**China**
Political Council	**Employment Control Committee**	**Chinese Communist Party Politburo**
Prime Minister (Chairman) Defence Minister External Affairs Minister	President (Chairman) Prime Minister (Vice-Chairman) Foreign Minister (Dy Chairman)	Party General Secretary (Chairman) Central Military Commission

[74] For more on command and control organization, see Manpreet Sethi, "Hand on the Button", in Sethi, n. 28.

Home Minister Finance Minister	Minister for Defence Minister for Interior Minister for Finance Chairman, Joint Chiefs of Staff Committee Chief of Army Staff Chief of Naval Staff Chief of Air Staff Director General, Strategic Plans Division (Secretary)	General Staff Department Second Artillery Command HQ

As is evident from the composition above, the Indian structure tasked with the responsibility of deciding the use of nuclear weapon comprises solely of political leaders and the three military chiefs can only be invited when considered necessary. On the other hand, in the case of the other two countries, the military leadership has an institutionalized presence in the decision-making body. However, irrespective of who populates the nuclear command and control, the essential issue is the ability of the system to sufficiently impose controls that can ensure the use of nuclear weapon *once it is authorized and only when it is authorized*. The system must not be so loose as to lend itself to use without proper authorization at lower levels of command, nor so tightly held in only one or a few hands as to tempt the adversary with the prospect of conducting a decapitating strike. For the Indian command and control system that is premised on a counter-strike doctrine, it is imperative that the survivability of the chain of command and control is ensured to the same extent as that of the other components of the nuclear arsenal.

Abolition of Nuclear Weapon: A Doctrinal Aspiration

Unlike any other nuclear doctrine, India's nuclear doctrine clearly expresses in its opening and closing paragraphs, the desire for a nuclear weapons free world (NWFW). This articulation stems from the premise that India's nuclear security is best ensured in a world

where none is in possession of nuclear weapons.[75] Therefore, in a state of universal nuclear disarmament, India would have no qualms about shedding its own nuclear capability. This is a logical position, given that India considers nuclear weapon only as a means for deterrence, and not for any other purpose. So, if there were no nuclear weapons in the possession of the adversaries that had to be deterred, India's nuclear weapons would have no role or justification. This narrow articulation of the role of nuclear weapons makes it far easier for India to argue for and pursue universal nuclear disarmament, as compared to the nuclear doctrines of other countries that perceive a more multi-role capability (deterrence against conventional wars) in their nuclear arsenal.

Is there a contradiction in India's nuclear doctrine since on one hand, it seems to advocate the pursuit of an NWFW, and on the other, provides direction towards the building of a credible nuclear deterrence? Several people have criticized this stance as a case of mouthing empty platitudes for disarmament, while the actual intention and focus is on building and refining the nuclear arsenal. However, the presence of the two aspirations in the Indian nuclear doctrine actually indicates a *mix of prudence and rationality*. Given the reality of the nuclearized neighbourhood that India inhabits, it is prudent to establish a relationship of credible deterrence with the adversaries in order to avoid nuclear coercion or war. At the same time, rationality demands that India attempts to realize a state of nuclear security through the abolition of these weapons of mass destruction. Notwithstanding the fact that the prospects of an NWFW appear dim at the time of writing this monograph, it is critical for India to contribute meaningfully to the process in order to realize such a world at some time in future which would be the best guarantee of its own security.

Conclusion

India has premised its need for nuclear weapons on its desire to resist nuclear coercion or blackmail and hence espies its use only for self-defence. Accordingly, New Delhi has

[75] For more on the arguments as to why India must pursue universal nuclear disarmament, see Manpreet Sethi, "Disarmament in India's Nuclear Strategy", in Jasjit Singh and Manpreet Sethi, *Nuclear Deterrence and Diplomacy* (New Delhi: Knowledge World, 2004), pp 247-65.

enunciated a nuclear doctrine that perceives a purely political role of deterrence for its nuclear weapons. Flowing therefrom, India's nuclear doctrine ascribes to a no first use posture since it holds that the nuclear weapon has no role in enforcing compellence or staging aggression and hence is only considered usable as an instrument to threaten unacceptable punishment if an adversary were ever to have first used a nuclear weapon against the country. In such circumstances, the doctrine prescribes *massive retaliation* to inflict unacceptable damage. In order to carry out this exercise, the doctrine aspires for a nuclear deterrence, whose credibility resides in the survivability of an arsenal to cause unacceptable damage.

The operational nuclear strategy as flows from India's nuclear doctrine provides the least risk option in a situation where nuclear weapons are present. It premises nuclear deterrence on a small arsenal that is not on hair trigger alert, and hence less open to the possibilities of miscalculation or accidental use. At the same time, given its own orientation towards no first use and punitive retaliation in case of use, the doctrine seeks to minimize the chances of nuclear use in the first place. This supposition, however, assumes the centrality of survival of the nation as a core value held equally by the adversary. It demands rationality or the basic assumption that states will not want to risk their extinction, or be willing to suffer enormous destruction, which will be inevitable with nuclear use, or be able to rationally make a cost-benefit analysis of their behaviour. If these preconditions go missing (as they could with non-state actors), classical deterrence would not hold. However, as long as national leadership (civilian or military) is not willing to place the survival of the state at stake, nuclear deterrence would apply.

5 NUCLEAR SECURITY THROUGH RISK REDUCTION MEASURES

Risks are an inevitable accompaniment of nuclear weapons. When countries acquire this capability, not only do they get existential deterrence, but they must also grapple with associated existential risks, primarily of five kinds:

- nuclear war, or in other words, deterrence breakdown as a result of deliberate act of nuclear use;
- unplanned or inadvertent escalation due to unintended use or a miscalculation triggered by improper judgment by the leadership at the highest or lower levels;
- unauthorized use without the concurrence of the authorized leadership;
- accidental use because of inadequate safety measures; and
- theft and smuggling of nuclear material or weapons for purposes of terrorism.

Some of these risks can be mitigated through measures taken individually by nations. For instance, accidental deterrence breakdown can be avoided by maintaining the nuclear arsenal in a disassembled form or keeping it at low levels of alert. Similarly, establishing a nuclear command and control system that is sufficiently assertive and does not indulge in pre-delegation of launch authority can minimize chances of unauthorized use of nuclear weapons. Likewise, risks of smuggling or theft of nuclear material can be prevented through the adoption of relevant security systems as well as by enacting necessary legislative measures and implementation procedures that proscribe its unauthorized possession, acquisition, sale or purchase.

However, there are some risks that need to be handled in a reciprocal fashion at the bilateral or at the broader multilateral levels. For instance, avoidance of the threat of deterrence breakdown due to inadvertence or miscalculation calls for a combined effort. A simple analogy could prove this point. While driving on a busy city street, one has to be careful not only about one's own driving skills in order to avoid a mishap, but also be watchful of the

driving capabilities of others and be prepared to handle mistakes that they might commit. The same situation is replicated with far greater gravity in the case of nuclear weapons where matters of survival of nations are concerned. It is, therefore, extremely important for states possessing nuclear weapons to maintain effective communication with one another in order to avoid an eventuality where use of nuclear weapon occurs as a result of a mistaken assumption or a misperception, thereby taking the countries down a path, desired or intended by neither.

This is even more critical in the case of India-Pakistan and India-China, both of which dyads are prone to routine border skirmishes and firing across disputed borders[76] arising out of long-standing disputes and unsettled territorial problems. It is for this reason that the international community was quick to dub the region as the nuclear powder keg soon after the nuclear tests conducted by India and Pakistan in 1998. Four reasons were then identified as factors that heightened the possibility of nuclear use in the region. These were: physical proximity and history of conflict; nascent command and control systems; inadequate safety measures; and potential for political instability. However, do these weapons pose an additional danger when in possession of the second-tier states? Is the region that India, China and Pakistan inhabit, and its two nuclear dyads, as 'nuclear-ly fragile' as they are made out to be?

The chapter argues that this may not necessarily be the case and that this was amply demonstrated in the outcomes of Kargil and Operation Parakram. In fact, if the assumptions put forth by the Western powers had been true (and Pakistan did try to fan these fears in the hope of using international intervention in the region to its own advantage), the two episodes should have resulted in a nuclear exchange. But the manner in which they played out revealed an inherent nuclear stability that is obtained from the very same factors that have been identified as posing specific dangers for the region. Therefore, while in theory it could be argued that the presence of these factors increases nuclear dangers, it would, however, be instructive to examine how real these dangers might be. In the presence of nuclear weapons,

[76] Rear Adm Raja Menon made a perceptive remark that indicates the different reality that prevails in this part of the world, "It is interesting to note that in the USA, nuclear defence readiness condition 2 is assumed when shooting begins, a condition that never stops in South Asia". See Raja Menon, "Nuclear Doctrine in South Asia", in P. R. Chari, Sonika Gupta and Arpit Rajain, ed., *Nuclear Stability in Southern Asia* (Delhi: Manohar, 2003), p. 104.

there can, of course, be no guarantee that nuclear use would not take place. But what are the chances that it would?

This chapter performs a twofold task. The first section examines the factors that are assumed to heighten the risk of nuclear use in the region, while simultaneously highlighting how the same set of factors also engenders greater deterrence stability. The second segment is premised on the acknowledgment that risks inevitably do exist when nuclear weapons are present and consequently explores the status and prospects of nuclear risk reduction measures (NRRMs)[77] in the region and suggests some steps that could be taken to ensure a higher level of safety and security in the three countries.

Of course, the basic lack of trust and confidence between the nations is a major hurdle towards their adoption. Can the two nuclear dyads, and especially the one comprising India and Pakistan, undertake nuclear confidence building in the presence of a deep-rooted trust deficit? It seems highly unlikely. In fact, every terrorist attack on the Indian soil that is traced back to Pakistan, severely erodes the possibility of the two being able to negotiate mutually acceptable steps for nuclear risk reduction, while, on the contrary, the risks grow as both countries advance their nuclear and missile capabilities. Meanwhile, domestic instability in Pakistan strengthens the hands of the radical non-state actors. And, with the ominous shadow cast by an increasingly powerful non-state actor on Indo-Pak relations, it becomes difficult to consider nuclear confidence building.

The experience of the superpowers during the Cold War indicates that NRRMs are possible only through technical and sophisticated negotiations between professionals (military and diplomatic). They can be meaningful and effective only if concluded with a measure of rigour, political will and confidence (by no means absolute or perfect) in the other's sincerity. The present relationship between India and Pakistan evokes little hope in this regard. And yet, the need for these measures has never been greater than they are now.

[77] Though some analysts make a subtle distinction between NRRMs, nuclear confidence building measures (NCBMs) and nuclear arms control, this paper uses these terms interchangeably.

The India-China nuclear relationship is far more stable, though nowhere near concluding any NRRMs, since China still does not recognize India as a state with nuclear weapons. Notwithstanding the fact that the two nations share a fairly comfortable relationship (with China as India's largest trading partner in 2009), it is equally true that both are distrustful of each other's military and strategic capability build-up and future intentions. In such a situation, NRRMs would certainly help to engender greater confidence. The paper explores how this might be possible.

How Different are Nuclear Risks from Second Tier Arsenals

Nuclear dangers are often cited more in the context of regional powers. In fact, after India and Pakistan brought their nuclear capabilities into the open in May 1998, the Western officialdom and strategic analysts were quick to describe the region as a nuclear powder keg that could be shrouded in the mushroom cloud any moment. Pakistan further fuelled these fears by exploiting every opportunity to draw attention to the fragility of the Indo-Pak situation by projecting a low nuclear threshold that could be breached easily by an Indian conventional offensive. The presence of nuclear weapons, therefore, was believed to have made the security environment in South Asia more complex because of the addition of new uncertainties and an increased volatility in an already fragile relationship. Small arsenals and rudimentary command and control (C2) in countries, anyway prone to war because of unsettled historical disputes, are perceived to create incentives for pre-emptive action, result in problems of error in judgment, or lead to accidents as a result of inadequate safety measures. In the case of the Superpowers, it is claimed, nuclear deterrence was more stable and secure because it was between nations geographically far apart, thus granting them more time for confirming launch and averting an accidental response. Also, since they had elaborate surveillance systems, capable of early warning – assets that India, Pakistan, and even China, despite its head start, are yet in the process of building – it was assumed that the chances of false alarm between the US and USSR were few. However, these assumptions that attribute stability or instability to a nuclear relationship require a deeper investigation.

Geographical Proximity and History of Dispute

The first factor that is deemed to heighten nuclear dangers in the case of the two dyads under study is geographical proximity and a history of conflict. Located next to one another and sharing disputed boundaries, it is feared that any major breakout of conventional hostilities between India-Pakistan or India-China could increase the pressures for a pre-emptive strike or a nuclear attack being launched without proper confirmation. Moreover, since the missile flight times would only be between 8-13 minutes for missile ranges of 600-2000 kms, it would not allow either side to even use the hotline (assuming these were functional) to confirm the veracity (deliberate or accidental) or nature (conventional or nuclear) of launch. Haunted by the thought that the country that waited to use its nuclear assets might end up losing them to a disarming first strike would cause near immediate nuclear retaliation engulfing the nations in a mindless nuclear exchange.

This assumption, however, is open to question since physical proximity also compels uneasy neighbours to be extra cautious and restrained in their approach on issues as sensitive as the use of nuclear weapons. It may be recalled that the two ideologically divided, but geographically contiguous East and West Germany did live with mobilized militaries and tactical nuclear weapons on hair-trigger alert during the long years of the Cold War. These too were uneasy neighbours separated by a bitter ideological divide and the danger of their slipping into a nuclear exchange inadvertently was ever existent. However, the fact that such an eventuality was avoided may be attributed as much to good fortune as to the effort made by both sides to consciously work at maintaining deterrence stability. Kenneth Waltz suggests that caution becomes the defining principle of nuclear-armed powers.[78] And this, in the case of the Cold War protagonists, is believed to have kept nuclear deterrence in place.

The same caution was on display between India and Pakistan during the Kargil conflict and Operation Parakram, as explained in the second chapter of this monograph. However,

[78] Kenneth N. Waltz, "The Spread of Nuclear Weapons: More May be Better", *Adelphi Paper* no. 171 (London: International Institute for Strategic Studies, 1981).

there is a glaring difference in the Indo-Pak relationship that does seem to heighten the nuclear dangers. In fact, Waltz's conclusion that nuclear powers tend to err on the side of caution, is exploited by Islamabad to foist a provocative sub-conventional conflict on India. It assumes that the presence of nuclear weapons and the associated risk of inadvertent escalation would impose caution on Indian actions, thereby providing it greater room for mischief-making at the lower levels of conflict. To some extent, Pakistan is right in assuming so, because India's military options are constrained by the presence of nuclear weapons. Even though Kargil demonstrated the types of conventional responses that can still be crafted to foil Pakistan's designs, the risk of escalation spinning out of control cannot be completely obviated.

As it turns out, the India-Pakistan relationship has ended up in a state where the danger of escalation to the nuclear level is highly over-emphasized by Pakistan, even as it is casually dismissed by India. Both positions are compelled by their national interests. But, the truth actually lies somewhere in between and perhaps more likely than not, India and Pakistan do realize the dangers of inadvertent and unwanted nuclear escalation that underlie their behaviour. It is for this reason that Pakistan does not display a wanton abandon in its policy of nuclear brinkmanship. For instance, the total number of terrorists pumped into India at any one particular time has never exceeded 2,500-3000 so as not to breach India's level of tolerance.[79] Also, Pakistan's nuclear rhetoric on its low nuclear threshold has mostly been heard during the stages of build-up of a crisis or towards its end. During the period of actual danger of escalation in the midst of a crisis, there is far greater caution in tone and action.[80] Similarly, India's exercise of caution in responding to Pakistan-fomented terrorism is illustrative of its desire to steer clear of any inadvertent escalation. Both realize the high costs that a nuclear exchange would impose on them. In fact, for all of Pakistan's nuclear flamboyance and the low threshold bluster, Islamabad does realize that the impact of destruction would be far greater on the state and society of Pakistan, whose recoverability, in terms of dealing with the human and economic disaster of such a scale, would be less than that of India. This should be deterrent enough to force Pakistan to reconsider what possible tangible political gains might be achieved at the cost

[79] Shalini Chawla, *Pakistan's Military and Its Strategy* (New Delhi: Knowledge World, 2009), p. 201.

[80] Rajagopalan, n. 14.

of risking a nuclear war. Would the loss of Lahore or Karachi be worth the acquisition of Kashmir? In fact, can there ever be any concievable political, military or strategic objective for which a country would resort to the nuclear use in the knowledge that it would be sure to lose some of its own cities?

Therefore, as long as rational and reasonable leaderships are in charge of nations (though the measure of their rationality and reasonableness may not exactly match), physical proximity between nations, even when riddled with historical border/territorial conflicts, does not pose an additional danger of nuclear use. Rather, geographical closeness also imposes an additional limitation since a nuclear catastrophe inflicted by one on the other cannot be expected to remain confined in space to only the adversary's side of the border. Of course, one could well argue that by the time the nations take the extreme decision to use the weapon, they would be well past the stage of being bothered by any effects of radioactive fallout, and more worried instead about the enemy's nuclear strike. Nevertheless, while thinking about nuclear weapons during 'crisis-free' times, this certainly is a variable that weighs on the mind of geographically contiguous nations.

Nature of Nuclear Command and Control

The second factor that is deemed to increase the prospects of nuclear exchange in the region is the absence of sophisticated, elaborate and well-defined command and control structures of the kind that USA and USSR had established. This, it is feared, could lead to an unintentional nuclear exchange because of an unauthorized nuclear use or deterrence breakdown due to a miscalculation based on faulty or inadequate intelligence. None of the three countries has elaborate surveillance and early warning systems of the kind that the superpowers flaunted. China, of course, has had a nuclear command and control in place since the late 1960s, but India and Pakistan have relatively nascent command structures that are acquiring organizational clarity only now and other necessary infra structural paraphernalia such as hardened national command posts or secure and robust communication lines.

However, it will be imprudent to presume greater dangers merely on the basis of a superficial comparison of the C2. Rather, it must be pointed out that the kinds of structures needed in this region need not be compared with the elaborate ones that have existed in the case of the Superpowers, since the requirements and status of nuclear weapons vary according to contexts. The command and control of USA and USSR were based on the need for a high-speed response to a nuclear attack, given the hair trigger alert (launch-on-warning and launch-under-attack levels of alert) at which the arsenals were maintained. In the case of the three countries of this region, the nuclear arsenals do not even exist in a ready-to-use state. Therefore, the question of launch on warning (LOW)/launch under attack (LUA) and the attendant processes do not apply. Consequently, the demands on the command and control structures are also proportionately reduced. Furthermore, pre-delegation of launch authority of the kind that was normal in the Superpowers is not known to have been undertaken in the three countries. In any case, none of them yet has an operational SSBN that presupposes a ready weapon and pre-delegated authority to launch. This certainly is a challenge that will emerge in the next decade and beyond. As China and India begin regular patrols with submarine launched ballistic missiles (SLBMs) on board, some changes in their national C2 will become necessary. For the time being though, the nuclear C2 structure in these nations can afford to be far more assertive than the Superpower models ever were. To that extent, the present state of the arsenal, existing in a disassembled form, lessens the dangers of inadvertent or accidental use of nuclear weapons.

In fact, in the case of the nations in this region, deterrence stability is premised on the "technological backwardness of the nuclear weapons infrastructure on both sides."[81] Factors such as lack of satellite monitoring capability, lack of knowledge of the opponent's nuclear weapons, a recessed posture, lack of missiles of sufficient range and accuracy, so on and so forth reduce the chances of any nation being able to carry out a first strike on another. And this provides reassurance that enough retaliatory capability would be available for launching a punitive counter attack.

[81] E. Sridharan, "International Relations Theory and the India-Pakistan Conflict", in E. Sridharan, ed., *The India-Pakistan Nuclear Relationship: Theories of Deterrence and International Relations* (London: Routledge, 2007), p. 31.

Yet another factor that relieves pressure on nuclear C2 in these second tier states, especially in the case of India and China, is their declared no-first-use doctrine. The American nuclear strategy has been largely shaped by the Pearl Harbour experience and hence always geared to act in a bolt from the blue contingency. Consequently, acting first and maintaining surprise were critical imperatives. Not surprisingly, therefore, Washington subscribed to a LOW/LUA postures. This was done in the belief that unless the US was able to undertake a pre-emptive/surprise strike, it stood little chance of being able to destroy all Soviet targets as required by its war plan. And minimizing, if not completely eliminating, the enemy's second strike capability was the primary task of the first strike, and hence the need for ever increasing numbers of warheads. NATO too adopted a first use doctrine to deter Soviet conventional might, a logic that Pakistan now uses in support of its nuclear doctrine of first use against India. The Soviet Union, similarly, relied on its capacity to mount pre-emptive attacks. And, to undertake pre-emption, both sides built up large, ready, counter-force capabilities supported by a huge infra structure in the form of C3I, early warning systems, so on and so forth.

An NFU posture, on the other hand, removes the need for any of these. In fact, for deterrence to be credible with a no-first-use doctrine, it would only be necessary to have available all the relevant nuclear assets, though dispersed, as unassembled nuclear warheads under civilian control, and dedicated delivery systems kept either in storage or in readiness away from their operational areas—as long as they can be brought together as rapidly as required during a supreme emergency, to carry out assured retaliation. Therefore, by removing the need for retaining nuclear forces on hair trigger alert – a situation not at all conducive to strategic stability given the geographical realities of the neighbourhood – an NFU also reduces the possibility of an accidental nuclear war, based on a gross miscalculation. It also raises the threshold of nuclear war in a crisis situation.

Inadequate Safety Provisions

Thirdly, it is alleged that since the arsenals of India, Pakistan and China are small and technically primitive, they lack fail-safe devices such as double keys, permissive action links (PAL) or other elaborate technological fixes to insure against an unintended or accidental

attack. However, it may be recalled that in the early years of the Cold War, Superpower warheads were not routinely mated, nor necessarily co-located, with delivery systems. It was the subsequent development of safety features designed into modern warheads and the advent of sophisticated administrative controls on nuclear weapons that made higher alert levels possible. Ironically, however, after keeping their nuclear missiles on hair trigger alert for years, the two Superpowers found the best nuclear risk reduction measures in de-alerting these and separating warheads from delivery systems! De-mating, de-alerting and de-targeting - the three steps taken by the superpowers for nuclear risk reduction and confidence-building form a natural part of the existing state of the arsenal of the three countries.

Nature of Civil-Military Relations and Risk of Political Instability

The fourth reason for nuclear dangers in second tier states is believed to arise from the nature of civil-military relations or the inadequacy of political control over nuclear assets and use. However, this danger exists in varying degrees in the case of India, Pakistan and China. It is far greater in the case of Pakistan, since India and China have displayed a long tradition of civilian superiority over the military. But this is not the case with Pakistan, where the military has been in total control of the nuclear weapons programme and weapons custody.

However, to presume easy use of a nuclear weapon only on the basis of the military having custody of weapons may not be entirely correct. Notwithstanding the highly unpredictable, and at times irresponsible behaviour of the Pakistan military, it need not be automatically assumed that this institution would not act with a certain amount of responsibility on an issue as crucial as this. It has been pointed out by several students of nuclear deterrence that it is only in an unreal world of simulated strategic warfare that one can assume that a loss of dozens of great cities can be a real choice for a sane man. As McGeorge Bundy argued, “In the real world of real political thinkers…a decision that would bring even one hydrogen bomb over one city of one’s own country would be recognised in advance as a

catastrophic blunder; ten bombs on ten cities would be a disaster beyond history; and a hundred bombs on a hundred cities are unthinkable".[82]

Going by this logic, if the military in Pakistan is not in the saddle of governance and there is a civilian government at the helm, then, obviously the civilian leadership could be expected to levy some control on the decision of nuclear use. And, if the military is in power, then too it cannot act completely irresponsibly since it would require a certain amount of legitimacy to retain that position of power. This is particularly true in this day and age when military dictatorships are not looked upon kindly by the world community.

Political instability in Pakistan, however, as a result of deteriorating civil-military relations and the exploitation of this rift by increasingly influential non-state actor is a risk that cannot be discounted. As long as there is legitimate governance and a state control of any kind, democratic or military, a nation's behaviour can be expected to be rational and hence deterrence would apply since survival of the state would be the core interest of the leadership, irrespective of its nature. But, a state suffering from a prolonged period of instability raises risks of irresponsible actors acquiring powers or assets that may lead to deterrence breakdown. More than India or China, this is a risk that could quickly emerge from Pakistan, given the political state of the country over the last few years. Factors like the steady deterioration of the Pakistani economy, the turmoil in domestic politics, the rise of fundamentalist tendencies, so on and so forth could dramatically increase the chances of a group, either with or without the knowledge of the military trying to steal, use or threaten to use weapons of mass destruction.

In fact, from the Pakistani side, the chances of use arise more from the possibility of theft and the use of the WMD by a terrorist or jehadi fighter. Given that Pakistan and Afghanistan are the breeding grounds of fundamentalism, the security of nuclear weapons with Islamabad, as well as the possibility of its willful complicity in transferring control of nuclear material, technology or weapon to a terrorist outfit is a cause for concern at the regional, as well as the international level. This is a risk that must be taken seriously. But to mitigate this

[82] Cited by General K. Sundarji, "Nuclear Deterrence Doctrine for India", *Trishul*, vol. 5, no. 2, December 1992, pp. 43-60.

challenge, the NRRMs would have to be far wider than just a bilateral engagement between India and Pakistan. These are discussed in some detail in the following section.

Nuclear Risk Reduction Measures: Status and Prospects

Nuclear history illustrates that as dangers from nuclear arsenals grew with increase in numbers and advanced technological capabilities brought in a near automaticity into nuclear use, the Superpowers resorted to well-negotiated agreements as a means to enhance deterrence stability and minimize risks. Despite their bitter ideological rivalry, some channels of communication, especially at the professional military level ensured that both sides invested the necessary effort into crafting elaborate agreements for arms control not only for mutual benefit through the establishment of strategic stability and reduction of risks, but also to reshape the balance of military capabilities to one's own advantage. Strategic Arms Limitation Treaty (SALT), Anti-ballistic Missile treaty, Conventional Forces in Europe treaty, Intermediate Nuclear Forces treaty, START I and II are illustrative of these.

As far as nuclear confidence building measures (CBMs) in the case of the two dyads of this region are concerned, India and Pakistan did get off to an early and fairly good start after their nuclear tests in 1998. In fact, it may be recalled that some significant agreements had been concluded between India and Pakistan much before 1998. One of these was the Agreement on the Prohibition of Attack against Nuclear Installations and Facilities that was agreed upon between Gen Zia ul Haq and Rajiv Gandhi in December 1985. It was finally ratified only in 1992 but has since stood through even the most hostile periods of the relationship. On 1 January of every year since 1992, the two countries have exchanged lists, enumerating their nuclear power and research reactors, fuel fabrication, uranium enrichment, isotope separation and reprocessing facilities. In 1991, the two countries also signed two non-nuclear CBMs in the form of an agreement on advance notification of military exercises and troop movement as also another agreement on prevention of airspace violation and permitting over flights and landing by military aircraft.

Post-1998, the Lahore Declaration of 20 February 1999, signed between the two countries during Prime Minister Vajpayee's visit to Lahore (the famous bus ride), encapsulated

a range of NRRMs. This agreement captured the spirit of the meeting between the leaders of two new nuclear powers and their understanding of the responsibility on their shoulders as expressed by PM Vajpayee when he said, "A small spark can now cause a huge fire." The Memorandum of Understanding signed between the foreign secretaries of India and Pakistan on 21 February 1999 identified bold NCBMs aimed at promoting an environment of peace and security. These included eight specific clauses[83]:

- Bilateral consultations on security concepts and nuclear doctrines
- Advance notification of ballistic missile tests
- National measures to prevent accidental or unauthorized use; notification is case of such use; measures to prevent misinterpretation by the other side
- Memorandum on foregoing further testing
- Measures to prevent incidents at sea
- Mechanism to review implementation of CBMs
- Enhanced communication between the two sides
- Bilateral consultations on security and disarmament in international fora.

Laudable as these measures were, they were stymied within months of their being crafted. Any meaningful action on this front was brought to a rude halt by the Kargil conflict that broke out in May 1999[84] when regular Pakistani troops covertly infiltrated as *mujahideen* into India and subsequently in 2001, a terrorist strike was undertaken on the Indian Parliament whose trail yet again ended in Pakistan. Periodic disruptions by Pakistan sponsored and trained terrorists have prevented any further action on nuclear risk reduction. In fact, it is doubtful that any purposeful movement in this direction is possible unless the trust levels of the countries rise significantly and there appears little hope of that happening in the present security

[83] Memorandum of Understanding, 21 February 1999, as reproduced in *Hindu*, 22 February 1999.

[84] Incidentally, that was about the time that the experts of both sides were to have met, as per the MoU of February 1999 to work out the technical details for implementing the nuclear CBMs.

environment. Nevertheless, the paper does make some recommendations that may become possible if the relationship begins to look up at some point in the future.

Before recommending the NRRMs for the region, two peculiar realities must be pointed out in order to understand the possibilities and complications of the process. Firstly, the Indo-Pakistan NRRMs have to contend with the reality that Pakistan suffers from a weak power syndrome. Pakistan has always resented the geophysical and structural asymmetry that it inherited at the time of Partition. A former Pakistani Foreign Minister, Abdul Sattar, lamented that the transition to independence "created seemingly impossible problems for Pakistan, which unlike India, inherited neither a capital nor government nor the financial resources to establish and equip the administrative, economic and military institutions of the new state…."[85] This perception that "Pakistan started its independent career as a weak nation"[86], for which India was held responsible, were met by defining "national identity through religious symbolism and by building India-Pakistan rivalry"[87]. Ever since, Pakistan has looked for ways and means to somehow equalize the power asymmetry with India through alliance-building with USA, China and other Muslim countries, as well as through acquisition of modern conventional weaponry to match a far larger and better-equipped Indian Army. However, it was in the acquisition of a nuclear weapons capability that Pakistan discovered the best and most effective equalizer. Therefore, Pakistan's conceptualization of nuclear CBMs with India hinges on the creation of a wider 'Strategic Restraint Regime' that can reduce the asymmetries. This regime is expected to include measures such as[88]:

a. Nuclear restraint and stabilization
b. Prevention of a nuclear and ballistic missile race in South Asia

[85] Abdul Sattar, "Fifty Years of the Kashmir Dispute: The Diplomatic Aspect", in Suroosh Irfani, ed., *Fifty Years of the Kashmir Dispute* (Muzaffarabad: University of Azad J & K, 1997).

[86] Pervaiz Iqbal Cheema, *The Armed Forces of Pakistan* (Karachi: Oxford University Press, 2003), p. 34.

[87] Hussain Haqqani, *Pakistan: Between Mosque and Military* (Lahore: Vanguard Books, 2005), p. 12. The author argues that focus on rivalry with India was used as an instrument by the national security apparatus in Pakistan to secure legitimacy for themselves. This continues to be the case.

[88] Rifaat Hussain, "Deterrence and Nuclear Use: Doctrines in South Asia", in E Sridharan, n. 81, pp. 161-62.

c. Establishment of risk reduction centres
d. Formalizing moratorium on nuclear testing
e. Non-induction of ABM and SLBM systems
f. Conventional restraint and stabilization
g. Mutual and balanced reduction of force and armaments.

As is evident, all the above measures seek to bridge the gap of capabilities between India and Pakistan. The acceptability of these by India is nevertheless constrained by its threat perceptions from nuclear China, against whom India has to build its credible deterrence. Therefore, this reality of having to deal with both Pakistan and China – countries with different nuclear capabilities and doctrines – makes it difficult for India to undertake CBMs that could be to the satisfaction of Pakistan. The requirement of credible deterrence with China will always seem excessive and hence ominous to Pakistan, unless it realizes India's compulsions and accepts that India has no territorial designs on Pakistan.

Secondly, nuclear CBMs must be anchored in a broader political relationship. This can occur as part of an overall progress on other issues and with some sort of a common vision of the relationship. Building of economic cooperation leading to economic inter-penetration and mutual stakes can be one way of doing so and this is true of the India-China relationship, since China has emerged as India's largest trading partner. Buoyed by the economic relationship, the political relations are on a better keel. Therefore, the scope and space for NRRMs do exist. The same, however, cannot be said of India and Pakistan who remain economically and politically estranged.

Nevertheless, as and when it does become possible to conclude some NRRMs, undertaking the following steps would be especially helpful. At the individual level, it would do well for the three countries to unilaterally take measures such as:

- strict Personnel Reliability programmes to deal with risks of accidental nuclear use due to human error;

- maintaining a high level of professionalism of the armed forces in order to maximize the efficacy of controls;

- undertaking necessary domestic legislation and its effective implementation to enforce effective export controls that would obviate the chances of unauthorized possession, acquisition or use of nuclear materials, equipment or technology.

On a bilateral level, it would serve India - Pakistan and India - China to negotiate:

- Removal of short-range ballistic missiles from being used with nuclear warheads. This would remove a potent source of instability by removing the ambiguity regarding the role of these missiles.

- Agreement not to attack each other's nuclear command posts. This would address apprehensions of decapitation resulting in decision-making paralysis and hence reduce the requirement for pre-delegation of authority. Accordingly, the concomitant dangers of unauthorized nuclear use or mistaken launch by commanders at lower levels of the nuclear use chain would also decrease.

- Establishment of hotlines at appropriate military levels to keep open meaningful channels of communication, especially during periods of crisis. There is a need to establish clear and mutually accepted rules and procedures on how to man these hotlines round the clock in order to avoid any chances of miscalculation or escalation premised on false alarms.

- Greater transparency about nuclear doctrine and command and control structures in order to avoid misperceptions. As stated earlier, doctrines perform the critical function of precisely communicating the purpose, role and circumstances of use of the national nuclear arsenal. Even though ambiguity and deception are important components of nuclear deterrence, a clearly articulated doctrine can alleviate mistaken assumptions of the adversary and thereby, enhance deterrence stability.

- Acceptance of a no-first-use doctrine by all the three states would significantly veer the region towards a high probability of no use of nuclear weapons. India and China in any case have a declared no-first-use nuclear doctrine. Pakistan has rejected this unless it is accompanied by a larger no aggression pact by India. However, that is unacceptable to India given that Pakistan uses a strategy of proxy war at the sub-conventional level, while using its nuclear weapons as a defensive shield against a superior military's conventional response. This is a conundrum of security perceptions that is not easy to resolve in the absence of more broad-based change in Indo-Pakistan relations. However, the acceptance of NFU by the three nations in the region would go a long way towards mitigating nuclear dangers.

- Conclusion of an agreement such as the USA-Russia agreement of the Incidents at Sea (INCSEA) in order to deal with inadvertent or accidental collisions of sea vessels. This would be particularly relevant once the countries have operational SSBNs undertaking regular patrols. While this is still some distance away in the future, early consideration of the issue would ease matters in the future.
- Conclusion of non-targeting agreements, since the absence of pre-targeted nuclear-tipped missiles would provide greater assurance in times of crisis and provide time to the leaders to resolve the crisis without nuclear weapons coming into play.
- Conclusion of an agreement on mutual reporting of nuclear accidents or loss of radiological or nuclear material.

Conclusion

Dangers accompany nuclear weapons wherever they exist. In each of the five NWS, as recognized under the NPT, they exist in equal measure. The US and the USSR admitted to living on the edge of nuclear brinkmanship during the Cold War years. And, even in the contemporary period, despite a reduction in nuclear weaponry, enough still remains on hair trigger alert to be a cause for alarm to the rest of the world. While there may have been a reduction in the threat of direct confrontation in the post-Cold War period, the risks arising from a false alarm, or an accidental launch, in turn leading to a mistaken retaliation, have not diminished. Rather the very magnitude of the arsenals and the ability of rapid launch heighten the chances of such usage. Some incidents such as the flight of the US bomber armed with nuclear weapons without the knowledge of the crew or ground staff or the collision of the nuclear submarines of British and French navies in the second largest ocean of the world are of recent vintage and in public memory.

Given these existential dangers then, nuclear weapons do create a shared interest and common concern between hostile nation-states. If survival is the core interest of both nations then, these weapons that place the very survival of countries at risk should also compel both to take individual and reciprocal or mutual restraints aimed at long-term stability. As astutely put by an analyst, “The risks associated with nuclear weapons, particularly in a hostile relationship,

encourage not only war avoidance, but also its institutionalization through arms control".[89] These measures, though, may take time to crystallize and depend on a number of factors – the extent of animosity in the mutual relationship, possibilities of inter-dependence, ability of a third party to influence behaviour, the level of risks, so on and so forth.

Historical experience of nuclear relations also demonstrates that these measures are usually undertaken after the countries have arrived at an understanding of the nuclear dangers after having gone past the phase of nuclear machismo and bluster that immediately follows the acquisition of nuclear weapons. Provocative posturing of this phase gradually gives way to a greater emphasis on war avoidance and hence a willingness to engage in NRRMs. US-Soviet nuclear arms control began more than a decade after the USSR broke US monopoly in 1949. As dangers grew with increase in numbers of nuclear weapons and the range and accuracies of delivery systems, it led to the crystallization of a mutual interest in reducing these dangers by enhancing deterrence stability through cooperation.

This is the trajectory that will most likely accompany India-China nuclear relations. Even 11 years after 1998, China is still reluctant to accept India's status as a nuclear weapons state and hence unwilling to engage in any kind of nuclear CBMs. However, as the credibility of India's nuclear deterrence increases with the enhanced range and accuracy of its missiles, and especially the operationalization of the sea-based leg of the triad, it is likely that China and India will see greater benefit in some negotiations to reduce nuclear risks.

Meanwhile, the India – Pakistan NRRMs, despite having gotten off to a good start soon after the overt demonstration of their nuclear capability, have floundered since, owing to Pakistan's offensive ventures at the sub-conventional level and the resultant lack of trust. Repeated incidences of nuclear terrorism, clearly traced back to Pakistan, have rocked the chances of both being able to arrive at any meaningful CBMs in the absence of any mutual confidence. Despite the fact that prudence calls for the two nations to arrive at some effective mechanisms to minimize nuclear dangers, given the particular fragility of their relationship, it is unlikely that anything fruitful could transpire till such a time as the mutual trust deficit is

[89] Rajesh Basrur, "International Relations Theory and Minimum Deterrence", in *ibid.*, p. 136.

significantly bridged. Under the current circumstances, where Pakistan is experiencing extreme domestic political convulsions, this appears to be a bleak prospect.

Nuclear CBMs would essentially have to arise from a more broad-based cooperative relationship between the nations. In fact, one lesson that stands out from the nuclear rapprochement that was achieved between Argentina and Brazil in the early 1990s, is that nuclear confidence automatically flows from other cooperative efforts, and it cannot be worked upon in isolation.[90] As expressed by an Argentine nuclear analyst, "the step from nuclear rivalry to cooperation was not an isolated phenomenon that occurred while antagonism prevailed in other sectors."[91]

Besides emanating from a comprehensive cooperation framework, the nuclear CBMs must also grow from within, from an understating for their requirement and rationale for mutual benefit, instead of being imposed from the outside. Such a comprehension could come about with a change in the attitudes of the leadership or after a catastrophe in the region. The latter eventuality might prove to be too late for several residents of the region. It is obvious that NRRMs are the need of the hour. Unfortunately, however, severe trust deficits cast an ominous shadow over their prospects.

[90] For a detailed discussion of the Argentine-Brazilian nuclear rapprochement and the lessons that could be drawn for other regions, including India-Pakistan, see Manpreet Sethi, *Argentina's Nuclear Policy* (New Delhi: Knowledge World, 1999), pp. 159-81.

[91] Julio C Carasales, "Argentina and Brazil: Nuclear Non-acquisition and Confidence Building", *Disarmament*, vol. XV, no. 3, 1992, p. 94.

Appendix 1

Draft Report of National Security Advisory Board on Indian Nuclear Doctrine

August 17, 1999

Preamble

1.1. The use of nuclear weapons in particular as well as other weapons of mass destruction constitutes the gravest threat to humanity and to peace and stability in the international system. Unlike the other two categories of weapons of mass destruction, biological and chemical weapons which have been outlawed by international treaties, nuclear weapons remain instruments for national and collective security, the possession of which on a selective basis has been sought to be legitimised through permanent extension of the Nuclear. Non-proliferation Treaty (NPT) in May 1995. Nuclear weapon states have asserted that they will continue to rely on nuclear weapons with some of them adopting policies to use them even in a non-nuclear context. These developments amount to virtual abandonment of nuclear disarmament. This is a serious setback to the struggle of the international community to abolish weapons of mass destruction.

1.2. India's primary objective is to achieve economic, political, social, scientific and technological development within a peaceful and democratic framework. This requires an environment of durable peace and insurance against potential risks to peace and stability. It will be India's endeavour to proceed towards this overall objective in cooperation with the global democratic trends and to play a constructive role in advancing the international system toward a just, peaceful and equitable order.

1.3. Autonomy of decision making in the developmental process and in strategic matters is an inalienable democratic right of the Indian people. India will strenuously guard this right in a world where nuclear weapons for a select few are sought to be legitimised for an indefinite future, and where there is growing complexity and frequency in the use of force for political purposes.

1.4. India's security is an integral component of its development process. India continuously aims at promoting an ever-expanding area of peace and stability around it so that developmental priorities can be pursued without disruption.

1.5. However, the very existence of offensive doctrine pertaining to the first use of nuclear weapons and the insistence of some nuclear weapons states on the legitimacy of their use even against non-nuclear weapon countries constitute a threat to peace, stability and

1.6. This document outlines the broad principles for the development, deployment and employment of India's nuclear forces. Details of policy and strategy concerning force structures, deployment and employment of nuclear forces will flow from this framework and will be laid down separately and kept under constant review.

2. Objectives

2.1. In the absence of global nuclear disarmament India's strategic interests require effective, credible nuclear deterrence and adequate retaliatory capability should deterrence fail. This is consistent with the UN Charter, which sanctions the right of self-defence.

2.2. The requirements of deterrence should be carefully weighed in the design of Indian nuclear forces and in the strategy to provide for a level of capability consistent with maximum credibility, survivability, effectiveness, safety and security.

2.3. India shall pursue a doctrine of credible minimum nuclear deterrence. In this policy of "retaliation only", the survivability of our arsenal is critical. This is a dynamic concept related to the strategic environment, technological imperatives and the needs of national security. The actual size components, deployment and employment of nuclear forces will be decided in the light of these factors. India's peacetime posture aims at convincing any potential aggressor that:

(a) any threat of use of nuclear weapons against India shall invoke measures to counter the threat: and

(b) any nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor.

2.4. 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 punitive retaliation should deterrence fail.

2.5. India will not resort to the use or threat of use of nuclear weapons against States which do not possess nuclear weapons, or are not aligned with nuclear weapon powers.

2.6. Deterrence requires that India maintain:

(a) Sufficient, survivable and operationally prepared nuclear forces,

(b) a robust command and control system,

(c) effective intelligence and early warning capabilities, and

(d) comprehensive planning and training for operations in line with the strategy, and

(e) the will to employ nuclear forces and weapons

2.7. Highly effective conventional military capabilities shall be maintained to raise the threshold of outbreak both of conventional military conflict as well as that of threat or use of nuclear weapons.

3. Nuclear Forces

3.1. India's nuclear forces will be effective, enduring, diverse, flexible, and responsive to the requirements in accordance with the concept of credible minimum deterrence. These forces will be based on a triad of aircraft, mobile land-based missiles and sea-based assets in keeping with the objectives outlined above.

Survivability of the forces will be enhanced by a combination of multiple redundant systems, mobility, dispersion and deception.

3.2. The doctrine envisages assured capability to shift from peacetime deployment to fully employable forces in the shortest possible time, and the ability to retaliate effectively even in a case of significant degradation by hostile strikes.

4. Credibility and Survivability

The following principles are central to India's nuclear deterrent

4.1. Credibility: Any adversary must know that India can and will retaliate with sufficient nuclear weapons to inflict destruction and punishment that the aggressor will find unacceptable if nuclear weapons are used against India and its forces.

4.2. Effectiveness: The efficacy of India's nuclear deterrent be maximised through synergy among all elements involving reliability, timeliness, accuracy and weight of the attack.

4.3 Survivability:

(i) India's nuclear forces and their command and control shall be organised for very high survivability against surprise attacks and for rapid punitive response. They shall be designed and deployed to ensure survival against a first strike and to endure repetitive attrition attempts with adequate retaliatory capabilities for a punishing strike which would be unacceptable to the aggressor.

(ii) Procedures for the continuity of nuclear command and control shall ensure a continuing capability to effectively employ nuclear weapons.

5. Command and Control

5.1. Nuclear weapons shall be tightly controlled and released for use at the highest political level. the authority to release nuclear weapons for use resides in the person of the Prime Minister of India, or the designated successor(s).

5.2. An effective and survivable command and control system with requisite flexibility and responsiveness shall be in place. An integrated operational plan, or a series of sequential plans, predicated on strategic objectives and a targetting policy shall form part of the system.

5.3. For effective employment the unity of command and control of nuclear forces including dual capable delivery systems shall be ensured.

5.4. The survivability of the nuclear arsenal and effective command, control, communications, computing, intelligence and information (C4I2) systems shall be assured.

5.5. The Indian defence forces shall be in a position to, execute operations in an NBC environment with minimal degradation;

5.6. Space based and other assets shall be created to provide early warning, communications, damage/detonation assessment.

6. Security and Safety

6.1. Security: Extraordinary precautions shall be taken to ensure that nuclear weapons, their manufacture, transportation and storage are fully guarded against possible theft, loss, sabotage, damage or unauthorised access or use.

6.2. Safety is an absolute requirement and tamper proof procedures and systems shall be instituted to ensure that unauthorised or inadvertent activation/use of nuclear weapons does not take place and risks of accident are avoided.

6.3. Disaster control: India shall develop an appropriate disaster control system capable of handling the unique requirements of potential incidents involving nuclear weapons and materials;

7. Research and Development

7.1. India should step up efforts in research and development to keep up with technological advances in this field.

7.2. While India is committed to maintain the deployment of a deterrent which is both minimum and credible, it will not accept any restraints on building its R&D capability.

8. Disarmament and Arms Control

8.1. Global, verifiable and non-discriminatory nuclear disarmament is a national security objective. India shall continue its efforts to achieve the goal of a nuclear weapon-free world at an early date.

8.2. Since no-first use of nuclear weapons is India's basic commitment, every effort shall be made to persuade other States possessing nuclear weapons to join an international treaty banning first use.

8.3. Having provided unqualified negative security assurances, India shall work for internationally binding unconditional negative security assurances by nuclear weapon states to non-nuclear weapon states.

8.4. Nuclear arms control measures shall be sought as part of national security policy to reduce potential threats and to protect our own capability and its effectiveness.

8.5. In view of the very high destructive potential of nuclear weapons, appropriate nuclear risk reduction and confidence building measures shall be sought, negotiated and instituted.

Appendix 2

'The Cabinet Committee on Security Reviews operationalization of India's Nuclear Doctrine', Statement of Government of India, New Delhi, 4 January, 2003.

1.The Cabinet Committee on Security (CCS) met today to review the progress in operationalizing of India's nuclear doctrine. The Committee decided that the following information, regarding the nuclear doctrine and operational arrangements governing India's nuclear assets, should be shared with the public.

2. India's nuclear doctrine can be summarized as follows:

(i) Building and maintaining a credible minimum deterrent;

(ii) A posture of "No First Use": nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere;

(iii) Nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage.

(iv) Nuclear retaliatory attacks can only be authorised by the civilian political leadership through the Nuclear Command Authority.

(v) Non-use of nuclear weapons against non-nuclear weapon states;

(vi) However, in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons;

(vii) A continuance of strict controls on export of nuclear and missile related materials and technologies, participation in the Fissile Material Cutoff Treaty negotiations, and continued observance of the moratorium on nuclear tests.

(viii) Continued commitment to the goal of a nuclear weapon free world, through global, verifiable and non-discriminatory nuclear disarmament.

3. The Nuclear Command Authority comprises a Political Council and an Executive Council. The Political Council is chaired by the Prime Minister. It is the sole body which can authorize the use of nuclear weapons.

4. The Executive Council is chaired by the National Security Advisor. It provides inputs for decision making by the Nuclear Command Authority and executes the directives given to it by the Political Council.

5. The CCS reviewed the existing command and control structures, the state of readiness, the targetting strategy for a retaliatory attack, and operating procedures for various stages of alert and launch. The Committee expressed satisfaction with the overall preparedness. The CCS approved the appointment of a Commander-in-Chief, Strategic Forces Command, to manage and administer all Strategic Forces.

6. The CCS also reviewed and approved the arrangements for alternate chains of command for retaliatory nuclear strikes in all eventualities.

Source: Indian Ministry of External Affairs, http://meadev.nic.in/news/official

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