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Examining Efficacy of Strategic Stability in South Asia: An Analysis

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Abstract

This paper highlights how, in the backdrop of prevalent tensions between India and Pakistan, deterrence stability is endangered even when overall strategic stability prevails. Unresolved legacy issues including an outstanding boundary dispute, conflict over Kashmir, and terrorism mar India-Pakistan relations. Variables undermining the prospects for long term peace, among others, include growing mutual mistrust, the proxy war that India believes is state perpetrated, increasing conventional asymmetry, rapid advancement in weapon technologies, growing size of nuclear arsenals, doctrinal mismatch and above all, bilateral gridlock in confidence building measures and arms control measures.

Disclaimer

During the design of the politico-military exercises discussed in this paper, a number of assumptions about goals, strategies, and actions of the various countries under consideration are made. While these assumptions are based on the writings and thoughts of a variety of analysts familiar with South Asia, they do not represent the opinion or positions of Sandia National Laboratories, the Department of Energy, or the Government of the United States nor any other government. Instead, they are hypothetical and only intended to explore some of the issues important to strategic stability in South Asia.

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I am grateful to Sandia National Laboratories (SNL), the U.S. Department of Energy (DOE) and Bob Swartz for providing me this wonderful opportunity to work on a project "Examining Efficacy of Strategic Stability in South Asia "that is at the heart of the nuclear stability debate exacerbated by current tensions between the two countries. Opportunity has allowed me to explore the various nuances of the prevailing dynamics underscoring tensions and outline my thoughts and perceptions.

I am thankful to a host of people at SNL for making my stay comfortable and for letting me devote my entire energies to single-mindedly pursue my assignment. At the top of the list is Geoff Forden, my supervisor, guide, and above all host, for his incisive inputs, advice and hospitality. I am also grateful to his team and staff at Sandia for their support and assistance. I would also like to thank Geoff, for organizing extensive interaction at important think tanks and other centers at Washington DC and Monetary, California, including the Naval Post Graduate School.

Insights on crisis gaming shared by Centre for Applied Strategic Learning, National Defense University and John Hopkins, Advance Physics Laboratories Warfare Analysis Laboratory have been critical in sharpening my understanding of crisis gaming as a tool for strategic analysis. I am indeed thankful for this great learning opportunity.

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List of Acronyms and Abbreviations

ACA	Arms Control Association
BMD	Ballistic Missile Defense
CBM	Confidence Building Measures
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
DRDO	Defense Research Development Organization
ELINT	Electronic Intelligence
EW	Electronic Warfare
GDP	Gross Domestic Product
GHQ	General Headquarters
IAF	Indian Air Force
IBGs	Integrated Battle Groups
ICGs	Integrated Combat Groups
IM	Indian Mujahedeen
IOR	Indian Ocean Region
IRNSS	Indian Regional Navigation Satellite System
ISR	Intelligence, Surveillance, and Reconnaissance
LoC	Line of Control
NATO	North Atlantic Treaty Organization
NCWF	New Concept of War Fighting
NFU	No First Use
NSAB	National Security Advisory Board (part of Indian NSC)
NSC	National Security Council
PD	Strategic Plans Division (SPD)
PLA	People's Liberation Army
SIMI	Students Islamic Movement of India
TBA	Tactical Battle Area
TFR	Theatre Force Reserves
TNWs	Tactical Nuclear Weapons

Executive Summary

Unresolved legacy issues, including the outstanding boundary dispute over the Line of Control, the conflict over Kashmir, cross border terrorism, and above all, a trust deficit mar India-Pakistan relations. Variables undermining the prospects for long-term peace include growing mutual mistrust, the proxy war that India believes is Pakistani state perpetrated, the increasing asymmetry in conventional power, rapid advancement in weapon technologies, growing size of nuclear arsenal, doctrinal mismatch and above all, bilateral gridlock in confidence building measures (CBMs) and arms control measures.

The nuclear factor has come to acquire paramount importance in India–Pakistan relations and is crucial to regional stability. Strategic stability in the South Asian subcontinent is being maintained by the size of nuclear forces wherein near parity exists. This essentially implies that in the prevailing strategic balance, pre-emption would not work and the side attempting to leverage its nuclear capability would face devastating riposte. Seen in this limited perspective, stability exists at the strategic level between India and Pakistan.

However, the security equations emerging from strategic stability owing to nuclear parity in the subcontinent are attempted to be undermined by exploitation of sub strategic sphere, in other words, is space below nuclear threshold by India and Pakistan in pursuit of respective national interests. Thus India seeks to deal with asymmetric warfare being waged by Pakistan, crossing its threshold of tolerance, military actions exploiting its technological and numerical asymmetry. Pakistan, on the other hand, refuses to accept its complicity and in turn puts the onus on India for ham-handed handling of its own internal insurrections. Attempts at escalation by India are sought to be handled through its growing conventional capabilities and brandishing tactical or battlefield nuclear weapons.

Consequently, despite credible weapon asymmetry, both countries are involved in not only nuclear parity but in developing credible nuclear capabilities at sub strategic levels (battlefield to tactical nuclear weapons) or for massive retaliation. Doctrinal mismatch together with nature of nuclear command and control further exacerbate regional tensions. Based on the above discourse, the following broad conclusions can be drawn.

Pakistan is using terrorism and Jihadi organizations to wage a calibrated proxy war against India that it believes can remain below India's conventional threshold, thereby putting the onus of escalation on India. Pakistan views this as a perfect containment strategy that undermines a more powerful India both internally and internationally.

India, on the other hand, looks upon this as a deliberate strategy to destabilize and undermine its integrity. It sees Pakistan's proxy war as upsetting the conventional deterrence and believes that should India's thresholds of tolerance be crossed it could provoke military response. India believes that space exists for such punitive retaliation leveraging its conventional superiority to impose costs on Pakistan.

Pakistan looks upon the current conventional force balance as not so asymmetrical as to allow India to impose unacceptable costs. Its thinking is driven by its own military modernization, and new

doctrinal thinking based on the forward deployment and multiple echelons of reserves that are expected to impose severe attrition on Indian forces. Notwithstanding this higher degree of conventional assurance, it wants to strengthen its conventional deterrence by overlay of "battlefield nuclear weapons" by posturing low nuclear thresholds.

The factors described above highlight glaring perceptional differences in the understanding of each other's conventional and nuclear thresholds, which has the potential for conflict escalation through misperception or miscalculation. This can be termed as *first stage response mismatch.*

The next stage of escalation is the nature of posturing and employment thresholds for battlefield nuclear weapons or tactical nuclear weapons (TNWs). Analysis suggests Pakistan will use TNWs as a last resort or what can be termed as A*ccumulated Threshold*; in other words most likely when presented with a serious adverse situation. Criticalities here are the timing, movement and deployment, command and control, targeting options, and the desired end results. The situation is exacerbated by the military-centric Nuclear Command Authority (NCA), with little or no civil oversight. Such a scenario is fraught with danger and could potentially lead to a major nuclear conflagration.

Another aspect for serious consideration is the likely employment and targeting options of Pakistan. If TNW use is being contemplated as a last resort in the face of a credible adverse situation, nuclear use must be such that it stalls Indian operations. This translates to fairly extensive use of TNWs mostly in Pakistani territory, although firm bases of operations in Indian Territory could also be targeted. The dilemma for Pakistani planners will be the consequences of such a major employment of nuclear weapons and more importantly impact on escalation management. This could also result in the inherent breaching of the strategic stability paradigm resulting from a major Indian nuclear response.

An important fallout from Pakistan's deployment of TNWs would be the status of strategic nuclear forces if Pakistan orders deployment of TNWs. In particular, how would India read these developments given its incrementally advanced intelligence, surveillance, and reconnaissance (ISR) and space capabilities? Will it lead to major up-gradation of overall strategic posture, to include mating of nuclear warheads, operational deployments? How would India respond to these developments? India could look at these as major escalatory steps, and fearing a pre-emptive or debilitating strike, order similar mobilization of its own nuclear forces. This thus constitutes a *second stage response mismatch;* even before the first nuclear shot is fired, the two countries would have adopted an extreme mobilization profile putting nuclear command authorities of both countries on short fuse.

The next escalatory consequence is the Indian response to the possible use of battlefield nuclear weapons. Doctrinally, this should entail massive Indian retaliation causing unacceptable damage. However, as many Indian officials and analysts argue, the rubric of Indian response options lie along a wide canvass extending from a conventional response, proportionate to massive retaliation. This possible doctrinal adaptation could be India's attempt to make strategic deterrence more robust and one that endorses Indian doctrinal articulation of nuclear weapons being for political deterrence and not war fighting.

The issue then emerges of whether such posturing and explicit enunciation can strengthen the strategic stability in South Asia. Despite India's and Pakistan's very detailed enunciation of their respective doctrinal thinking, escalation management right through the conflict cycle will be a matter of perception, based on how each side reads signals emanating from the other and their resulting response.

Going by Pakistan's articulated doctrinal thinking and the perceived role of nuclear weapons, it is apparent Pakistan will leverage its nuclear capability to prevent India from taking advantage of growing conventional asymmetry. This in all probability will result in increasing its nuclear force posture in the early stages of conventional conflict, indicating political resolve and forcing restraint on India. Additionally, Pakistan, not fully convinced of India's No First Use (NFU) pledge will ensure dispersal, concealment, and operational readiness as an insurance against possible Indian first strike, in what is termed as "use or loose" syndrome. Another possible reason for early nuclear deployment could be attempts by external players to neutralize their weapons undermining their credibility.

Another important factor is the credibility of the Nuclear Command and Control. With a strong civilian control and defensive system in place, the Indian system is apparently more stable. Pakistani nuclear command structures though intrinsically stable, remain susceptible to the prevailing civil - military equations and the Pakistani military leadership's propensity for brinkmanship, mis-reading and mis-perception creating serious concern for stability.

Predelegation of command and control of battlefield nuclear weapons, which will become an operational necessity, could lead to serious escalation. A number of Table Top exercises involving both Indian and Pakistani interlocutors have highlighted that deployment and control of nuclear weapons under dynamic and fast-changing operational situations will always be an issue that can lead to unintended consequences.

Dispersal of stockpiles as the situation builds up towards a possible conflict is another factor that could lead to escalation. With strategy of nuclear brinkmanship inextricably linked to the strategy of "use it or lose it," such dispersal is well-nigh certain. Thus, correlation between conventional mobilization and strategic posture upgradation will put extreme pressure on the two command authorities. The situation, over time, will get exacerbated by developments in ISR capabilities for example, fielding of constellation of optical and electronic intelligence (ELINT) satellites, backed by Indian Regional Navigation Satellite System (IRNSS) etc.

With enhanced ISR pressuring deployments and constant moves including camouflage and deception, this will make existing communications vulnerable to cyber and electronic warfare (EW) attacks that could result in serious miscalculations including unintended use.

Pakistan is conceptually adopting a strategy of "*deterring and defeating a conventionally strong nuclear adversary*." Its theory of victory is predicated on the use of proxy war backed by nuclear weapons to prevent India from calibrating political risk of escalation thereby enhancing its threshold of tolerance. Its posturing of battlefield nuclear weapons and nuclear tipped cruise

missiles is part of what it believes as "*nuclear de-escalation strategy*" by exploiting its first strike stability. This it is attempting backed by a credible second strike capability.

India, on the other hand, believes that there is adequate space below the nuclear threshold that it can exploit and impose costs on Pakistan for its propensity in waging proxy war by state sponsored non state actors. It counters Pakistani attempts at nuclear coercion through battlefield weapons by its doctrine of massive retaliation and unacceptable damage. Thus, India's concept of victory in any military conflict lies in *making costs of nuclear use so prohibitive so as to deter Pakistani General Headquarters (GHQ)* from going down that route.

It follows, therefore, that there exists between the two countries a huge mismatch in perception of threat, constitution and management of escalation, doctrinal thinking and command and control. Added to the above there are cultural and psychological factors that impact both decision making and response dynamics. Pakistan perceives the Indian leadership as weak, vacillating and unable to escalate to nuclear dimension. Thus, the Pakistani military leadership is prone to miscalculation and risk taking. India's political leadership, although largely risk averse, would likely act decisively in an adverse situation when national interest and prestige are involved.

1 Introduction

Unresolved legacy issues including the outstanding boundary dispute, the conflict over Kashmir, and terrorism mar India-Pakistan relations. Variables undermining the prospects for long term peace, among others, include growing mutual mistrust, the proxy war that India believes is state perpetrated, the increasing conventional asymmetry, rapid advancement in weapon technologies, growing size of nuclear arsenal, doctrinal mismatch and above all, bilateral gridlock in CBMs and arms control measures.

Strategic stability in the subcontinent is being maintained by the size of the nuclear forces wherein near parity exists. This means that given the prevailing strategic balance, preemption would not work and the side attempting to leverage its nuclear capability would face devastating riposte. Seen in this limited perspective, stability in the India – Pakistan equation exists at the strategic level. However, going by the Cold War experience, deterrence stability is neither a given, nor resulting from the offsetting of nuclear capabilities.[1] Taking the example of the United States – (former) Soviet Union equation, even the existence of thousands of warheads was not sufficient to ensure deterrence stability. With both sides continuing to invest in better capabilities and technologies, it only resulted in creating greater insecurities.

The central argument of the above thinking lies in the fact that if the first strike stability could indeed marginalize the use of nuclear forces. A nation in possession of a strong conventional military capability could well think in term of attempting to cross the other's redlines, relying on the alleged stability at the strategic level to obviate the threat from the adversary's nuclear forces. This could in turn trigger the defending party's use of nuclear weapons, potentially gambling on the same favorable balance and the existence of a situation of mutual vulnerability.[2]

In a somewhat similar scenario, the stability induced by nuclear weapons through mutual deterrence is pushing both sides to explore substrategic space in pursuit of their own interest. India, in dealing with Pakistan-sponsored proxy war and state sponsored terrorism, believes that acts of terror leading to a deteriorating situation could induce India to resort to military force as a punitive option. Pakistan on the other side, not willing to allow India to exploit the advantage of growing conventional balance is preparing to leverage nuclear weapons to deny India the conventional space it is seeking. This has created a great degree of regional instability and potential for military confrontation.

Thus, India and Pakistan appear to also be heading down the same path the United States and the former Soviet Union did during the Cold War. Pakistan today boasts the fastest developing nuclear arsenal and according to some analysts, might have adequate fissile material to produce 200 nuclear weapons by 2020.[3] Although initially focusing on the uranium enrichment route for its nuclear weapons, Pakistan has, according to some respected analysts, in recent years shifted its focus to

[1]Deterrence Stability and Escalation Control in South Asia; Edited by Michael Krepon and Julia Thompson; Stimson Centre 2013, p 10.

[2] This argument has essentially been drawn from Elbridge Colby's Essay titled "Defining Strategic Stability: Reconciling Stability and Deterrence," in US War College Report titled "Strategic Stability: Contending Interpretation," p 53.

[3]Gregory Koblentz as reported in "Pakistan could have 200 nuclear weapons by 2020"; at http://www.dw.com/en/pakistan-could-have-200-nuclear-weapons-by-2020/a-18105706; [Accessed on 29 Jun 2015].

plutonium-based weapon development.[4]It has built three plutonium-processing reactors at Khushab, a site 200 km from Islamabad. In addition, it is also constructing a fourth reactor to reprocess spent fuel from these reactors. Once all reactors and associated facilities are operational, many independent analysts believed that Pakistan will have adequate plutonium for 10 to 12 nuclear devices per year.[5] In terms of delivery systems, many analysts believe Pakistan has developed or is developing eleven different nuclear delivery vectors ranging from ballistic missiles, including short-range ballistic missiles, to cruise missiles and aircraft.[6]During the period 1998 to2005 Pakistan tested six new missile systems and since2006, it has tested three additional systems that include the short-range battlefield missile *Nasr,* the *Raad* cruise missile and the extended range IRBM *Shaeen* capable of hitting all targets in India including Andaman and Nicobar Islands in the Indian Ocean.[7]

The Arms Control Association (ACA) has published its own estimates that India might possess around 100 nuclear weapons.[8] However, reports indicate that India has stepped up its production of fissile material.[9]This could give India the ability to produce more and larger weapons in a relatively shorter time frame. As per ACA estimates, India possesses the means to vastly increase the size of its arsenal.[10] India is developing and fielding a number of nuclear capable delivery systems that include a new range of ballistic missiles, sea based deterrence, missile defense and possibly nuclear-tipped cruise missiles in the future. During the same period, (between 1998 and2005), India added three new delivery systems and since 2006 flight-tested six new missile systems.[11]India's push to develop four nuclear submarines equipped with 12 missiles is also seen as a substantial upgrading of maritime nuclear capability.[12]

There is growing concern that this unabated arms race is creating conditions that could breakdown strategic stability, including growing regional tensions, cross border terrorism, and fast deteriorating bilateral relations that have already resulted in three wars and one major intrusion (Kargilin 1999) that could have escalated to a nuclear standoff. The two major terrorist incidents--the attack on the Indian Parliament and India's financial capital, Mumbai, could have been possible

[4]David Albright and Serena Kelleher-Vergantini, "Construction Continues at Pakistan's Khushab Site," Institute for Science and Inernational Security, Washington, D.C, Imagery Brief, Aug. 2015.

[5]Pakistan could have 200 nuclear weapons by 2020. At:http://www.dw.com/en/pakistan-could-have-200-nuclear-weapons-by-2020/a-18105706;[Accessed: 29 Jun 2015].

[6]"Cloud cover--Pakistan's shift towards tactical nuclear weapons," *Jane's Intelligence Review*.At: https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1721672&Pubabbrev=JIR. [Accessed: 12Oct2015].

[7]Deterrence Stability and Escalation Control in South Asia; Stimson Press; 2013, p 12.

[8] Daryl Kimball, "Nuclear Weapons: Who Has What at a Glance," https://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat, accessed 4/20/2016

[9] Is India Building Thermonuclear Weapons; seehttp://thediplomat.com/2014/06/is-india-building-thermonuclear-weapons/.

[10] Robert Farley, "India's Mighty Nuclear Weapon Programme: Aimed at China and Pakistan?"National Interest.At:http://nationalinterest.org/feature/indias-mighty-nuclear-weapons-program-aimed-china-pakistan-11956. [Accessed 3 Jan 2015

[11]Deterrence Stability and escalation Control in South Asia; Stimson Press; 2013, p 12.

[12]Is India Building Thermonuclear Weapons. At:http://thediplomat.com/2014/06/is-india-building-thermonuclear-weapons/. Accessed 21 June 2014

triggers boiling over to a conflict. That these did not result in major conflagration was, in the author's opinion, due to Indian restraint even as its threshold of tolerance was dangerously breached. The fact that political restraint has worked in the past is no guarantee that it will work at all times in future.

The important question that subsequently arises is what is propelling this arms race? Pakistan appears to have a single-point nuclear agenda: to deter India from exercising any military option against Pakistan. The former Director General of Pakistan's Strategic Plans Division (SPD) Lt. General Kidwai (retired) mentioned as much in an interview during the Carnegie International Nuclear Policy Conference.[13] Pakistan would seem to realize that, over time, the conventional asymmetry could become a stark and strategic balance unfavorable for itself. As a consequence, it wants to stymie such a situation through what it calls "development of full spectrum nuclear capability," in other words, a repository of nuclear systems that extend from tactical to strategic. Thus, from Pakistan's viewpoint, nuclear weapons are crown jewels not only for display but for use (war fighting) to secure its core national interests.

India, on the other hand, does not look at its nuclear program merely being Pakistan-centric but finds itself caught in a triangular competition, rallied against growing Sino–Pakistan nuclear and strategic collaboration. Many analysts have pointed out the belief that Pakistan has received nuclear-related assistance from China in the past and continues to do so, which has led Delhi's policy circles to conclude that Pakistan is increasingly emerging as China's nuclear proxy.[14],[15] In their opinion, the synergy and cooperation between the two countries provides Pakistan the necessary maneuver space to keep the situation in the subcontinent on "low boil" against India. This also provides a coercive scenario to China's great advantage. India appears to believe that as its economic and gross national power increases, strategic competition in Asia will grow. In such a scenario, it becomes likely that nuclear equations in South Asia would become part of the overall coercion strategy, particularly as maritime competition in the Indian Ocean Region (IOR) unfolds and Chinese nuclear submarines increase their patrols. These broader strategic calculations are largely responsible for India concentrating on developing a credible strategic nuclear weapons capability in contrast to the full spectrum perspective of Pakistan and one that deters China, as well.

1.1 Scope

This paper examines the current state of strategic stability in South Asia, recognizing the nature of conflictual relationship, doctrinal differences in particular approaches to the perception of regional stability, nature of command and control, and the degree of assurances it provides in ensuring regional balance. It also evaluates technological developments and their impact on existing balance. It discusses the above issue within the context of conceptualization of strategic stability and its relevance in the South Asian context.

[13] See Kidwai interview. At: http://carnegieendowment.org/2015/03/23/interview-with-khalid-kidwai/i2sx. Accessed March 23, 2015.

[14] "CNS—China's Nuclear Exports and Assistance to Pakistan."At: http://cns.miis.edu/archive/country_india/china/npakpos.htm. [Accessed: 12Oct2015].

[15] Deterrence Stability and escalation Control in South Asia; Stimson Press; 2013, , p11.

This paper consists of two major parts. The first part examines the challenges to strategic stability in South Asia. In the second part, broad premises or hypotheses of the report will be tested through iterative simulation processes, by means of Table Top crisis gaming exercises.

1.2 Conceptualization of Strategic Stability

The term "strategic stability" grew out the efforts of the two Cold War super powers to find a *modus vivendi*, given their expanding arsenals and antithetical beliefs, undermining one another in their ambition for global domination. Consequently, the major concern of the political and strategic communities within the United States was the possibility of a surprise nuclear attack by the former Soviet Union and its debilitating consequences. "Perhaps more than any other issue, the threat of a surprise attack was the catalyst to the line of thinking that ultimately led to the concept of strategic stability."[16] The basic logic was to stabilize bipolar confrontation by ensuring each side had credible capability to strike back following a disarming first strike by the opponent. The idea was to remove the temptation to gain strategic advantage in any future confrontation.

The core of the concept thus was "first strike stability" defined as "vulnerability of strategic forces by both sides, neither leader perceives the other as pressurized by the posture of forces to strike first in a crisis and neither leaders see's the advantage in striking first to avoid the potentially worse outcome of incurring first a first strike if he waits."[17]In simple terms, it was a two-sided calculus based on each side's understanding of the cost of striking first compared with the cost of attacking second, implying thereby that the costs of denying the opponent chances of striking first in terms of degradation of its nuclear strike forces, versus withstanding such a preemptive strike and the ability to launch a retaliatory strike that will be both credible and devastating. What it meant was that the perceived damage of a first strike and a massive survivable capability to mount a retaliatory strike ensured that both sides refrained from using nuclear weapons. It emerged, therefore, that fundamentals of first strike stability lay in relative strategic balance, posture of the forces, command and control systems, and more importantly, the "will and resolve" of the political leadership.

Strategic stability came about as concept primarily because the nature of confrontation between the two main protagonists was largely strategic. Given the need to preserve Europe from possible Soviet threat or domination, conventional balance was always considered; but the discourse invariably shifted from operational to strategic deterrence focusing solely on nuclear weapons because conventional wars were increasingly seen as inconceivable. One of the factors contributing to the bilateral discourse on the need to maintain strategic balance was the general congruence of views and understanding on proliferation of weapons and vector technologies, transparency around strategic underpinnings that motivate nuclear programs, and more importantly, fissile material control.

With the end of the Cold War and the advent of new geopolitical, technological, and military conditions, the concept of strategic stability began to expand to include new challenges in terms of

[16] Michel S. Gerson; "Origin of Strategic Stability: The United States and the Threat of Surprise Attack," in Elbridge and Colby and Michael S. Gerson, eds., Strategic Stability: Contending Interpretation" (Strategic Studies Institute and US Army War College Press, February 5, 2013) p 5.

[17] Glenn A. Kent and David E.Thaler, First Strike Strategic Stability; A methodology for Evaluating Strategic Forces, Rand Corporation; Aug. 1989, p xviii.

nuclear proliferation, new missile technologies, development of ballistic missile defense, global prompt strike systems, and eventual deployment of space weapons.

In recent years, the strategic stability has acquired a more geostrategic context related to arms control. In the wake of the post-Cold War arms limitation discourse and the prevailing geostrategic realities, "strategic stability" is being conceived in three broad ways: in its most narrow sense it entails the absence of incentives to use nuclear weapons first (*crisis stability*) and the absence of incentives to build up a nuclear force (*arms race stability*); more broadly, it is described as the absence of armed conflict between nuclear-armed states; and in its broadest sense it is seen to reflect a regional or global security environment in which states enjoy peaceful and harmonious relations.[18]

Thus, at one level, strategic stability as a concept is an attempt to stabilize confrontation between nuclear opponents by assuring each side of an ability to strike back. At a broader level, it is a major arms control and disarmament measure to ensure regional and global stability by negating the use of nuclear weapons or proliferation. Essentially, therefore, both "strategic stability" and the following "first strike stability" reinforce deterrence.

However, in South Asia, there are different dynamics at play. As mentioned earlier, bilateral relations are marred by historical legacy and politics, with dynamics so blurred and polarized that despite nearly seven decades of confrontational history, peace eludes the region, and the situation remains toxic with propensities for escalation leading to conflict. Yet the reality is that despite posturing and rhetoric, the destructive reality of war and nuclear weapons is well understood, making them political weapons that reinforce deterrence. Seen in this context, strategic stability in South Asia differs from that of Western conception, particularly as these weapons are seen from the political context to help avoid war rather than deter each other in terms of first strike stability. This is true both in bilateral context between India and Pakistan and also at the trilateral level between India, Pakistan, and China, the latter two being seen as collusive partners.

Given the broad perspective just described, this paper focuses on strategic stability from two specific constructs—"crisis stability" and "arms race stability"—to analyze the unfolding strategic balance in South Asia.

Crisis stability essentially means how an impending crisis will be managed to prevent its escalation from unfolding into a major all-out confrontation including use of nuclear weapons. When thinking about strategic stability, it is important to take into account the medium- and long-term impact of developments in the strategic environment, including unfolding technological developments, changes or evaluation of doctrinal percepts, the nature and the psychological perspectives of the leadership, etc. One of the most important elements of ensuring strategic stability is the *material basis* for nuclear and nonnuclear deterrence. Academician Yuri Trutnev states that, "material basis means the weapon system defines the doctrine that exists in reality as opposed to the declared doctrine."[19]Seen in this context, the basic ingredients of strategic stability are negating the options

[18] James M Acton, "Reclaiming Strategic Stability," in Elbridge and Colby and Michael S. Gerson, eds., Strategic Stability: Contending Interpretation," (Strategic Studies Institute and US Army War College Press, February 5, 2013) p 117.

[19] Andrei A Kokshin, " Ensuring Strategic Stability in the Past and Present: Theoretical and Applied Questions," paper for the

of surprise attack, and the existence of equality or symmetry that constitutes credible strategic balance, in other words the ability to destroy each other whether striking first or second. The essence of strategic stability thus lies in first strike stability, which essentially entails denying the first user advantage through systematic survivability and retaliatory capability. Propensities for first strike stability lie in secure and survivable forces, backed by political will and resolve. Being a multifunctional and multidisciplinary percept, integrated man–machine systems of intelligence, surveillance, communications, data processing, analysis, command and control as well as information security all play a contributory role.

1.3 Concept of Discriminate Deterrence

The overarching concept of Strategic Stability as discussed above is not seen as sufficient to create genuine stability.[20] This results in wide spread 'modernization of nuclear weapons," examples include, NATO's review of its nuclear policy as a result of Russian attempts to bolster its nuclear forces, and also countries such as the United States and Pakistan arguing for a "more versatile arsenal" of tactical nuclear weapons.[21] There are two reasons why first-strike stability alone is seen as inadequate. It is argued that the elimination of incentives to use nuclear weapons undermines the goal of deterring "major" wars based on the premise that if nuclear weapons are not used/cannot be used, this creates the risk of conventional conflicts escalating at a substrategic level. Elbridge Colby argues that "if a situation were to be deemed "strategically stable" because no one would ever dream of using nuclear weapons first, then no one would need to worry about conventional conflict—especially relatively limited conventional conflict. He further argues that such a situation of strategic stability would undo the "nuclear revolution" and in turn destabilize the substrategic level, particularly as it will cordon off the deterrent effects of nuclear weapons."[22]

What follows is the growing discourse on limited use of nuclear weapons, which is being shaped by the propensities to exploit the substrategic space by crossing or threatening to cross the opponent's "redlines" in pursuit of strategic goals, secure in the belief that "first strike stability" will act as a strategic balancer. It is argued that such a scenario could or does, in effect, incentivize the threatened party to use nuclear weapons; particularly if it believes that a strategically adverse situation is emerging, posing a grave threat to its vital interests. In such circumstances, the threatened side could use or threaten to use nuclear weapons. The use would be justified particularly if the asymmetry of stakes favored the defender to gamble, that in the existential strategic balance, the opponent would be constrained to respond with a total strike. Such behavior or thinking is being shaped by developments in Ukraine, in particular, Russian aggressiveness backed by declarations to lower nuclear thresholds similarly[23], North Korea and its nuclear

Belfour Centre for Science and International Affairs, Harvard Kennedy School, June 2011, p 4.

[20] Elbridge Colby, Defining, Strategic Stability: Reconciling Stability and Deterrence, in Elbridge Colby and Michael S. Gerson, eds., Strategic Stability: Contending Interpretation" (Strategic Studies Institute and US Army War College Press, February 5, 2013) p 52.

[21] Rod Lyon, A Frightening thought nuclear weapons are back (And so is deterrence), National Interest. At:http://nationalinterest.org/blog/the-buzz/frightening-thought-nuclear-weapons-are-back-so-deterrence-13259, [Accessed:6 July 2015].

[22]Glenn A. Kent and David E.Thaler, First Strike Strategic Stability; A methodology for Evaluating Strategic Forces, Rand Corporation; Aug 1989, p. xviii.

posturing. More importantly from this paper's perspective, Pakistan's potential development of battlefield or tactical nuclear weapons and development of nuclear-tipped cruise missiles could be an attempt to exploit the same substrategic space against India, by denying it any conventional military options.

While first strike stability conceivably reinforces deterrence; it has created instability at the sub-strategic level. Attempts are being made to exploit this space, secure in the belief that the first strike stability would preclude nuclear escalation, thereby creating space for "limited conflict" under the nuclear overhang. "Limited conflict" in this case relates to operations below perceived nuclear thresholds, aimed at inflicting calculated damage. Thus, perceiving a direct threat to its vital national security interests, states are arguing for limited use of nuclear weapons (or discriminate use)—to preserve their core interests. The word "discriminate" here applies to low-yield battlefield nuclear weapons.

The gamble is based on the prevailing notion of existential strategic balance, which is seen to preclude massive retaliation. Such a concept, it is argued, is a signal to the potential opponent of forced nuclear retaliation should redlines be transgressed or its vital national security interests threatened. The use of nuclear weapons in such a scenario is seen as a calibrated move to demonstrate political resolve to climb, howsoever imperfectly, a controllable "ladder" of escalation, and to inflict pain in a bid to dissuade an opponent from pursuing his current course of action. Analysts term this as "discriminate or limited use of nuclear weapons" as a conflict termination strategy at lower "rungs" of escalation ladder, wherein both sides have inflicted damage rather than pursuing dangerous escalation to employing strategic weapons and risking total nuclear war. Underlying the perception of this thinking is the nature of stakes involved; in case vital national security interests are impacted in terms of stability of the state, sovereignty, or national pride or honor. Second is the credibility of strategic riposte capability to inflict unbearable pain on the opponent. Thus, the idea that nuclear weapons could be used along controllable escalation in conditions of great asymmetry against "conventionally strong nuclear armed power" when vital national interests are threatened is gaining currency in the West's thinking and appear to have been embraced by Pakistan.[24]This strategic conceptualization is in a fashion similar to the nuclear doctrine of "flexible response" with emphasis on nuclear war.[25]

This thinking is in a sense rewind of the Cold War standoff between the Warsaw Pact nations and NATO wherein the use of low-yield battlefield weapons was justified against the massive conventional force superiority of the former Soviet Union. During discussions with think tanks and others in Washington DC as part of this project "discriminate use of nuclear weapons" as part of a conventional deterrence strategy was repeatedly emphasized. In fact, an impression emerged that in a number of operational scenarios, gamed use of "low yield nuclear weapons" as an effective deterrence strategy was acceptable if odds of conventional deterrence justified it; examples include

[23]"Russia to send new missiles to Baltic exclave on maneuvers," MilitaryTimes. At: http://www.militarytimes.com/story/military/2015/03/17/russia-to-send-new-missiles-to-baltic-exclave-on-maneuvers/24899467/. [Accessed: 12-Oct-2015].

[24]US Stratcom Deterrence Symposium 2015. At:http://livestream.com/Stratcom/2015USSTRATCOMDS accessed on Aug 17, 2015.

[25]J. E. Stromseth, "The Origins of Flexible Response: NATO'S debate over strategy in the 1960s." Macmillan Press, 1988.

China using nuclear tipped Anti-Ship Ballistic Missiles against a US carrier task force in Asia–Pacific or North Korea launching a low yield nuclear weapon against targets in East Asia.. Examples cited by the think tank analysts included that in a scenario of a hypothetical Chinese attack on Taiwan, the United States would be forced to attack the Chinese mainland to degrade its launch base and anti-access and area denial capability to build US forces in support of Taiwan. Fearing defeat or loss of face, China could up the ante by limited use of nuclear weapons to convey its political resolve in support of its critical vital interests being impacted.[26]

The response matrix to such low yield nuclear weapons is equally interesting. The discussions of gaming outputs within the US analytical community tend to indicate that such limited and discriminate use of nuclear weapons does not automatically result in deterrence breakdown, leading to an all-out massive retaliation. In fact, the dominant thinking appears to send a message that in this high-stakes game of nuclear retribution, there will be reprisal but clearly leaving a window open to manage escalation.

Broad deductions emerging from the above discussion include:

a) Strategic stability as currently conceived is an imperfect concept, which while preventing broader all-out nuclear conflict, allows substrategic space to be exploited. This brings into question the logic of nuclear weapons being used as political weapons or for deterrence only.

b) Second, and more importantly, it allows space below the strategic threshold to be exploited for conventional operations. Under such circumstances, discriminate use of nuclear weapons is seen as a credible option, if perceived redlines are crossed.

c) Such discriminate use is not per se deemed to be deterrence breakdown but is regarded as a conventional continuum within nuclear shadow. Low-yield and limited damage destruction template of nuclear weapons seem to justify such thinking.

d) There is a perception that the retaliation to such discriminate use would remain proportional and calibrated to prevent escalation to an all-out nuclear confrontation. This thinking questions the concept of *"massive retaliation designed to inflict unacceptable damage,"* as conceived in Indian doctrine.

e) Most importantly, such thinking vindicates the use of low-yield nuclear weapons as part of the calibrated conventional defensive strategy.

In the subcontinental context, the deterrence strategy of both Pakistan and India are likely being shaped by such thinking, but in largely varied ways. Pakistan is seen as attempting to exploit substrategic space to wage a proxy war against India. It is challenging Indian conventional military response to such provocations through the development of TNWs as part of its broader conventional response strategy, which includes discriminate use of nuclear weapons in the belief of keeping escalation manageable. Given the obtaining conflict scenario, in which both sides developing doctrines, and a response matrix aimed at exploiting space below the nuclear threshold,

[26]See Luncheon Address by Dr. Brad Roberts,

the conceptual narrative above holds great significance for our subsequent analysis of the regional equation and its impact on security dynamics.

1.4 Prevailing India—Pakistan Scenario

Instability in South Asia is driven by four competing dynamics. First is the difference between "status quo" and 'revisionist strategies" of India and Pakistan, second is the defense- offense balance at different levels of escalation, third is the asymmetric warfare and its inherent percept of 'plausible deniability' and last but most importantly, the 'incompatible nuclear their impact on military strategies of the two countries.

Within the above backdrop, three "ladders" of competition define the conflict dynamics between India and Pakistan. The first is Pakistan's believed predilection to wage a proxy war against India to create internal instability and undermine the accession of Jammu and Kashmir through externally fueled internal subversion.[27] This is a long-standing ideological construct of Pakistan born out of the two-nation theory that has always questioned the legality of J&K accession. In this game, proxy non-state actors, radical religious groups and communal forces are all fair play as long as the purported aim of destabilizing the Indian state is achieved. In response, India is seen as developing military options and capabilities to impose punitive costs on Pakistan. The second step is to evaluate the impact of this proxy war on India and its response options; given that the dynamics of military balance increasingly shifting in India's favor. The resulting third step is the brandishing of nuclear weapons at tactical and battlefield levels secure in the backdrop of prevailing strategic balance in the subcontinent. How these competing steps of the escalation ladder are playing or could play out and their impact on strategic stability will be examined in the next part of the paper.

[27] See discourse on India–Pakistan relations in George Perkovich; Non Unitary Model and Deterrence Stability, in "Deterrence Stability and Escalation Control in South Asia," p 22.

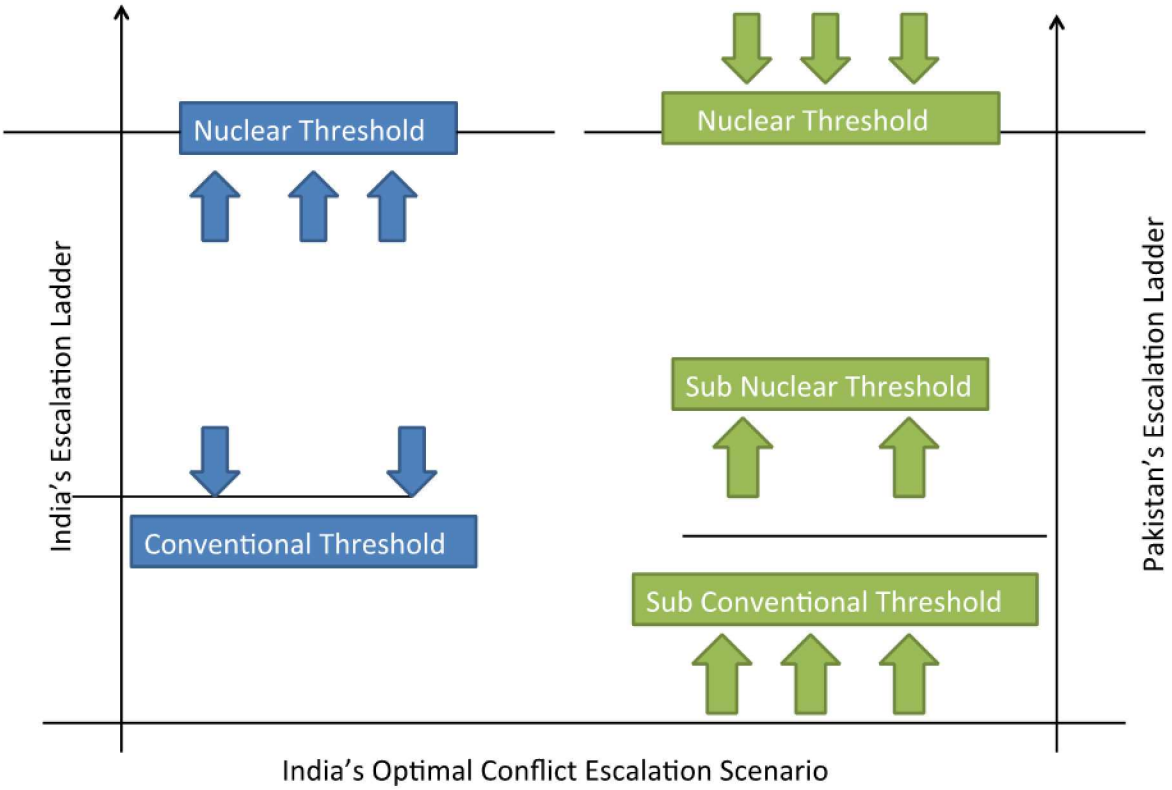

Figure 1. India's optimal conflict escalation scenario

2 Proxy War

The proxy war being waged by Pakistan is a low cost option to bleed India through a "thousand cuts." India believes this to be fueled and supported through state complicity, if not directly. Pakistan on the other hand attributes these attacks to the so-called "aggrieved citizens" of Kashmir to force India into making political accommodation.[28]Pakistan believes this to be a credible strategy of coercion to put India on a strategic back foot, while leveraging nuclear deterrence and brinkmanship for managing escalation and war avoidance. Kashmir and the disputed Line of Control provide a credible alibi to raise the temperature and keep the international players involved in preventing a subcontinental nuclear holocaust, which could result in millions of impoverished Indians and Pakistanis dying. So long as this strategy holds, the situation from Pakistan's perspective is largely favorable as it limits India's strategic and operational space and options. *Thus, at this level of play a favorable symmetry exists in Pakistan's favor*.

India's perceptions however are different. India believes that the proxy war and associated terrorist activities are part of a diabolical Pakistani plan largely hatched by its military leadership to undermine India's integrity and security. It looks upon the proxy war and terrorism as comprising the first tier of conventional deterrence breakdown. Thus, its perceived thresholds of tolerance in managing both proxy war and cross-border terror dictate its response options. As long as political costs are manageable through effective counter-insurgency policy backed by discriminate use of force, it sees little reason to escalate. Concerns are that the current unabated tensions, particularly the internal situation in Pakistan, the rise of the Islamic State group and growing sectarian and militant violence and, most importantly, what many analysts see as emerging civil – military tensions, could create a situation of great internal dissonance forcing Pakistan to externalize its internal troubles by upping the ante against India.[29],[30]Under such circumstances, it is assumed that thinking within the Indian political and security establishment is that grave acts of terrorism or spiraling tensions along the Line of Control (LoC) could lead to India's overly elastic thresholds of tolerance stretched to their limit, forcing the use of military force as an unavoidable political option. While this is seen as an avoidable option at its current economic development and growth, should redlines be crossed by unwarranted acts of terror, it could force India's hand to respond militarily. Indian strategic and military thinking is assumed to be *firmly wedded to the belief that there is space below the nuclear threshold* for such an option and it is exercisable.

The thinking just described is driven by the wide-ranging economic growth and incremental buildup of comprehensive national power including military capabilities. India is posting a consistent 7% plus gross domestic product (GDP) growth, which is resulting in a situation wherein defense modernization, indigenous military capability building programs, and creation of strong self-sustaining defense industrial complexes can be both financed and made self-sustaining.[31]The current Indian defense budget is assumed to be close to 48 to 50 billion dollars, which by 2020, is

[28] Ibid.

[29]The Islamic State group formerly known as ISIS.

[30]S. Ganguly, "A Tale of Two Trajectories: Civil-Military Relations in Pakistan and India," *J. Strateg. Stud.*, pp. 1–17, 2015.

[31]A. Rehman, L. Jingdong, and Y. Du, "Last Five Years Pakistan Economic Growth Rate (GDP) And Its Comparison With China, India And Bangladesh," 2014.

likely to be close to 80 to 100 billion dollars. The Pakistani defense budget during the same period could be anything from 15 to 18 billion dollars. Should the "Make in India" program take off, the existing asymmetry will grow further both qualitatively and quantitatively.

In addition there are developments in the Indian space program, for example the fielding of synthetic aperture radar imaging satellites, which is a constellation of electro- optical earth observation satellites including an indigenous navigation system based on the Indian Regional Navigation Satellite System(IRNSS).[32].These developments, in addition to enhancing India's ISR capabilities, also provide an integrated high accuracy satellite-based augmentation system thereby enhancing its precision strike capability. These systems are likely to become fully operational in the around 2020.

2.1 India's Proactive Doctrine Concept

The Indian doctrine of punitive response is thought to be based on leveraging growing conventional asymmetry to inflict military and political costs on Pakistan for its purported misadventure in a bid to stop India from prosecuting a proxy war. This is sometimes referred to as "Cold Start Doctrine," a term not officially recognized in the Indian military's doctrinal lexicon.

Many analysts believe that the genesis of the doctrine lies in the lessons learned during Operation Prakram (Indian post Parliament attack military mobilization), which lead to a major standoff between Indian and Pakistani armies during 2001to 2002.[33] There is a widespread perception that Operation Prakram was an exercise in coercive diplomacy to dissuade Pakistan from continuing proxy war and to punish it for the terrorist strike on the Indian Parliament that failed to achieve its wider strategic or operational objectives. Pakistan's propensity to pursue an asymmetric option in terms of proxy war in J&K and destabilizing strategy in the Indian hinterland was further underscored by the 2008 terror strikes in Mumbai.

Two rationales are possible for developing the pre-emptive doctrine. One, the long mobilization period of the army's offensive strike reserves from their peace locations to their deployment areas. These are believed to require two to three weeks to mobilize because of exterior lines of communication, resulting in a loss of strategic surprise. Second; Western powers concerned with the standoff between the two nuclear neighbors used the extended mobilization period to diffuse the crisis and effectively restrained India from exercising any of its planned offensive options. These perceptions are further reinforced by the declining edge in conventional force ratios.

The edifice of the Indian army's changed doctrinal thinking lies in the in the shift from defensive reactive strategic thinking to a more proactive approach aimed at leveraging conventional force advantage by seizing early initiatives in any confrontation. In some ways, it is premised on the Peoples Liberation Army's (PLA's)*active defense and anti-access strategy***,** in terms of degrading an adversary's combat potential before it is able to build up through preemptive strikes.[34]The

[32]A. S. Belward and J. O. Skøien, "Who launched what, when and why; trends in global land-cover observation capacity from civilian earth observation satellites," ISPRS J. Photogramm. Remote Sens., vol. 103, pp. 115–128, May 2015.

[33]S. P. Kapur, "Ten years of instability in a nuclear South Asia," Int. Secur., vol. 33, no. 2, pp. 71–94, 2008.

[34]S. A. Pedrozo, "China's Active Defense Strategy and its Regional Impact," Council on Foreign Relations, Testimony, Jan. 2010.

preemptive actions are primarily seen as defensive measures, particularly if buildup or attacks are seen as imminent.

2.1.1 Doctrine

India's doctrine is assumed toconsist of launching limited offensives within the shortest possible timefollowing a political decision to use military force in retaliation to a specific or a series of trigger events. To provide the desired capability, Indian army formations, over a period, have been reorganized from holding formations (deployed on defensive tasks on the border) into strong pivot formations (Integrated Battle Groups) capable of undertaking offensive operations in the shortest possible time frame with minimum reorganization and logistic support. The idea is to create a number of divisional sized Integrated Battle Groups that could be launched in 48 to 72 hours without awaiting full-scale mobilization.

Operational objectives of these offensives is to make shallow thrusts into Pakistan of up to 15 to20 km into Pakistani territory to breach the initial tier of defenses and pose a threat to its hinterland, as part of punitive strategy. Doctrine envisages quick massing of massive firepower, together with deep air and naval strikes as an integrated air–land battle doctrine to deliver punishing blows, aimed at degrading Pakistan's war waging potential and posing a threat to its strategic heartland with minimum collateral damage. The operational shift is reflected in high tempo, continuous day and night, operations and close inter- and intra-service synergy.

The major focus of the doctrine is simultaneity and integrated operations to unhinge the enemy, break its organic cohesion, and paralyze its military leadership forcing it to make operational mistakes from which it will find it difficult to recover. The primary emphasis is on the speed of deployment and execution to overcome the disadvantage of operating on exterior lines to achieve early break-in across the opponent's defenses. Attempts would also be made to take advantage of strategic and operational surprise to seek decisions before credible intervention by external powers could attempt early conflict termination.

2.2 Pakistan's Response

Pakistani response to Indian doctrine can be deduced from former General Kyani's vision statement that Pakistan would develop an effective response to Indian Cold Start Doctrine.[35] Pakistan's vision statement forms a critical part of Pakistan's overall national deterrence strategy. Pakistan has developed a hybrid concept called the New Concept of War Fighting (NCWF) that entails employing a combination of conventional, unconventional, and substrategic means as part of its overall national strategy.[36] Pakistani military planners believe that the credible conventional capability gives credence to the notion of nuclear deterrence/threshold, providing an interface between its conventional and nuclear strategies, thereby creating disincentives for India to undertake proactive operations.

[35]Masood Ur RahmanKhattak, Indian Military's Cold Start Doctrine: Capabilities, Limitations and Possible Response from Pakistan, SASI, Research Paper 32, Mar. 2011, South Asia Strategic Stability Institute, London, p31.

[36]Countering cold start: Military to Adopt new war concept, The Express Tribune. At:http://tribune.com.pk/story/558604/countering-cold-start-military-to-adopt-new-war-concept/,June4, 2013.

NCWF is Pakistan's multitier conventional response to growing conventional asymmetry with India, aimed at providing an interface between conventional and nuclear strategy. As a conventional war fighting doctrine, NCWF envisages forward deployment and quick reaction by exploiting Indian defenses in the early stages of operations through judicious use of brigade and divisional-sized Integrated Combat Groups (ICGs) (as opposed to Indian Integrated Battle Groups [IBGs]) that would drive a wedge between Indian Pivot (holding) forces and the strike offensives (Integrated Battle Groups and Theatre Force Reserves [TFRs])).

Indian proactive strategy, although seen as a reality, is considered to be in a "transient" stage by Pakistan that will mature based on its state of modernization and perception of the Pakistani Army's response. According to Pakistan, one of the major shortcomings of the Indian Pro Active (IPA) doctrine is the inability to achieve strategic or tactical surprise given the existing disposition of forces.[37] Early loss of surprise, Pakistan envisages, provides both time and opportunity to deploy a strong defensive posture. Additionally, the Indian concept relies heavily on inter-service integration, which is seen to be largely lacking, pointing to the Indian Air Force's reservations on the efficacy of IPA Doctrine.[38]

Further, in the scenarios considered here, Pakistan believes that the Indian doctrine revolves around the seamless fusion and synergy in sequential application of forces with tenuous time linkages. The mobilization of Indian battle groups is deemed to be susceptible to "selective interdictions" along the choke points created by well-developed obstacle systems resulting in both delay and degradation of India's offensive potential. Predictably, the application of the IBGs and their sustenance beyond 72 to96 hours are seen as questionable. Pakistani military leadership, based on their own internal assessment, is assumed to believe that after culling IBGs from the defensive formations, vulnerabilities are likely to result creating serious voids/gaps that can be exploited by Pakistan's strategic reserves.[39] Notwithstanding this in its planning, Pakistan has been forced to re-evaluate its conventional response options and +contemplate the use of nuclear weapons at a tactical level under adverse operational situations.

The second tier of response is assumed to rest on the development of tactical nuclear weapons (TNWs), as Pakistan's version of discriminate deterrence and creating a nuclear shadow by *interfacing nuclear weapons in its conventional doctrinal thinking*. The aim is to deter war through a combination of a credible conventional response backed by battlefield nuclear weapons as part of its overall strategy to deny India space for *limited war under the nuclear overhang*. Lowering threshold and ambiguity are aimed at providing requisite relief to its conventional strategy by forestalling space for conventional war. Nuclear thresholds are deliberately kept ambiguous while maintaining adequate readiness to give credence to the projected level of deterrence.[40]Pakistan

[37] See Note 36 pp

[38] Army and IAF Faceoff over new Doctrine, India Today,http://indiatoday.intoday.in/story/Army+and+IAF+face+off+over+new+war+plan/1/74898.html, accessed on 10 July 2015.

[39] Interaction with Pakistani interlocutors during Track II Mil to Mil Talks.

[40] See Brig Gen (Retd) NaeemSalik, "Evolution of Pakistan's Nuclear Doctrine" in Nuclear Learning: The Next Decade in South Asia, By Centre on Contemporary Conflict, Naval Post Graduate School, Monterrey, 2014.

believes that this helps to maintain widespread speculation regarding lowering thresholds and enabling prosecution of war in a more offensive manner.[41]

2.2.1 Pakistani Doctrinal Thinking and Discourse on TNWs

The TNWs are assumed to be increasingly seen by the Pakistani strategic planners as part of its design to achieve conventional parity through strategic coercion. To understand their likely use there is a need to examine what makes for Pakistani nuclear thinking beyond the normal hyperbole, highlighted by Pakistani military and civilian leadership. First and foremost it is important to recognize the pride of place nuclear weapons are assumed occupy in the Pakistani psyche. Second, in its 68-year history there have been few achievements to celebrate; the success of the nuclear program, therefore, is believed to be central to its national identity.[42] Pakistan believes it is facing an enemy six times larger and the only way to deal with such a threat is by acquiring an equalizer.

This belief, among other reasons, is used to justify Pakistan's hyped-up nuclear program and the world's fastest growing nuclear arsenal. To expand their inventory of delivery vectors, it is assumed to be miniaturizing warheads, so that they can be mounted on cruise missiles as short range shoot-and-scoot type missiles. As a result of these persistent efforts, Pakistan is thought to have the fourth largest inventory of warheads of nations that possess them. Pakistan, which professes to hold the concept of "credible minimum "weapon capability, has always been shy of indicating any defined number or rationale that will give them the desired sense of security.[43] During discussions in the ongoing Track II on nuclear CBMs, Pakistani interlocutors do indicate that there is a blue print defining both the quality and quantity of the nuclear warheads and vectors perceived as adequate which, however, is not disclosed.[44]

To understand what is driving this feverish pace of nuclear capability development, it is important to first consider Pakistani nuclear doctrinal precepts. Pakistani concept of mutual nuclear deterrence is believed to rest on the logic that in the backdrop of growing conventional asymmetry the only way the unfavorable conventional deterrence can be compensated is through its unmistakable linkage to nuclear deterrence. This is qualified by the doctrine of "First Use", which itself is based on the belief that in a conventionally asymmetric environment, if there is no first use, then there is no nuclear deterrence, thereby giving strategic advantage to the side with strong conventional capability. Further, Pakistanis believe that the certainty about the use of nuclear weapons is critical to determine the effect of the balance of forces in crises. When the balance of forces favors the defender (Pakistan), immediate deterrence is likely to hold[45]. However in case a defender's response is likely to be weak, as in the situation of conventional asymmetry, it will be

[41] Discussion with Pakistani interlocutors during Track II Dialogues and Crisis Simulation Table Top Exercises.

[42] "Eating Grass: The Making of the Pakistani Bomb: Feroz Khan: 9780804776011: Amazon.com: Books." At: http://www.amazon.com/Eating-Grass-Making-Pakistani-Bomb/dp/0804776016/ref=sr_1_1?ie=UTF8&qid=1444682247&sr=8-1&keywords=eating+grass. [Accessed: 12Oct2015].

[43] Z. Khan, "Pakistan's Minimum Deterrence and its Policy Approach toward Fissile Materials: Security Concerns and the Regions Changed Strategic Environment," Korean J. Def. Anal., vol. 26, no. 1, pp. 51–64, 2014.

[44] Ibid

[45] Masood Ur RahmanKhattak, Indian Military's Cold Start Doctrine: Capabilities, Limitations and Possible Response from Pakistan, SASI Research Paper 32, Mar. 2011, South Asia Strategic Stability Institute, London, pp 31,, particularly Brig Salik's argument on deterrence logic.

prone to exploitation by the stronger power (India).It is this context in the Pakistani doctrinal rationale that the nuclear weapons provide the much sought after strategic balance.

2.2.2 Interplay of Nuclear and Conventional Forces

The Pakistani military establishment, according to recent documents, pronunciations, and discussions during Track II Dialogue on nuclear CBMs, has sought to link nuclear and conventional forces as part of an all-encompassing "deterrence doctrine." In Pakistan's thinking, the degree of nuclear deterrence depends on the nature of the equilibrium produced by the nuclear forces. Therefore, the influence of the nuclear weapons upon conventional forces is deemed to be *total, partial, or nonexistent.*[46] It is in the above context that capability and capacity of conventional forces are deemed as both important and necessary; their role is either to round-off nuclear deterrence if it is not complete, or even to replace it if its influence at the conventional level is negligible.

Thus from the Pakistan's perspective , the things that stand out is, the imperative need to balance India's growing conventional superiority through reasonable conventional capability enhancement backed by full spectrum nuclear capability. Pakistan's belief is that weak conventional forces tend to lower the nuclear threshold to a dangerously low level, leading to pronounced instability. Therefore, from the Pakistani perspective, it appears that conventional forces with the ability to thwart enemy incursions are absolutely essential. In the absence of conventional forces, the enemy can mount a swift offensive, capture major objectives, declare ceasefire and present a *fait accompli*, leaving Pakistan to be confronted with an excruciating choice of either accepting the loss or opting to commit mutual suicide by escalating to strategic nuclear strikes. Conventional capability that has the ability to thwart any aggression by the adversary is therefore deemed to complement the nuclear deterrence and help in keeping thresholds low. Flowing from this is the assumed fundamental doctrinal objective: to convince India that there is a *clear linkage between conventional and nuclear strategies, and that nuclear thresholds exist that are low and ambiguous and specifically aimed at contracting the space for conventional war*. This objective would also help Pakistan exploit its option of waging proxy war against India with impunity using cross border infiltration and terrorism as preferred instruments.

2.3 Tactical Nuclear Weapons and Overall Deterrence

At a grand strategic level, it is assumed that Pakistan sees India as a revisionist military power (and itself as "status quo") that is involved in tilting the regional strategic balance in its favor through the buildup of both conventional and nuclear capabilities including an effective nuclear triad, and "ballistic missile defense" as shield against Pakistani nuclear escalation and response. It follows from this that Pakistan believes the unfolding scenario of pronounced and growing conventional and future nuclear asymmetry is perilous to deterrence stability between the two countries.

Pakistan's doctrinal thinking and capability development, thus, are assumed to be focused solely on undermining India's favorable conventional asymmetry through feverish nuclear weapons development and posturing of shallow thresholds.[47] This is assumed to be a response to what

[46] Air CmdeJamalHussain (Ret'd), Deterrence in Nuclear Environment. At:http://www.defencejournal.com/2003/mar/deterrence.htm, accessed 1 December 2015

[47]Masood Ur RahmanKhattak, Indian Military's Cold Start Doctrine: Capabilities, Limitations and Possible Response from

Pakistan might view as India's attempts to exploiting conventional superiority through pre-emptive massive and punitive retaliation by creating space for "Limited War under the Nuclear Overhang," as discussed above. Such thinking is also posited in the backdrop of the Indian doctrine of massive retaliation should Pakistan attempt nuclear brinkmanship and coercion.[48]

India's Cold Start Doctrine and military modernization are believed to be seen by Pakistan as attempts at increasing conventional asymmetry, thereby reinforcing the stability/instability paradox in the region. According to these assumptions, Pakistan believes India's pre-emptive conventional doctrine poses the following strategic challenges to Pakistan:

a) India can launch a pre-emptive offensive at short notice with a credible element of surprise. Growing Indian ISR and noncontact precision capabilities provide multiple options and operational advantages.

b) Indian Air Force (IAF), with its growing superiority both in numbers and quality, can create a favorable air situation through an effective counter air campaign, including strategic and operational interdiction. According to estimates, by 2020, IAF could be fielding double the number or more fourth generation aircraft vis a vis Pakistan.

c) Similarly, the Indian Navy, with its developing surface and sub-surface capability including nuclear attack submarines, can exploit its numerical strength both in terms of imposing costs and denial through imposition of a maritime exclusion zone.

d) Technological developments such as ballistic missile defense (BMD), Multiple Independent Re-entry Vehicles, and space-based systems, over a period of time, are seen as negating Pakistan's ballistic and cruise missile capability and first strike option.

e) A massive Indian offensive over a wide front significantly increases the challenge for Pakistan's limited intelligence and reconnaissance assets, enhancing the scope for operational surprise.

f) Growing Indian cyber and EW capabilities (2020) are posing increasing challenge to the critical national infrastructure of Pakistan.

g) The financial burden of coping with India in its conventional capabilities is also seen as a major factor, given the state of the two economies.

What appears to be unnerving the Pakistani military establishment is the growing Indian ISR capability, resulting in greater battlefield transparency, backed by precision strike capabilities, backed by long range artillery fire support through multi-barrel weapons systems such as Smerch and Pinaka. These systems provide India with significant operational advantage through force projection in sensitive areas, NCWF, notwithstanding.

Pakistan, SASI Research Paper 32, Mar. 2011, South Asia Strategic Stability Institute, London, p.31.

[48] Ibid.

According to a Pakistani military planner, these developments have exposed Pakistan's conventional and nuclear limitations. In the absence of the option for a flexible, measured, and proportionate response, Pakistan faces the grim option of either resorting to massive and suicidal nuclear attacks against Indian cities as a response to India's aggression, or face strategic losses of grave political consequences.[49] These limitations have, in this scenario, necessitated the revision of Pakistan's nuclear doctrine and weapon development priorities leading to a new generation of weapons that include tactical weapons, miniaturization of nuclear warheads for its cruise and other missile systems including development of sea leg.

Pakistani planners appear to be increasingly concerned about the credibility of the "doctrine of use (first use) as a last resort," particularly its efficacy in the face of military pressure from India. Should Pakistan launch a credible first strike or should it doctrinally develop a graded and proportional punitive retaliation option? There is also a perception that while nuclear deterrence can prevent major escalation, it does, however, leave adequate space for a limited conflict. In its perception, space for limited conflict exists precisely because of the confidence that stability at a strategic level provides such a space. Worse, if escalation is feared, ceasefire can be declared by India before the deemed Pakistani thresholds are reached, allowing India to declare both physical and moral victory along with the effectiveness of its punitive strategy. This has forced nuclear planners in Pakistan to think of stabilizing an increasingly asymmetric conventional scenario by lowering its nuclear thresholds through the introduction of low-yield nuclear weapons. Pakistan's decision to develop TNW is assumed to be predicated on the following considerations:

a) First, low-yield-battlefield nuclear weapons help solidify its defensive fence and assist in tackling the eventualities arising because of increasing conventional asymmetries;

b) Second, the threat of employment of a new weapon, previously untried in battle, creates complete uncertainty as to the tactical result of the battle, creating a huge impact on overall operations and response options;

c) Third, the employment of low yield nuclear weapons creates the fear of the possibility or near certainty of escalation on to the strategic nuclear level (India's doctrine of massive retaliation and Pakistan's assured second strike capability). The stability achieved at the strategic level thus gets extended to the conventional one, as well.

Although Pakistan is believed to accept that the development of these weapons requires testing and validation prior to their integration into existing nuclear command and control, along with sophisticated and fool-proof safety arrangements, it appears to be ready to take the attendant risk of lowering its nuclear thresholds and take tactical risks.

2.4 Possible Operational Thresholds for Use of TNWs

Given the fact that Pakistan has purposely not articulated a nuclear doctrine, our analysis of likely employment of TNWs is based on the examination of existing literature, discussions with Pakistani interlocutors during Track II meetings on nuclear CBMs, and other discourse with Pakistani interlocutors. Fundamentally, recognizing that Pakistan, assumed to be following the strategy of

[49]Interaction with Pakistani interlocutors during Track II Mil to Mil Talks.

"Defensive Denial," and concerned about implications of "Surprise or pre-emptive disarming conventional strike" would like to keep nuclear escalation at the lowest levels. In its strategy of graded response, its use of TNWs can be contemplated at any of the following thresholds;

a) Pre-emptive Response;

b) Early Response;

c) Delayed Response;

d) Accumulated Response.

2.4.1 Pre-emptive Response

Pre-emptive response relates to premediated use of nuclear weapons to prevent, as Pakistan puts it, "incautious" pre-emptive Indian attack in response to a major terrorist incident or similar provocation. Such a scenario could come about if India is able to achieve both tactical and strategic surprise and the Pakistani military establishment is caught unprepared. A similar scenario is also predicated upon India's growing ability to execute a successful "Non-Contact Campaign" using kinetic resources such as air and naval campaign backed by precision missile strikes to inflict credible damage on Pakistan's operational and strategic assets. These could be backed by nonkinetic attacks to include cyber, EW and information operations, made feasible by enhanced battle space awareness and credible Indian C4ISR.

Another possible scenario could be jittery Pakistani military leadership resorting to low yield weapons on Indian IBGs in Indian territory. This could be an action of a rogue corps commander to whom tactical control has been delegated by the Pakistani Nuclear Command Authority (NCA). In any of the above scenarios, use of tactical weapons will be against Indian formations at their launch pads, logistic installations, choke points, etc., to dissipate the offensive formations before or immediately on launch, significantly over Indian territory or its proximity.

2.4.2 Early Response Threshold

The scenario for an early response could be dictated by an unexpected success of Indian offensives particularly into politically sensitive sectors of Punjab or even Sindh, considered sacrosanct both in political and territorial terms. Opportunities for exercising such an option would be dictated by direct relationship between the threat posed by the success of the Indian offensives, nature of the adverse situation, and force degradation. Decision for employment will be a function of the perceptions of the Pakistani military leadership and the nature of the challenge posed. Breakthroughs in the Lahore or Sialkot Sectors, which pose a direct threat to Pakistan's center of gravity in Punjab, is an unexceptional redline which could invite an early battlefield nuclear response. So too would a threat to key strategic, operational or logistic targets that might have serious operational, economic and political ramifications. These options appear to be relatively realistic for the employment of TNWs, which Pakistan can sell as a credible response to a grave threat posed to its national security and integrity.

2.4.3 Delayed Response Threshold

A delayed response scenario is predicated on the emergence of a situation of great strategic vulnerability at the theater level, posing a threat to politically sensitive and strategically important areas, having exhausted majority of its conventional options. An imbalance in Pakistani defenses in critical sectors, for example, Sialkot, Lahore, Multan, or a push toward Rahimyar Khan, threatening the severance of the North-South Super Highway could result in such a situation. The scenario could come about as a consequence of the delay in operational decision-making or fog of war creating a situation of grave political or military miscalculation.

The targets here include forward combat echelons, logistic installations, forward airfields, choke points, C4ISR infrastructure, etc. Weapon use will be aimed at causing severe damage to advancing Indian offensives and follow up formations. In this scenario, the number of TNWs employed will be much higher than the early response option, preceded by a high degree of political signaling and brinkmanship.

2.4.4 Accumulative Response Threshold

Accumulative Response Threshold relates to major strategic breakthrough by Indian forces, leading to unacceptable loss of territory or unacceptable force degradation, indicating strategic and operational ineptness on the part of the Pakistani military yet again. Such a scenario would create a major decision dilemma with regard to deterrence breakdown, particularly if the situation relates to Pakistan suffering a major operational defeat, for example, inroads in Lahore or Sialkot sectors, or serious degradation to Pakistani strategic reserves, backed by major losses of its air and sea power.

Such a scenario would create, in the minds of Pakistani NCA, a decision dilemma between choice of "massive nuclear strike" based on the logic of "use it or lose it" or flexible response, based on TNWs. In my understanding even in a seriously adverse situation, cold rationality is likely to be the mainstay of Pakistani NCA's decision making. Pakistan would employ TNWs to highlight lengthening nuclear shadow and its increasing strategic vulnerability. The use will be aimed at halting Indian offensives and war termination. A multiple salvo of TNWs and nuclear-tipped cruise missiles could be employed against advancing Indian columns including follow up echelons to halt the offensives. Given the nature of expected escalation based on the reading of Indian signals, it could follow these strikes with major nuclear retaliation as a sequel to Indian reaction. Fundamentally such a scenario has the potential for dangerous all-out nuclear escalation.

3 Analysis of Thresholds

Pakistan's use of TNWs will be a high stake strategic gambit driven by the perception of its military high command of the developing adverse situation in terms of operational losses, loss of territorial space that threatens high value targets, or critical infrastructure that is crucial to its war waging effort. Pakistan, thus, is less likely to use TNWs in the initial stages of operations, and will most likely employ its conventional capabilities to stall Indian offensives. Use of nuclear weapons will be considered when in the minds of Pakistani military leadership, an operational situation is developing that cannot be stalled by conventional forces, leaving no recourse but to use nuclear weapons. Timing will be a criticality, as premature use by Pakistan will be seen as an attempt at escalation inviting major international opprobrium.

Considering the discussion above, delayed/accumulated thresholds appear a more likely option for the use of TNWs. This underscores two issues; it acknowledges space below the nuclear threshold (no matter how shallow) that can be exploited by India to mount limited offensives as part of its punitive response strategy against the proxy war being waged by Pakistan. Pakistan on the other hand, would make all attempts to deny the same through doctrinal and operational posturing; conveying to Indian political leadership its shallow thresholds and consequences of Indian military adventure that could lead to escalation and the use of nuclear weapons, in self-defense.

However this situation poses three serious operational dilemmas. First, in terms of command and control, forward operational deployment will necessarily mean delegation; and second and more seriously, the movement and deployment of short-range ballistic missiles under adverse operational conditions. These are important aspects that can at best be speculated; the problems of decision making in terms of command and control and release of TNWs can only be highlighted through iterative simulation and gaming exercises. Last, the potential use of nuclear weapons in the above scenario will be calibrated as a situation of desperation and critical vulnerability to justify their use internationally and to put pressure on India for restraint.

Pakistan's "New Concept of War Fighting" as a quick reaction offensive/defensive strategy finds resonance with Pakistani military planners because it enhances their operational options and delays the use of nuclear weapons to only seriously critical situations. However, this does not mean posturing and brinkmanship will not be resorted to earlier. The failure of conventional deterrence by reckless use of Indian military power will be played to create conditions both politically and nationally for possible nuclear response as weapons of last resort. Pakistan will attempt to postulate low thresholds to restrain India in its operational designs and put caution on Indian political leadership in furthering its operational plans.

An important factor that will impact employment decision of TNWs will be the range constraint. The dilemma is that a preemptive deployment would be seen as an act of escalation that could force India to mobilize its nuclear weapons, thereby leading to a situation of concurrent or near simultaneous deployment of strategic weapons in concert with conventional force mobilization. This correlation between conventional and strategic mobilization would create a scenario wherein nuclear weapons are brought into the equation at the first instance of conflict even before there are any serious concerns of deterrence failure.

Such a scenario will further contribute to instability with both sides shifting from recessed deterrence to alerted deployment, which then could become targets for conventional missile strikes. Pakistani military planners appear to be miscalculating that in such a scenario, India will hedge its bets on early deployment for fear of premature nuclear confrontation, and international opprobrium, further constraining space for conventional conflict. This will at best be a prevarication on the part of Pakistan's military leadership's in terms of miscalculation of Indian political will and resolve.

Another factor that could induce Pakistani military leadership to consider preemptive deployment or use is increase in situational awareness through military cooperation with China, in terms of improvement in optical and ELINT capabilities. For instance, access to the Chinese Beidou navigation system would enhance the strike accuracy of Pakistani vectors. These technological developments could induce a sense of over-confidence resulting in premature use. There is a tendency within the Pakistani Strategic Plans Division (SPD) to factor India's response thresholds and preparedness both loosely and negatively, based on the belief that Indian NCA is too diffused, bulky and incapable of making timely decisions[50].

On the issue of command and control of TNWs, open source literature is inconclusive and vague. However, discussion with Pakistani interlocutors and others during Table Top exercises and Track II discussions indicate that their control is similar to that of other strategic weapons. This, however, does not appear rational given the nature of the weapons and their tactical deployment discussed earlier. At some stage, control will have to be delegated, even going by the NATO experience, creating potential for rogue use or loss to extremists.

Another critical factor in the decision to deploy TNWs is the security of these weapon systems in the tactical battle area. Given 'Nasr's' assumed limited range of 60 to80 km; these weapon systems perforce would have to be deployed at least 15 to 20 km from the forward edge of the battlefield, so as to cover targets up to the operational depth of Indian offensives while also being in a position to target forward airfields and logistic installations, bridge heads, etc.[51] Importantly, these locations will be within the range of Indian multi barrel rocket launch and many other systems. This would require their initial deployments to be in "hides" with forward deployment on orders as per standard operating procedures. During such moves, these systems would be vulnerable with tenuous command and control, and be an obvious target for Indian ground and air weapon systems, creating a scenario of miscalculation and instability.

Use of nuclear-tipped cruise missiles, both ground and air launched, also need to be factored in to operational considerations. These could be employed for counter-force targeting along with TNWs or used to destroy deployed Indian vectors as part of larger nuclear attack plan. The fact that these can be employed both at tactical and strategic levels is important.

[50]Based on discussions during Track II with former SPD officials.

[51]"Ballistic missile Nasr: A bigger threat from Pakistan : Manoj Joshi, News - India Today."At: http://indiatoday.intoday.in/story/pakistans-short-range-ballistic-missile-nasr-is-a-matter-of-concern-for-india./1/140087.html. [Accessed: 12-Oct-2015].

Another important aspect is posturing and signaling. This could take the form of assertive and proactive verbalization, including demonstrative strikes in own territory to indicate firmness of resolve and criticality of the situation. A fair amount of such posturing and signaling could be expected, heightening the chances of miscalculation particularly in the scenario wherein nuclear weapons are already deployed. It would be imperative to read these signals correctly and shape responses appropriately. The nature of escalation will also be reflected by the competing risk-taking behavior; Pakistan may attempt to increase the risk by aggressive posturing and signaling. Inadequacy or wrong interpretation by India could prove catastrophic.

A number of scenario/simulation exercises have indicated misreading of signals leading to either a complete surprise resulting in hasty, uncoordinated and premature response, or an inability to make timely political decision, leading to a delayed response. While decision making and timing are functions of Nuclear Command Authority, a credible C4ISR would help in decision making, including correct reading of signals. Development of these capabilities is becoming an imperative for both sides to ensure that they are not surprised.

Another logic and rationale of Pakistan developing TNWs is being largely driven (assumption) by the "strategy of denial," which essentially means that even if India were to launch massive retaliatory counter -value cum counter-force strikes in response to substrategic use, its growing credibility of assured second strike would dissuade massive use as contemplated in the Indian doctrine of punishment. Pakistani planners appear to believe that discriminate use of low yield weapons and graduated escalation together with leveraging international opinion is an effective war termination strategy that would prevent a nuclear holocaust in the subcontinent.

Thus, Pakistan is prepared to play a game of nuclear brinkmanship at the lowest possible thresholds with the singular idea of not allowing India space to exploit its growing conventional force advantage. Pakistani interlocutors in Track II dialogues are quite forthright in acknowledging a clear cut linkage of strategic weapons and conventional asymmetry. They look upon these as means to maintain strategic balance by limiting Indian conventional options, backed by massive strategic strike capability.

3.1 Indian Doctrinal Perspective

The above discussion brings into question the nature of Indian strategic response calculus to the possible use of TNWs by Pakistan. India's declaratory nuclear doctrine appears to be based on the concept of NFU backed by a policy of assured massive retaliation in case nuclear weapons are used against Indian territory or its forces anywhere in the world. In this policy of "retaliation only," the survivability of nuclear arsenal is the most critical issue. Indian policy planners are believed to perceive this to be a dynamic concept related to the strategic environment, technological imperatives, and the needs of national security, which determine the actual size, components, deployment and employment of Indian nuclear forces. The overall aim is therefore to convince any potential aggressor that:

a) Threat or use of nuclear weapons against India shall involve measures to counter the threat; and,

b) Any nuclear attack on India and its forces anywhere shall result in massive retaliation, inflicting unacceptable damage to the aggressor.

With that as the backdrop, let us now look at Indian doctrinal perceptions in terms of response to TNWs as also NFU and Second Strike Credibility.

3.2 Indian Response to TNWs

Pakistan is assumed to be consciously shifting the strategic focus of its nuclear option to low level graduated escalation using TNWs as a conflict prevention or termination strategy. It appears to be shifting from what is termed in nuclear lexicon from "Offensive Disarmament" through preemptive first use to one of "Defensive Denial"—a category located in the middle of the nuclear spectrum—where the principal intention consists of denying the assailant, either its operational objectives on the battlefield or its strategic interests through employment of nuclear weapons. Nuclear weapons, in this construct are treated as war fighting instruments, but intended less for exploitation and *more to reinforce deterrence and avert military defeat*, together with all the disastrous political consequences that flow from such an outcome. Substrategic use or "Tactical Nuclear Weapons" fall in this category of "Defensive Denial."

The dilemma facing India is how it should respond. Should it continue with no first use doctrine, clearly dispelling the notion of graduated response by articulating and more importantly signaling massive punitive retaliation through deployments and political retaliation? The idea is to dissuade Pakistan from going down the nuclear path by highlighting inevitability of the consequences. The issue needs to be examined from both doctrinal and operational perspectives.

In terms of response strategy, despite a clearly enunciated doctrine of massive retaliation, political considerations, the likely impact of massive retaliation and associated escalation dynamics, are factors that will weigh heavily on the Indian nuclear command authority in determining its response options. Therefore the actual response matrix will be dictated by the political considerations of the desired effects rather than merely be dictated by doctrinal underpinnings. In an "Early Threshold" scenario, where the use is at the tactical level, there could be an option of graduated response. However, in "Delayed" or "Accumulated Threshold" scenarios, which in all probability would entail much larger use of nuclear weapons, Indian response could range from a strong counter-force conventional response in the form of precision missile strikes on deployed Pakistani nuclear assets, limited nuclear response against Pakistani forces, or massive nuclear strikes both on counter-force and counter-value targets, including decapitation. This will be a function of nature of damage, and the political perception of risk involved in retaliation. Thus India has multiple response options. The options, which would most probably be exercised, will be based on political judgment fully underscoring the rationale of punitive retaliation.

All options are likely to be preceded by credible declaratory warning leaving Pakistani leadership in little doubt that attempts at escalation will result in a devastating response. A major concern for India would be that of deployment of TNW in the tactical battle area (TBA). These are likely to be exposed to Indian interdiction strikes that could be seen by Pakistan as a premeditated counter-force targeting, resulting in "unintended escalation." Many more sets of responses could emerge

from the detailed analysis of Pakistani targeting options; their damage criteria and the India national will and political resolve.

Since the 1980s, the Indian Army has been making preparations for fighting conventional operations under NBC conditions. To meet this requirement, India is indigenously producing NBC equipment such as decontamination suits, face lets, over-boots, and tents, etc. In terms of training, the Indian Army, since 1987, has been running familiarization courses and studies that provide for both active and passive defence against nuclear attack for army combat formations.

India's Army Training Command is responsible for conducting detailed studies into NBC warfare. Given India's nuclear threat perception, all major exercises are conducted in a nuclear backdrop. It would be safe to presume that India's offensive formations are both equipped and prepared to operate in a contaminated environment. Second, given the Pakistani nuclear doctrine discussed above, offensive operations will be planned around the possible use of battlefield or tactical nuclear weapons. The attacking forces would remain dispersed and only concentrate rapidly to attack. In such a scenario, damage by 5 to 10 KT devices will not cripple the mechanised thrust; no doubt substantial damage would be caused. Weapons are more likely to be used against attacking force concentrations to overcome defensive positions or multiple obstacle systems developed by Pakistan in plains and semi-desert terrain. For substantial degradation of Indian offensives, Pakistan would have to initiate multiple strikes for any meaningful damage. Such large scale use would in all probability cross the realm of "discriminate use" creating a scenario for major Indian retaliation by exponentially raising escalation dynamics.

3.3 Sectorial Analysis with regard to Employment of TNWs and Indian Response

It is difficult to presume that Pakistan would initiate nuclear attacks against Indian forces either in Punjab or Kashmir purely for tactical gains. Indeed, for Pakistan the use of such weapons in Kashmir would almost certainly alienate the Muslim population of the Kashmir Valley. Punjab is an even more sensitive issue as the bulk of Pakistani military and the political elites are drawn from the Province. It is highly unlikely, therefore, that Pakistan would risk using a nuclear weapon and risk massive casualties to Punjabi population together with contaminating its "granary" from where the bulk of its food supplies come; for limited tactical gains. Use of nuclear weapons in Punjab can only be visualised in a "use it or lose it" option if major population centres such as Lahore, Sialkot, and Multan, etc. are threatened. India is unlikely to attempt touching any of these population centres. From a purely military standpoint, it is important to note that the ditch-cum-bund[52] obstacle system defenses with their network of concrete bunkers would probably survive a nuclear attack.

The only area, therefore, that lends itself for use of tactical weapons with reasonable yields is the desert sectors of Rajasthan and Gujarat. However, this area bears little strategic importance for any shallow thrusts by Indian Integrated Battle Groups. Here, the thresholds are deep and it appears unlikely that Pakistan would risk nuclear escalation for what can be termed as practically no useful grains of "sand."

[52] Ditch-cum-bund is an Indian Army term used to refer to obstacles, such as berms and ditches, placed around a defensive position.

The next question is whether India too, should develop TNWs based on battlefield missile systems such as the short-range tactical missile "Prahar." Similarly, is there a need to equip cruise missiles such as the Brahmos and under development "Nirbhay" with nuclear warheads? This is a major developmental dilemma for India. The development of such weapon systems provides credibility to the Pakistani thinking of graduated response, even as it helps keeping escalation levels low and manageable, and even though it undermines Indian doctrine of punitive response. An associated issue that requires serious deliberation within India is the impact of "doctrine of massive retaliation" based response strategy on strategic stability even if India was to carry out a "limited retaliatory strike." This is an extremely serious issue with impact on India's overall doctrinal perspectives and future nuclear weapon development programs.

Development of credible "Area Denial Strategy" can provide some response leeway for India. Three development phases are advocated. One, developing credible C4ISR and 24 hours 7 days a week surveillance of Pakistani space, so that advance warnings of conventional deployments, and changes in the Pakistani nuclear preparedness status can be picked up early. Second, developing non-kinetic intervention capabilities to both signal resolve and degrade critical infrastructure supporting India's NCA. Third is the capability to undertake precision-targeted attacks on both military targets, and critical communications infrastructure together with nuclear delivery means. Here the aim would be to degrade capabilities and send a message that escalation would be counter-productive.

The next important aspect is the early operationalization of the BMD program. Having taken the "genie out of the bottle" it is important now to develop a credible and operational system that will convince Pakistan that India will effectively degrade Pakistan strikes, particularly against important counter-value targets such as the NCA, and follow this up with massive retaliatory response. This will be a game of perceptions in which speed and credibility of response will be important.

4 No First Use Strategy and Second Strike Credibility

The Indian No First Use (NFU) doctrine is based on creating conditions that will ensure survival of the country's nuclear arsenal against an adversary's first strike whether it is counter-value, counter-force or both. One of the key areas of concern for Indian planners is that while they are reasonably assured that a major part of the nuclear weapons would survive; the same cannot be guaranteed for the delivery systems. Ballistic missile systems are increasingly becoming vulnerable to new satellite-based intelligence gathering capabilities available to nations either directly or through allies in possession of such assets. The challenge is to find ways and means to ensure that road- and rail- mobile missile systems can neither be detected nor attacked. Insofar as aircraft are concerned, flight refueling capability and flexibility in weapon storage provide early dispersal capability to survive a first strike.

Nuclear submarines equipped with Sea Launched Ballistic Missiles (SLBMs) are the most survivable assets. Because of this, India has invested in developing a credible Triad. Silos for storage of ballistic missile systems undoubtedly enhance survivability but are expensive to build. India has adopted the route of land and rail mobile systems.[53]These can initially be located in depth areas and appropriately redeployed, thereby preserving the arsenal from a debilitating counter-force strike. Adequate concealment during movements and dispersal and effective control in an increasingly transparent environment poses a great challenge.

The last concern is the perception that deterrence does not imply matching weapons for weapons to achieve a degree of deterrence. While the discussion above underscores little relevance of nuclear arms race or parity, its credibility is based on robust command and control and resolute authority that could signal high deterrence value. For example, response calculus to TNW based on massive retaliation looks good doctrinally but what is its political feasibility? What is the thinking behind graduated response and its perceived efficacy? These are important issues that not only shape response options but also influence the country's weapon development and delivery programs.

4.1 Employment Options and Communication of Intent

India believes signaling and posturing are important components of a credible deterrence strategy, particularly given its belief as a minimalist nuclear weapon state. There is a growing thought process amongst the strategic community that India needs to be more forthcoming about its nuclear force-in-being, credibility of its command authority, and above all, its political resolve. Lack of an articulated perspective has the potential for "miscalculated escalation," particularly in the India–Pakistan scenario where signaling matters as much as capability.

India usually decries Pakistan as being an irrational state. In fact, many analysts believe that such an approach suits Pakistan, given the growing conventional asymmetry and lack of strategic depth. For Pakistan, such a doctrinal ambiguity helps in keeping Indian planners guessing and assessing its response options. On the other hand, Indian reticence on issues related to operational command and control of nuclear weapons, NCA, etc., might be at times misconstrued as a sign of weakness leading to attempts at coercion. Statements such as "Pakistan's acquisition of nuclear power

[53]"India tests long-range missile from mobile launcher." At: http://www.dawn.com/news/1160646. [Accessed: 12Oct2015].

smashed Indian dreams," by Pakistan's advisor on National Security and Foreign Affairs Sartaj Aziz are seen by some analysts as attempts at coercion of Indian political leadership.[54]

India, on the other hand, is seen by many analysts as wanting to convince the world at large of being a rational nuclear weapons state that looks at nuclear weapons purely as a political deterrence to avoid conflict and restrict Pakistan's military options. This Indian thinking, while nevertheless providing dividends at strategic levels, has allowed the substrategic space to be manipulated by Pakistan to serve its interests. As described earlier in this report, this has created its own escalation dynamics that could break out into broader conflict, including nuclear deployment. In addition, the asymmetry in response levels has created a situation where one side feels that there is space below nuclear thresholds that can be exploited to use conventional superiority, whereas the other wants to deny the same space both conventionally or through discriminate use of battlefield nuclear weapons. Thus, in any conflict scenario, a dangerous game of brinkmanship is inherent with the likelihood of unintended escalation.

4.2 Perspective of Nuclear Command and Control

The next important aspect impacting crisis stability is the nature of command and control and its structures. The most critical issue in determining the efficacy of command and control is to determine who wields the ultimate influence and its nature. Second, is the nature of the balance between civil and military control.

First, consider the structural dynamics of the Pakistan Nuclear Command Authority (NCA). Although the Prime Minister heads Pakistan's NCA, many believe that in reality the power and influence for both development and employment of nuclear weapons is wielded by the military. Many believe that India's case is the exact opposite: the Indian NCA is firmly under civil control with the Prime Minister as its head while the military is, at best, in a consultative capacity on the periphery of the NCA.

The control over strategic weapons is another issue to consider. In India, the strategic forces are under the administrative control of the tri-service Strategic Forces Command, which is notionally under the Chiefs of Staff Committee (COSC). However, both functional and operational control is exercised by the National Security Advisor (NSA) as the head of the Executive Council of India's two tier NCA (the other being the Political Council). All decisions within the Indian nuclear command structure are discussed and debated at the Executive Council and ratified by the Political Council. Therefore all operational and organizational directions to the Strategic Forces Command originate from the NCA and not the COSC. Thus, over the years the Headquarters Strategic Forces Command has emerged as a nuclear integrator much like the SPD, providing synergy between the military, scientific, and bureaucratic establishments. The debate within the Indian establishment to bring the military into the loop by creating the post of Chief of Defense Staff or at a minimum Permanent Chairman COSC, is driven by the need to ensure single-point advice and equitable equations within the various organs of the nuclear hierarchy.

[54] Pakistan's Acquisition of Nuclear Power smashed India's Dreams: Dawn 01 Jun 2015. Athttp://www.dawn.com/news/1185311. Accessed June 1, 2015

Many believe that in Pakistan's case, command and control over service-specific Strategic Forces Commands is essentially, military-centric and is exercised by the Military National Command Post under the Chairman Joint Chiefs of Staff Committee, operating through the Strategic Plans Division, clearly indicating control over nuclear weapons within a tight military loop. This, in a sense, highlights how the development and management decision of Pakistan's nuclear forces are presumed to be undertaken taken: in contrast to India where the military is believed to remain on the periphery of nuclear decision making and the entire development cycle is in the hands of bureaucrats, scientists, and technologists, in the case of Pakistan, development and employment decisions are presumed all military-centric and exercised through the overarching authority of the Strategic Plans Division.

The next major issue is to determine how the command control is designed to function. An important aspect that defines this function is the doctrinal perspective of the respective country. Pakistan's nuclear doctrinal thinking and capability development, as discussed earlier, are attuned to undermining India's favorable conventional asymmetry through a credible nuclear program and posturing of shallow thresholds. This achieved by *integrating conventional and nuclear doctrine* in a bid to bring about strategic stability, in a scenario of conventional asymmetry. Given the assumption that the Pakistani deterrence strategy is based (or does not exclude) first use and nuclear war fighting, this perforce leads the Pakistani NCA to maintain a nuclear posture close to hair trigger alert based on operationally deployable and instantly ready weapon systems, to ensure credibility of nuclear response. This underscores the inherent requirement of early deployment and dispersal (as insurance against possible Indian strikes against its delivery vectors accentuated by advancing Indian ISR capabilities), *thereby creating command and control and communications challenges, in addition to escalatory signaling*. This also highlights minimum necessary preparedness, casting aspersions on its de-mated and de-alerted status.

The situation is further complicated by the introduction of short-range battlefield (tactical) nuclear weapons. These weapons, given their short range (60 to 80 km) inevitably, have to be deployed in proximity of forward operational areas in what can be termed as a highly escalatory move. One of the rationales for developing these weapons is the concern of Pakistani planners about the credibility of the "doctrine of use (first use) as a last resort." The dilemma Pakistan faces is: should it launch a credible first strike or adopt graded and proportional punitive retaliation option? Furthermore, the perceived thinking is that while nuclear deterrence can prevent major escalation of conflict, it does, however, leave space for a limited conflict. In Pakistan's perception this space exists precisely because of the Indian confidence that in any punitive conventional response option, incursions and degradations of Pakistani military carried out while remaining substantially below the perceived thresholds remains a credible option. Such an option also provides India with the option of declaring ceasefire to prevent escalation, effectively demonstrating doctrine of punitive retaliation.

Pakistani military planners, faced with the problem of stabilizing an increasingly asymmetric conventional scenario, have sought to introduce low-yield nuclear weapons as part of its conventional response matrix. Apparently, it may appear to give an advantage; but in effect, such

thinking is hugely destabilizing. Misgivings in this regard could lead to unintended escalation with catastrophic consequences. Figure 2 below illustrates this dilemma.

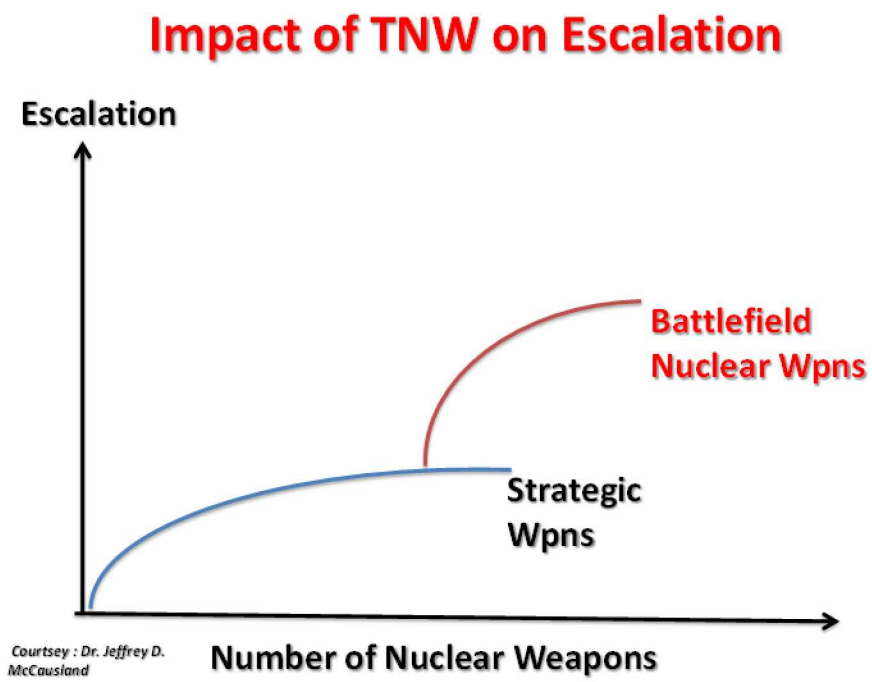

Figure 2.Impact of TNW on escalation

On the other hand, in the Indian perspective, the correlation between the doctrine, strategy, and structure are based on the fundamental belief that nuclear weapons are for deterrence only. Consequently, the Indian arsenal, weapon development program, and the associated command and control structures are designed to meet this objective. Considering that nuclear threats to India are essentially from its immediate neighborhood, with a very short flight time because of the proximity factor, these aspects perforce are factored in India's overall strategy. Second, there is *broad political consensus that there is no conceivable political purpose that would necessitate India to initiate a nuclear first strike.*

Therefore, structurally, the Indian nuclear command and control is designed to deal with *deterrence failure* (an aggressor launches a nuclear strike against India or its forces). In such an eventuality, the Indian nuclear forces should be able to retaliate immediately with adequate power to inflict an "unacceptable" level of punishment and destruction on the aggressor. Taken together, these two principles imply that *India will not be the first to use nuclear weapons* and, therefore, will also not be the first to threaten another country with nuclear weapons. With such a defensive deterrence strategy, Indian planners believe *there is little requirement for any preemptive deployment of its nuclear forces*.

However, the strategy of *"no-first-use"* requires maintaining retaliatory punitive capability in the eventuality of deterrence failure. This implies that India's nuclear arsenal *does not have to be maintained at hair-trigger alert of operationally deployed and instantly ready weapon systems* unlike

Pakistan following its "First Use" war fighting doctrine. From the Indian perspective, this implies maintenance of credible minimum capability and speed of response to any provocation. The command and control of nuclear forces, therefore, is tighter, and as a consequence, more centralized (in Pakistan's case, non-vertical and contingency based). Change in the nuclear posture including deployment if any, therefore, will be a function of Indian assessment of the actions of potential adversary (based on its growing ISR capabilities) in terms of changes from peace time deployment in other words the dispersal of strategic weapons, staging forward of battlefield weapons, etc.

This broad strategy demands a nuclear posture that ensures a very high level of credible and effective punitive retaliatory capability that would inflict unacceptable punishment. In the context of giving up the first strike option, this also requires a very high degree of survivability of the nuclear arsenal, including command and control system. This means that the command and control must be able to survive and continue functioning with high efficiency to achieve the political goals even after absorbing a first nuclear (attempted decapitation/counter-value) strike. It is imperative therefore to build a high level of survivability through a combination of measures including high degree of mobility of assets, particularly the delivery means and warheads, separately, as well as, complete weapon systems.

It also entails extensive dispersal, including frequent moves and relocation of nuclear assets along with an ability to operate from myriad locations. The greater the mobility of the arsenal, the greater would be its survivability. It is these considerations that have forced the Indian NCA to develop sea-based nuclear capability, seek technology for ballistic missile defense and enhancement of its overall ISR capabilities. Perceived technological developments in which India appears to be investing are directly related to both survivability and credibility of its nuclear response in a situation of pre-emptive use by the adversary.

Extensive deception measures, including decoys and dummies are other aspects that merit consideration. This issue is rapidly becoming critical given the advances in Chinese ISR capabilities, space based assets including fielding of its own GPS named Beidou (Compass) Navigation Satellite System currently operational over the Asia-Pacific. In the backdrop of Sino–Pak military and nuclear collusion, and availability of these assets to Pakistan, will enhance the credibility of Pakistan's first strike. These developments no doubt will force India to build an arsenal of highly mobile delivery systems with foolproof communication so as to launch a retaliatory nuclear strike within the shortest possible time, together with investments in BMD. This implies that degree of precautionary measures including a certain degree of operational preparedness and deployment could become crucial. In addition, a command system that is adaptable to quick decision making and execution thus becomes an imperative. The efficacy and credibility of a nuclear command system lies in the fact that a retaliatory strike must be launched within a minimum period to drive home a certainty of response.

4.3 Nuclear Command and Control in Crisis Scenario

Deterrence failure in the South Asian context will be a function of perceived conventional balance in a hostile situation. Fundamentally, such a situation will arise as a result of an action- reaction cycle following a crisis triggering event (equivalent to the 2008 attacks on Mumbai or an event even more

damaging) that forces the hand of Indian political leadership to retaliate militarily. The crisis from here on can take many turns, it can be diffused or can follow a path of an action-reaction cycle, which if the escalation is not managed, could lead to higher levels of both horizontal (space) and vertical (force levels) escalation. To prevent unacceptable strategic losses and to manage conventional escalation, Pakistan, going by its doctrinal thinking, could resort to nuclear brinkmanship and posturing. This essentially implies dispersal and deployment of its nuclear arsenal, both at tactical and strategic levels. The scenario could become exacerbated by the introduction of TNWs, which Pakistan may attempt to deploy in the early stages of the conflict to restore an adverse operational situation created by Indian proactive use of military power. A graphical description of an unfolding crisis scenario is outlined below;

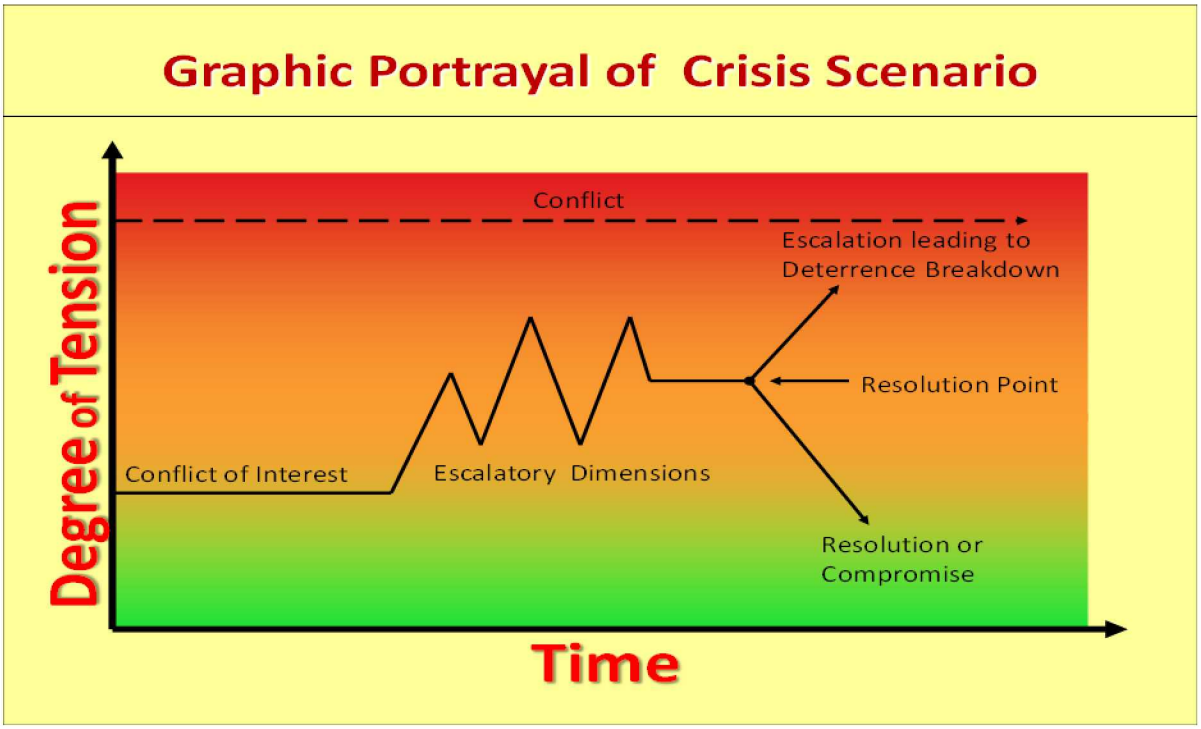

Figure 3. Graphic portrayal of crisis scenario

To explain; in a hypothetical scenario as outlined above figure, apart from the conventional response at early stages of the conflict (depending upon reading of operational situation) the Pakistani NCA will be forced to make a decision on how to move and deploy its nuclear assets – both to deal with perceived Indian pre-emption and signaling of its thresholds. In the very least, Pakistan could move and deploy TNWs in what can be termed as contingency positions in proximity of the TBA (necessitated by their short range). In such a situation, an important issue will be command and control. Given their range and necessity of dispersal in the proximity of TBA, and the fact that they will be vulnerable to direct military, cyber or EW attacks—*pre-delegation would become a necessity*. The second and even more serious issue is that of security. In a recent scenario exercise between Indian and Pakistani interlocutors, hosted by the US Naval Postgraduate School, attempted pre-emptive deployment of TNWs owing to late decision making was caught between the Indian offensives and either destroyed or bypassed. Such developments have the potential of dangerous

escalation that could lead to full-scale nuclear mobilization and standoff. Additionally, wide dispersal and constant moves to evade detection by India could result in a situation wherein command and control failure could take place, or weapons could fall in the hands of radical elements or extremely violent organizations.

An important element of the above scenario is regarding how the Indian side reads such a situation and reacts. Can the Pakistani NCA afford to simply deploy tactical nuclear weapons without a backup strategic weapons deployment? What factors will lead to such decision making? What does such signaling convey and how would the Indian side react? These are some of the aspects that require critical examination through simulation and iterative processes.

From the foregoing studies, it is apparent that even though the introduction of tactical nuclear weapons in the early stages of the conflict may well be a part of the Pakistani strategy to create an "interface between conventional and nuclear strategy" to deter India from exploiting the space for *limited war under nuclear overhang,* nonetheless, the lowering of the nuclear threshold could lead to major instability. It must be recognized that early deployment, posturing, and brinkmanship will force Indian nuclear reaction, in terms of both mobilization and deployment of its nuclear assets to ensure credible deterrence in the early stages of its operations that could include the mobilization phase. Thus, a scenario of dangerous nuclear standoff could emerge in the early stages of conflict with a serious potential for escalation.

It is important to consider whether both sides, even in the case of Indian reaction to a major triggering event, are exercising restraint. Under such circumstances, based on the nature of Indian response and the escalation dynamics that are set in motion can best be restrained only through proportionate and effective response together with credible political overtures. A delicate balance exists in such a situation. Should there be misperception of the nature of response or one that is beyond the acceptance levels of the other side, a higher escalation cycle could get set in motion. On the other hand, if the response is limited to some cross border surgical strikes, there is likelihood of the situation being diffused at lower levels and escalation prevented. However, this will be a function of political judgment based on the nature of desired political end state. In another strategic gaming exercise between Indian and Pakistani interlocutors, Pakistani perceptions of Indian response to a triggering event was that limited cross-border strikes restricted to terrorist infrastructure and border assets were an acceptable political risk, to prevent broader military escalation; seen by Pakistan as anger venting by India.

In case, however, of a stronger Indian military response that included strategic and operational targets including communications being attacked, these would be deemed as unexceptionally escalatory, setting off major action-reaction cycles, which in turn will set the stage for a major confrontation, including nuclear deployments. This will be a matter of fine political and military judgment and the perception of the respective command authorities as to how they are reading signals emerging from both sides. Signaling, crisis decision-making and response dynamics will thus, become critical in all crisis situations.

5 Deductions

Broad deductions emerging from the various issues impacting strategic stability are outlined in the following paragraphs.

There is an asymmetry and more importantly, perceptional misunderstanding between India and Pakistan of each other's nuclear and conventional thresholds. This is a serious gap that needs to be understood then subsequently addressed through confidence building measures (CBMs).

Pakistan is using terrorism and Jihadi organizations; mostly Punjabi Tanzeems such as Lashkar-e-Taiba and Jaish-e-Mohammed, etc., to wage proxy war against India. By refusing to accept complicity and propagating it as home-grown internal insurrection, it believes it can continue to singe, while remaining below India's conventional threshold, thereby putting the onus of escalation on India. In its assessment, the issue of Kashmir, the role of non-state actors, and nuclear weapons provide credible space to wage such a proxy war with minimal costs. This is viewed as a perfect containment strategy that undermines a more powerful India both internally and internationally.

India, on the other hand, looks upon this as a deliberate strategy to destabilize by provoking insurgency in Kashmir and attempting to undermine its integrity, through communal out pouring, radicalization of minority community, and propagating internal groups such as the Student Islamic Movement of India (SIMI) or the Indian Mujahedeen (IM) to create instability. It sees Pakistan's proxy war as upsetting the conventional deterrence that could provoke military response should India's thresholds of tolerance be crossed. There is, therefore, a major perceptional mismatch at this juncture of the escalation ladder as follows:

a) India believes that should its thresholds be crossed it can leverage its conventional superiority for punitive retaliation imposing costs on Pakistan. Doctrine of pre-emptive retaliation based on its current and prospective capabilities is seen as a credible option by India.

b) Pakistan on the other hand believes that the current conventional force balance is not so asymmetrical that it allows India to impose unacceptable costs. Its thinking is driven by its own military modernization, and new doctrinal thinking based on the forward deployment and multiple echelons of reserves from tactical, operational to theatre that are expected to impose severe attritional costs on India. Notwithstanding this higher degree of conventional assurance, Pakistan wants to strengthen its conventional deterrence by the overlay of "battlefield nuclear weapons." Essentially, its strategy is to deny India space for a conventional response and "checkmate" operationally adverse situations by posturing low nuclear thresholds and brandishing battlefield nuclear weapons.

c) This highlights the glaring perceptional differences in the understanding of each other's conventional and nuclear thresholds. As a consequence of these differences, conflict escalation through misperception or miscalculation is likely to get accentuated. This can be termed as *"First Stage Response Mismatch."*

d) Flowing from above, the nature of posturing and employment thresholds for battlefield nuclear weapons or TNWs. As analyzed, in all probability, Pakistan will use TNWs as a last resort at the "Accumulated Threshold." This no doubt will be preceded by posturing, brinkmanship, and above all, signaling of a shallow threshold. Criticalities here are triggers that will force deployment. The aspects that will be critical are the timing, movement, and deployment, command and control, safety and security, and the possible targeting options these will critically impact employment decisions. Each one of these situations can lead to misperception and misunderstanding leading to premature use. In the case of Pakistan, the situation is exacerbated by the military-centric NCA, with little or no civil oversight. The Indian belief is that, like in previous conflicts between India and Pakistan in 1965, 1971, or even 1999, Pakistan GHQ can get carried away by its own tactical and operational rhetoric with little consideration for strategic consequences. Such a scenario is fraught with danger and could potentially lead to a major nuclear conflagration.

e) Another aspect for serious consideration will be the likely employment and targeting options, yields of warheads, and the nature of the desired effects. If TNWs are being used as a last resort that presupposes a credible adverse situation beyond the control of conventional forces, the response in such a case perforce will have to be large enough to stall Indian operations. This translates to a number of salvos of Nasr missiles over large geographical area fired on Indian, mechanized spearheads mostly in Pakistani territory, although firm bases of operations in Indian territory could also be targeted. The dilemma for Pakistani planners will be the consequences of such a major use in terms of probable Indian response. Even more important is the violation of the notion of discriminate use to keep the escalation manageable.

f) An associated aspect of the above (e) scenario will be desired effects and weapon yields. Going by the limited damage criteria of battlefield weapons, a low order yield may not be sufficient to stall Indian offensives. Under such circumstances escalation by Pakistan will be inherent, breaching the strategic stability paradigm by invoking major Indian nuclear response.

g) Yet another associated aspect is the status of strategic nuclear forces when Pakistan orders deployment of TNWs. In particular, how will India read these developments given its incrementally advanced ISR and space capabilities? Does deployment of battlefield weapons translate into major up gradation of overall strategic posture, to include mating of nuclear warheads, operation deployments of vectors etc.? How will India respond to these developments? No doubt that India will look at these as major escalatory steps up the nuclear escalation ladder and most likely, fearing a pre-emptive or debilitating strike, order similar mobilization of its own nuclear forces.

h) Thus, this *second stage response mismatch* suggests that before even the first nuclear shot is fired the two countries could have adopted an extreme mobilization profile putting both countries' nuclear command authorities on a short fuse.

The next set of issues relates to the Indian response to the possible use of battlefield nuclear weapons by Pakistan. Doctrinally, this should entail massive Indian retaliation causing unacceptable damage in other words, a major strategic response that could be counter-value, counter-force or both. Alternately, as many Indian officials and analysts argue that the rubric of Indian response options lie along a wide canvass extending from conventional response, proportionate to massive response. This possible doctrinal adaptation could be India's attempt to make strategic deterrence more robust and nullify the idea of graduated nuclear escalation or what was referred to during the Cold War as a fight at the "nuclear edges." This, in a sense, endorses Indian doctrinal articulation that nuclear weapons are for political deterrence and not war fighting.

The issue then emerges whether such posturing and explicit enunciation can strengthen the strategic stability in South Asia. Despite a very detailed enunciation of their respective doctrinal thinking by both India (Shyam Saran as head of India's NSAB) and Pakistan (Rashid Kidwai as former head of SPD), escalation management right through the conflict cycle will be a matter of perception that will determine how each side will read signals emanating and the resultant political response including operational deployment of nuclear weapons. This will be the function of the NCAs of both Pakistan and India.

Going by the articulated doctrinal thinking, the perceived role of nuclear weapons and the structure of the NCA, it is apparent; Pakistan will leverage to prevent India from taking any advantage of its conventional asymmetry. As discussed, this will result in up-gradation of its nuclear force posture in the early stages of conventional conflict, to indicate political resolve and attempt to force restraint on India. Additionally Pakistan, not fully convinced of India's NFU pledge will ensure dispersal, concealment and operational readiness as insurance against an Indian first strike. There is also the usual "use or lose" syndrome. Yet another perceivable reason often articulated by Pakistani interlocutors during Track II Nuclear Dialogues is a possible attempt by external players to neutralize their weapons undermining their credibility.

More importantly, the prevailing Indo–Pak tensions have an intrinsic potential of escalation that could result in a major military confrontation. Under the circumstances, the credibility of the Nuclear Command and Control system to prevent unintended nuclear escalation, based on misperception, sabre rattling or inclination to believe that the Indian doctrine of massive retaliatory response is mere bluster, lies in the nature of its control.

With a strong civilian control and defensive system in place, the Indian system is apparently more stable. Pakistani nuclear command structures, although intrinsically stable, remain susceptible to the prevailing civil- military dynamics and the fact that the Pakistani military leadership believes in brinkmanship and posturing that creates serious concerns for stability.

The nature of doctrine, particularly the purported "First Use," is backed by full spectrum capability and delegated command and control for battlefield nuclear weapons that could induce pre-emptive use given the perforce early dispersal and deployment to enhance their security. As discussed, this could initiate an action-reaction cycle including the deployment of weapons, with propensities for unintended escalation.

Pre delegation of command and control of battlefield nuclear weapons will be a serious escalatory step and cause major instability. A number of Table Top exercises involving both Indian and Pakistani interlocutors have highlighted their deployment and control will be an issue that can lead to escalation.

Dispersal of stockpiles as the situation builds toward a possible conflict scenario will also be a major factor that could lead to escalation. With a strategy of nuclear brinkmanship inextricably linked to the strategy of "use it or lose it, "such dispersal is well-nigh certain. Within the foregoing reality, there is clear emergence of correlation between conventional mobilization and strategic posture up-gradation, which will put extreme pressure on the two command authorities. The situation, over time, will get exacerbated by developments in ISR capabilities for example fielding of constellation of optical and ELINT satellites, backed by IRNSS, etc.

Pre delegation and security of communication is yet another factor. Given the fact that the enhanced ISR will put pressure on deployments and constant moves including camouflage and deception, this, in effect, will make existing communications vulnerable to cyber and EW attacks, as also lead to serious miscalculations including unintended use.

6 Conclusion

This paper has attempted to highlight how, in the backdrop of prevalent tensions marked by a trust deficit, deterrence stability is endangered even when overall strategic stability prevails. Pakistan is conceptually adopting a strategy of "*deterring and defeating a conventionally strong nuclear adversary*." Its theory of victory is predicated on the use of proxy war backed by nuclear weapons to prevent India from calibrating the political risk of escalation, thereby enhancing its threshold of tolerance. Its posturing of battlefield nuclear weapons and nuclear-tipped cruise missiles is part of what it believes is a *"nuclear de-escalation strategy*" by exploiting its first strike stability; this it is attempting backed by a credible second strike capability.

India, on the other hand, believes that there is adequate space below the nuclear threshold that it can exploit and impose costs on Pakistan for its propensity in waging proxy war by state-sponsored non-state actors. It counters Pakistani attempts at nuclear coercion through battlefield weapons by its doctrine of massive retaliation and unacceptable damage. Thus India's concept of victory in any military conflict lies in *making costs of nuclear weapon use so prohibitive as to deter Pakistani GHQ from choosing that route*.

It follows, therefore, that there exists between the two countries a huge mismatch in perception of threat, constitution and management of escalation, doctrinal thinking, and command and control. In addition, there are cultural and psychological factors that impact both decision making and response dynamics. Pakistan perceives the Indian leadership as weak, vacillating, and unable to escalate to nuclear dimension. Thus, the Pakistani military leadership is prone to miscalculation and risk taking. Indian political leadership, although largely risk averse, can be expected to act decisively in an adverse situation when national interest and prestige are involved.

A scenario of miscalculation and misperception exists. It is important in the given circumstances that a series of simulation exercises be run with Indian and Pakistani interlocutors for them to understand the nature of risks involved in leading to initiation of risk mitigation and confidence building measures. The idea is to understand the nature of challenges to strategic stability and agree on measures to enhance the same.

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