
DETERRENCE STABILITY
AND ESCALATION CONTROL IN SOUTH ASIA
Edited by Michael Krepon and Julia Thompson

DETERRENCE STABILITY AND ESCALATION CONTROL IN SOUTH ASIA

Edited by Michael Krepon and Julia Thompson

STIMSON

ISBN: 978-1-939240-06-4

Stimson

1111 19th Street, NW, 12th Floor
Washington, DC 20036
Tel: 202.223.5956 | Fax: 202.238.9604
www.stimson.org

Contents

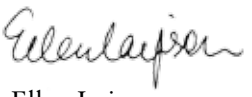
Preface

I am pleased to present the latest publication of the Stimson Center's South Asia program: *Deterrence Stability and Escalation Control in South Asia*, edited by Michael Krepon and Julia Thompson. Since 1991, the Stimson Center has examined the threat of conflict in South Asia, ways to seek normal relations between India and Pakistan, and means to reduce nuclear risks. Stimson's South Asia program includes prescriptive analysis, fieldwork, outreach to decision-makers and civil society, Washington meetings, workshops within the region cosponsored by local partners, Visiting Fellowships, and initiatives geared to a rising generation of strategic analysts in India and Pakistan. This fall, Stimson launched a new website — South Asian Voices: Generation Why (www.southasianvoices.org) to empower a rising generation of strategic analysts and to facilitate cross-border dialogue, which has been hindered by the denial of visas.

During the past year, Stimson has convened workshops where the authors in this volume have presented their work in progress. Feedback from these workshops and from project advisors is reflected in this collection. Stimson plans an additional volume with essays from new workshops and authors a year from now.

I wish to express gratitude to the Carnegie Corporation of New York, the John D. and Catherine T. MacArthur Foundation, and the National Nuclear Security Administration for their support of Stimson's programming on nuclear issues in South Asia. The editors also wish to thank Stimson's Communications team — David Egner, Rich Robinson and Lita Ledesma — copy editor Karla Daly, and intern Dylan Rebstock for their production support.

Sincerely,



Ellen Laipson

President and CEO, Stimson Center

Key Terms and Acronyms

ATGM	Anti-tank guided missile
CBM	Confidence-Building Measure
CENTCOM	Central Command
CIA	Central Intelligence Agency
DCM	Deputy Chief of Mission
DGMO	Director General of Military Operations
DOD	Department of Defense
DRDO	Defense Research and Development Organization
FATA	Federally Administered Tribal Areas
IM	Indian Mujahideen
ISI	Inter-Services Intelligence
JeM	Jaish-e-Mohammad
JTEs	Joint transparency exercises
LeT	Lashkar-e-Taiba
LoC	Line of Control
MAD	Mutually Assured Destruction
MoU	Memorandum of Understanding
NCTC	National Center for Counterterrorism
NGO	Non-governmental organization
NPT	Nonproliferation Treaty
NRRM	Nuclear Risk Reduction Measure
NSC	National Security Council
RSO	Regional Security Office
SAARC	South Asian Association for Regional Cooperation
SPD	Strategic Plans Division (Pakistan)
SRBM	Short-range ballistic missile
TTP	Tehrik-i-Taliban Pakistan
UAV	Unmanned Aerial Vehicle
UNSC	United Nations Security Council

Introduction

Michael Krepon and Julia Thompson

When India and Pakistan tested nuclear devices in 1998, their governments offered assurances that they would seek minimum, credible nuclear deterrents. With the passage of time, their definitions of "minimum" have evolved. Powerful domestic constituencies and institutions in Pakistan and India have developed, tested and inducted more types of nuclear weapon delivery vehicles than are now possessed by the United States. There is no evidence, as yet, that this competition is slackening.

Even though the nuclear competition on the Subcontinent pales by comparison to the superpower competition, it is nonetheless dangerous. The primary dangers do not relate to a lack of professionalism on the part of those responsible for nuclear stewardship. Instead, escalatory dangers are rooted in the absence of normal relations between nuclear-armed neighbors, the presence of spoilers who seek to disrupt more normal relations, and the potential for incidents that could lead to renewed conflict. The United States and the Soviet Union did not have to concern themselves with domestic and cross-border threats to deterrence stability. Pakistan and India do.

New challenges to stability are rising. Governance in Pakistan continues to be in decline. Water is becoming an increasingly scarce, and perhaps contested, commodity. Crises may be prompted by disaffected Indian Muslims who seek to settle domestic scores by violent means, actions that may be hard to distinguish from Pakistan-based spoilers. The introduction of short-range delivery vehicles for nuclear weapons, the utility of which depends on their proximity to battlefields, leaves much to chance.

Some pathways to conflict, such as premeditated, large-scale conventional warfare, as might have been contemplated in 1987, and as was the case in 1965 and 1971, now seem unlikely because of offsetting nuclear capabilities. Fears of preemptive nuclear strikes, like those plaguing Washington and Moscow during the Cold War, seem even more improbable on the Subcontinent. Instead, the most likely scenario for conflict in this region continues to arise from escalation sparked by spectacular acts of violence on Indian soil by individuals trained and based in Pakistan.

This scenario has confronted decision-makers on two prior occasions — the "Twin Peaks" crisis sparked by an attack on the Indian Parliament in 2001 followed by an attack on the dependents of troops deployed on the front lines in 2002, and after multiple attacks on iconic targets in Mumbai in 2008. On these occasions, spectacular acts of terrorism did not lead inexorably to war. Neither did a limited war, fought in the heights above Kargil in 1999, lead to uncontrolled escalation. In these three instances, national leaders acted responsibly, outsiders played constructive roles to defuse tensions, and escalatory pressures were deflated. This may hold true in the future, as well. But there can be no assurance of the absence of another triggering event. Nor can there be assurance that Indian and Pakistani leaders will react in the same way in the future as in the past. Indeed, there is good reason to assume that there will be another crisis-triggering event, whether relations between Pakistan and India remain poor or, perhaps more likely, if national leaders seek improved ties.

A great many in Pakistan see the wisdom of avoiding a repeat of the Twin Peaks crisis and the Mumbai attacks. After these crises subsided, India rebounded, while Pakistan's image and economy suffered deeply, and foreign direct investment dried up. It is, nonetheless, hard to translate this recognition into concerted actions against extremist groups. Pakistan's army is heavily engaged in fighting some of these groups along the Afghan border. Pakistan already suffers more internal violence than any other state not in the throes of a civil war, with the sole exception of Iraq. To take on extremist groups that carry out attacks against India would entail even tougher challenges for Pakistan's security forces and much higher potential casualties — not on the periphery of the state, but in its heartland. Pakistan's national leaders hope that extremist groups will turn away from violence and be reintegrated within their society. But hope is not a game plan for dealing with the perpetrators of violence directed against India — or, indeed, against Pakistan itself. As long as Pakistan's decision-makers are unable or unwilling to move against extremist groups, the potential for another crisis remains, along with the potential for uncontrolled escalation.

To complicate matters further, India's national leaders do not appear to have a game plan for trying to improve relations with Pakistan. If they do, very little effort is being expended toward this goal. Ambition has been displaced by ennui. Indian leaders have had good reason to conclude that Pakistan's political leaders do not have the power or inclination to make deals over Kashmir that reflect ground realities — a considerable distance away from campaign boilerplate. The Pakistan file in South Block is gathering dust — until it will be shaken off by a new Indian government or by foreseen but nonetheless jarring events.

Deterrence stability is not a given and does not automatically result from acquiring offsetting nuclear capabilities. Even when the United States and the Soviet Union acquired a triad of basing modes for nuclear weapon delivery vehicles on land, at sea and with aircraft, and even after Washington and Moscow each acquired and deployed more than 10,000 nuclear weapons, deterrence stability proved elusive. To the contrary, both superpowers felt more insecure as the other's capabilities and stockpiles grew. The more each adversary increased its nuclear-weapon-related capabilities, the less its force structure appeared to be for deterrence purposes and the more it appeared to be seeking advantage in nuclear war-fighting scenarios.

India and Pakistan are slowly climbing this familiar path, adding perhaps 10 warheads per year as they add delivery vehicles for their use, if deterrence fails.[1] India and Pakistan appear on course to each have a triad, large families of ballistic and cruise missiles, and, in the case of Pakistan (with perhaps India to follow), a declared requirement for short-range nuclear weapons for use at the forward edge of future battlefields. There were no official statements hinting at nuclear forces of current sizes, no mention of requirements for "tactical" nuclear weapons, no mention of expanded infrastructure to produce fissile material, and no hint of vetoing fissile material cutoff negotiations in the years immediately following the 1998 tests.

Some — but not all — of these developments might well have been anticipated, but others appear to have been generated by unforeseen developments, including the US-India civil nuclear agreement, changes in military doctrine following the Kargil war, particularly the Indian military's planning for shorter timelines to respond in limited ways to grievous injury, and the readjustment of requirements in an unfolding competition marked, as might be expected, by conservative estimates of adversarial intentions and production capabilities.

Leaders in both countries provide assurance that deterrence is becoming stronger and that they will be sensible stewards of their nuclear arsenals. They take strong exception to worst-case analyses by outsiders who have rarely set foot in South Asia (and by those who have visited frequently). These sensitivities are understandable, as those ringing alarm bells typically come from countries guilty of extreme nuclear excess. But behind prideful rebuttals lies reasonable doubt — doubt that all is not as safe and sound as advertised at home and abroad, that no system of nuclear deterrence is foolproof, and that much could go haywire on the Subcontinent.

As with the United States and the Soviet Union, Pakistan and India will encounter difficulty in finding deterrence stability — even at their current, modest level of ongoing competition. They could still, however, brake their nuclear competition in ways that eluded the United States and the Soviet Union. It is still possible, for example, for New Delhi and Rawalpindi to avoid placing multiple warheads atop their missiles. It is still possible to avoid missile defense deployments that will be militarily ineffective yet will ratchet up the adversary's targeting requirements. It is still possible to avoid the pursuit of greater accuracies to open the Pandora's box of counterforce targeting requirements for their medium- and intermediate-range missiles. And it is not too late to rethink the wisdom of requirements for tactical nuclear weapons.

Deterrence stability is far from assured on the Subcontinent and is likely to deteriorate if current trend lines continue. One reason is due to the triangular nature of the nuclear competition in which India and Pakistan are embedded with China. New Delhi wishes to focus on deterring China and does not wish to be linked to Pakistan in a nuclear competition. These distinctions have been blurred in the past because Pakistan has received nuclear-weapons-related assistance from China. It is extremely hard to establish deterrence stability — let alone maintain it — when states with unequal capabilities are enmeshed in a strategic competition, and when two of these states are strategic partners. The geometry of this nuclear triangle provides no sound basis for constructing deterrence stability.

Strategic stability is also hard to establish and maintain when bilateral diplomacy between India and Pakistan and between India and China has been moribund, marked by periodic high-level engagement without appreciable result. New Delhi would welcome nuclear risk-reduction accords with Beijing, but Chinese leaders have so far shown little enthusiasm to do so. Indian and Pakistani attempts to reach nuclear risk-reduction accords in the context of a composite dialogue process have been stymied by acts of violence that can be traced back to Pakistan. Neither country appears to view Nuclear Risk Reduction Measures as worthwhile in their own right; instead, they have been viewed as useful to deflect external pressures after serious crises or as bargaining levers for more important objectives in the absence of crises.

A common conceit, regardless of nationality, is that deterrence becomes stronger as nuclear capabilities grow. In reality, deterrence becomes less stable when nuclear weapons substitute for diplomacy. There is no basis for deterrence stability when diplomacy and nuclear risk reduction is moribund while nuclear capabilities are growing and military doctrines are evolving. Negotiating bilateral nuclear risk-reduction accords are hard enough; reaching triangular accords among states with differing power potential and military requirements is much harder. Bilateral nuclear risk-reduction accords between India and Pakistan have been infrequent. The last one — relating to notifications of nuclear accidents — was reached in 2007. Nothing tangible in this

realm has been accomplished since the 2008 Mumbai attacks. There have been no bilateral nuclear accords between Beijing and New Delhi.

Nuclear capabilities are growing at a steady pace while becoming more diversified by all three of the triangular competitors. All three have adopted changes in military doctrines to increase agility. India's military services seek to be able to respond more promptly to severe provocations that can be traced back to Pakistan. Pakistan's army also seeks to shorten its ability to move troops and equipment into blocking positions. And Chinese military forces seek to strengthen their abilities to deny access to offshore challengers. Nuclear dangers can only grow in South Asia when capabilities outpace doctrine, and when both capabilities and doctrine outpace diplomacy.

New Delhi and Islamabad have made many modest overtures signaling an interest in improving bilateral relations, such as the release of fishermen captured in contested waters, but little has come of them. Military-related Confidence-Building Measures (CBMs) and Nuclear Risk Reduction Measures (NRRMs) have been few and far between over the past 15 years. The governments of India and Pakistan assert that they have been responsible stewards of their nuclear arsenals, and they have taken steps to increase the security and command and control arrangements for their nuclear deterrents. However, their definition of responsible nuclear stewardship does not appear to include sustained, productive diplomatic engagement to reduce nuclear risks.

In contrast to their relaxed approach to NRRMs, Pakistan and India have together introduced 17 new nuclear-weapon-capable delivery systems since 1998 — or slightly more than one system per year. New families of cruise missiles are being readied for operational deployment, along with expanded families of ballistic missiles. Nuclear weapon delivery systems are moving out to sea. Differing cycles of missile development and flight-testing add to difficulties in stabilizing nuclear competition on the Subcontinent.[2] From 1998 to 2005, India added three new nuclear weapon delivery systems, while Pakistan tested six for the first time. Since 2006, India has introduced new missile systems at a more rapid pace than Pakistan: India has flight-tested six new nuclear-capable missile systems since 2006,[3] while Pakistan has flight-tested two — the Nasr and the Raad cruise missile. The most notable missile developments of late have been New Delhi's flight testing of an extended-range ballistic missile to deter China and Pakistan's stated requirement for short-range nuclear weapon delivery systems to deter India.[4] Pakistan's embrace of short-range nuclear weapon requirements is being pursued under the rubric of "full spectrum deterrence."[5]

Concurrently, military doctrines have evolved significantly. Since the 1999 Kargil War, Indian military exercises have focused on faster and more flexible force deployments for limited war without triggering the use of nuclear weapons. The Shoor Veer exercises in Rajasthan in April and May 2011 involved more than 300 combat vehicles and roughly 60,000 troops to practice an "integrated theatre battle concept."[6] Pakistan's military exercises, such as the Azm-e-Nau series, seek shorter timelines for blocking action.

Ineffectual diplomacy, coupled with rapid technological and doctrinal developments, has shortened the fuse for the possible use of nuclear weapons on the Subcontinent. Since 1998, potentially meaningful CBMs and NRRMs with a direct bearing on reducing the risk of military confrontations have been few and far between: the 1999 Lahore Memorandum of Understanding, the 2005 Agreement on Pre-Notification of Flight Testing of Ballistic Missiles, and the 2007 Agreement to Reduce Nuclear Risks — renewed in 2012 for a five-year term.

Before going public with their nuclear-weapon capabilities, India and Pakistan negotiated several important measures: a hotline between the prime ministers, used episodically and reaffirmed in May 1997; a hotline between the Directors General of Military Operations (DGMOs), first established following the 1971 War, re-established in December 1990, and reaffirmed in the 1999 Lahore Memorandum of Understanding; the 1991 Agreement on Advance Notice on Military Exercises, Manoeuvres and troop movements; and the 1991 Agreement on Prevention of Air Space Violations and for Permitting Over Flights and Landings by Military Aircraft. Pre-nuclear CBMs were typically agreed to following crises.

Existing CBMs and NRRMs have regrettably not served as a sufficient foundation for nuclear risk reduction. The DGMO hotline has been unreliable and sometimes not employed during periods of tension. The hotline between the prime ministers has not prevented or defused severe crises. War broke out on the heights above Kargil only two months after the Lahore Declaration. Joint statements calling for cooperation against terrorism have had little follow-through. Extremists based and trained in Pakistan carried out mass attacks in Mumbai one month after Prime Ministers Manmohan Singh and Yousuf Raza Gilani had termed terrorism a "common enemy."[7]

The timeline on the following page correlates nuclear competition and diplomatic cooperation between India and Pakistan since 1998. Serious crises with the potential to spark uncontrolled escalation are noted in this timeline, along with notable nuclear- or military-related CBMs and NRRMs and the initial flight tests of missile systems.

The timeline suggests the following conclusions, which are reflected in the essays of this volume:

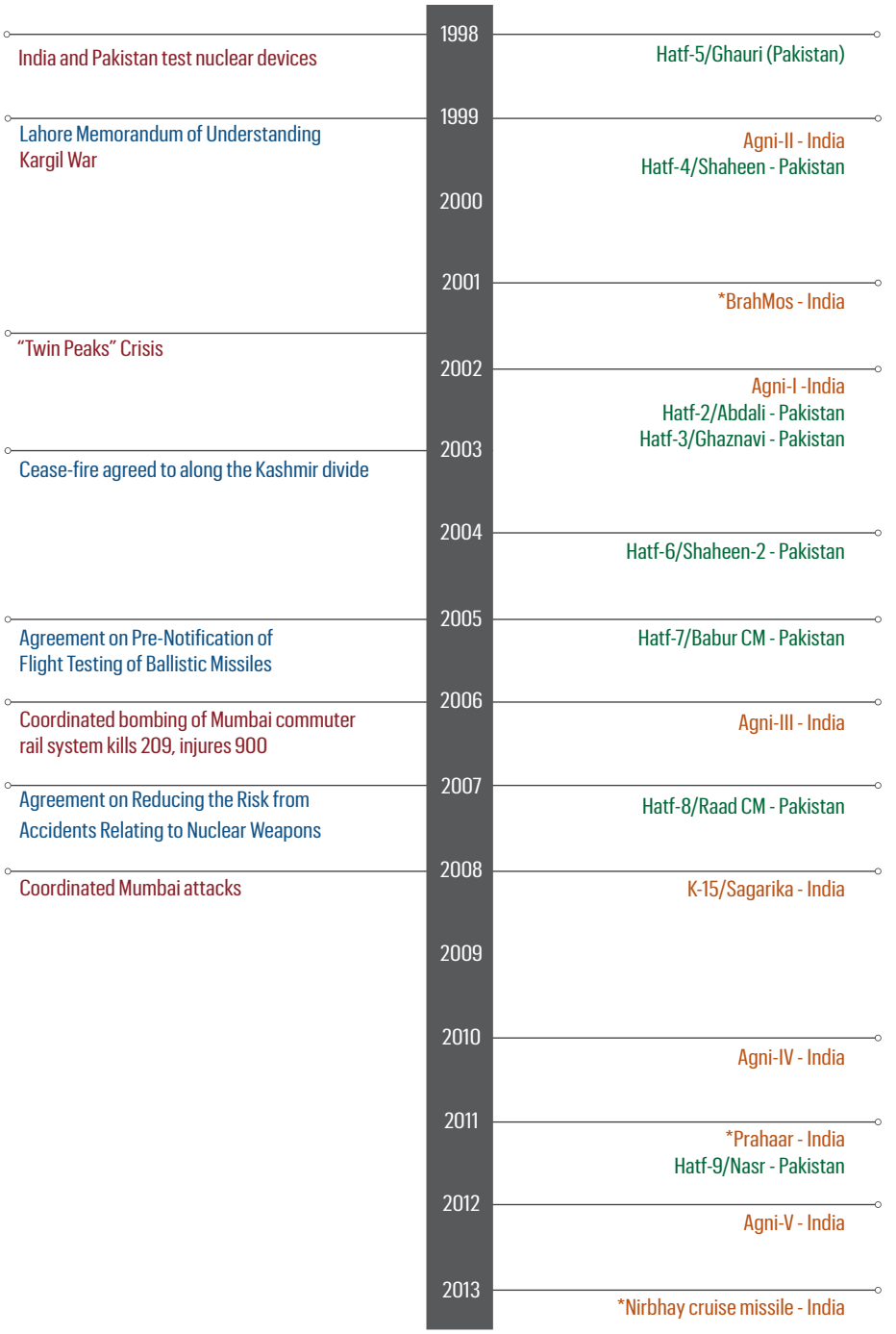
- Military capabilities and doctrine have far outpaced nuclear risk reduction diplomacy in the 15 years since India and Pakistan tested nuclear devices in 1998. New Delhi and Islamabad have made numerous overtures signalling an interest in improving bilateral relations, including declaratory statements and trade initiatives, prisoner exchanges and the release of fishermen, but these gestures have not led to meaningful steps and have had little impact.

- The few CBMs and NRRMs that have been reached since 1998 have not begun to serve as a stabilizing offset to technological and doctrinal developments. No other states possessing nuclear weapons have flight-tested nearly as many types of nuclear weapon delivery systems since 1998 as Pakistan and India. Nuclear risk reduction agreements appear paltry by comparison.

- The few CBMs and NRRMs that have been finalized since 1998 have not served to dampen the impact of spoilers, who have been able to short-circuit efforts to normalize ties between India and Pakistan. In certain cases, CBMs and NRRMs may have actually incentivized spoilers to stop further steps toward normalization.

- Differing cycles and priorities of missile development and flight-testing have exacerbated the challenges of deterrence stability on the Subcontinent. It will require exceptional, sustained efforts by Indian and Pakistani leaders to stabilize their nuclear competition.

Nuclear Competition and Diplomatic Cooperation Between India and Pakistan Since 1998



KEY

- Crises in South Asia
- Notable military-related CBMs & NRRMs
- Initial flight test of Indian nuclear-capable missile systems

* Unclear whether will be nuclear armed

- Initial flight test of Pakistani nuclear-capable missile systems

It is not unusual for military capabilities and doctrine to outpace diplomacy; this was certainly the case in a far more intensified way between the United States and the Soviet Union. But Washington and Moscow benefited from geography and geometry in ways that the competitors in South Asia will always lack. It helped greatly that the heartlands of the United States and Soviet Union were so distant from each other. After close calls in Cuba and Berlin, both superpowers tacitly agreed not to play with fire in each other's backyard. Restraint was codified in multilateral negotiations that reaffirmed the status quo in Europe and established limits to conventional capabilities within this theater.

In stark contrast, geography has not been a stabilizing factor on the Subcontinent, as is evident by wars fought over the status of Kashmir and what used to be called East Pakistan, now Bangladesh. Another war was fought over a contested border between India and China. Pakistan has backed subconventional warfare in Kashmir, just as India supported disaffected Muslims in East Pakistan prior to the 1971 war. Unresolved border disputes and local grievances lend themselves to keeping neighbors "on the backfoot."A "foreign hand" is often seen in militant acts, sometimes with good reason. Indian and Chinese patrols periodically call attention to their unsettled border. Pakistan, India and China do not have the luxury of distant adversaries. They are the only nuclear-armed neighbors beset with border disputes. There have been no concerted diplomatic efforts to resolve these disputes, even though the outlines of prospective settlements are well understood.

The geometry of a triangular nuclear competition is inherently more unstable than a bipolar competition. Tripartite conventional force limitations are implausible. A two-way competition is more amenable to stabilization measures, as long as the adversaries have a rough symmetry in overall nuclear capabilities. Consequently, the bipolar Cold War competition lent itself, with great diplomatic effort, to the negotiation of treaties that eventually served to slow a strategic competition fueled by rational calculation that reached senseless proportions. Later, under unusual and unexpected circumstances marked by the sudden demise of one competitor, strategic arms reduction treaties were grasped to codify a reversal of the arms race in a safe manner. Yet another treaty, which remained in force for three decades, banned nationwide missile defenses, removing one driver of rising targeting requirements.

These treaties did not, despite their valuable contributions, provide for deterrence stability and escalation control. One reason for failure was because mistrust was so great that treaties were accompanied by hedging strategies that, in turn, required even greater efforts to stabilize the competition. Deterrence stability eluded the United States and the Soviet Union because of their interactive strategic modernization programs. Protagonist and antagonist alike viewed the ratcheting up of nuclear capabilities as a necessary signal of resolve, and as effort to prevent being placed at a disadvantage in crises or a breakdown of deterrence. These signals were received otherwise — as the pursuit of advantage and a rejection of sufficiency.

The more force structure was diversified and filled out, the more nuclear capabilities seemed suited for war-fighting rather than deterrence. Once stockpiles grew to dizzying levels, possible devastation became too immense to fit within a construct of deterrence stability. Similarly, once nuclear capabilities became greatly diversified and widely dispersed, command and control became too complicated to ensure escalation control. Under these conditions, the essence of deterrence stability and escalation control crystallized into the avoidance of the first mushroom cloud. Beyond this, the fate

of planetary health and humankind was left to chance, or rather to the human frailties of leaders placed under unfathomable pressures, operating on the basis of insufficient and unreliable information.

Well before massive nuclear arsenals are accumulated, deterrence stability and escalation control proceed unevenly, not in a straight line. Deterrence stability and escalation control are weakest at the outset of a nuclear competition, where decisive advantage might be perceived by preemptive attack and when safety and security measures as well as command and control arrangements for nascent nuclear arsenals are being developed. Stability and escalation control improve somewhat as nuclear competitors acquire tens of nuclear weapons, work out the modalities of mobile basing modes for medium- and intermediate-range delivery systems, improve safety and security mechanisms, and develop more mature command and control arrangements. Then, deterrence stability and escalation control deteriorate as competing arsenals grow to three digits and as basing modes diversify further — especially if shorter-range delivery vehicles are introduced. Pakistan and India are approaching this juncture.

Nuclear dangers are inherent in the Bomb; they grow as a nuclear competition heats up. Even the demise of a competitor does not necessarily reduce, let alone eliminate, nuclear dangers, as was evident when the Soviet Union imploded. Instead, nuclear dangers present themselves in new ways, requiring creative responses in the form of cooperative threat reduction programs. Even the terminology of cooperative threat reduction raises hackles in South Asia, as it suggests (to some ears) denuclearization. Since no one will forcibly denuclearize the Subcontinent, improved deterrence stability and escalation control will need to be found, if at all, by the competitors themselves, not by outsiders.

As noted above, arms control and reduction treaties are most unlikely in a triangular geometry, or in any of the triangle's two sides. India, Pakistan and China might therefore be spared the "bargaining chips" and "safeguards" that accompanied the superpower arms race. On the other hand, absent the prospect of treaties, if mutual or trilateral restraint can be found, it will have to be tacitly agreed to. The key areas of restraint, as enumerated above, related to counterforce capabilities, multiple warheads atop missiles, ballistic missile defenses and short-range nuclear weapon delivery vehicles.

Confidence-Building and Nuclear Risk Reduction Measures can be employed to help with deterrence stability and escalation control — especially reliable channels of communication in crises. These measures take on added value precisely because arms control treaties and border settlements appear remote. The most desirable off-ramp to increased nuclear dangers is to secure normal relations with a nuclear-armed neighbor. This pursuit would require leadership that has been absent or transient in South Asia: there has been an acute shortage of leaders strong enough to pursue normal relations in the face of violent acts designed to disrupt progress.

This collection of essays provides analysis and ideas for deterrence stability and escalation control on the Subcontinent. In "The Non-unitary Model and Deterrence Stability in South Asia," George Perkovich focuses on violent extremist groups who engage in subconventional warfare that can provoke crises that could escalate to conventional and perhaps nuclear war. This situation is unique in terms of nuclear deterrence. He assesses the escalatory threat posed by these groups as more likely than the threat of nuclear terrorism. He proposes that Washington pursue nuclear engagement in the region through a framework of deterrence stability, as India and Pakistan would be "more inclined to

engage in dialogue and Confidence-Building Measures ... than they are when the agenda seems to reflect other US priorities, such as countering nuclear terrorism or strengthening the nuclear nonproliferation regime."[8]

In "Pakistan's Nuclear Strategy and Deterrence Stability," Michael Krepon argues that it will be hard to dampen the growth of Pakistan's considerable nuclear arsenal because a small circle of military officers determine Pakistan's stockpile and targeting requirements, and because most Pakistanis view their nation's nuclear weapons program as a success story. Acknowledging that the particulars of Rawalpindi's targeting objectives are closely held, the author offers the speculative conclusion that Pakistan's requirements for nuclear weapons reflect a mix of low-, medium- and high-end options, ranging from the demonstrative use of a weapon to tactical or catalytic use. Krepon argues the safest route to reducing nuclear dangers remains patient, persistent, top-down efforts to normalize relations between Pakistan and India. Success in this pursuit is dependent on the recognition by Pakistan's military leaders that they possess a sufficient arsenal to secure their deterrence objectives, that their current path does not strengthen or stabilize deterrence, and that Indian leaders seek a properly functioning Pakistan more than a submissive one.

David Smith's essay, "The US Experience with Tactical Nuclear Weapons: Lessons for South Asia," examines the implications for nuclear stability in South Asia of Pakistan's current approach to short-range delivery systems. Drawing from the US-Soviet historical model, Smith predicts three unsettling developments on the Subcontinent should Pakistan continue on this path: (1) new systems development and acquisition will precede development of doctrines concerning their employment; (2) India will match, if not exceed, whatever numbers of weapons Pakistan eventually builds; and (3) for both sides, fissile material production capacity, and not the number perceived to be needed for deterrence, may be the only limit on stockpile size. Smith concludes that tactical nuclear weapons will add little to deterrence; will complicate safety and security; will invite pre-emption; will complicate command, control and communications; and will be expensive.

The essay by Christopher Clary and Vipin Narang, "Doctrine, Capabilities, and (In) stability in South Asia," contends that there is a disjuncture between military capabilities and political ends in both India and Pakistan. Rapid military modernization and doctrinal innovation, disagreements about the nature of nuclear deterrence and escalation risks, dysfunctional civil-military relations, and the autonomy of nuclear enclaves have contributed to an environment where military capabilities have outpaced military doctrine. Clary and Narang suggest three military developments in South Asia that have the most potential to weaken deterrence stability: Indian conventional doctrinal innovation, the resultant Pakistani interest in battlefield nuclear weapons, and the development of long-range, precision strike technologies. Insufficient attention to the strategic implications of developments in both capabilities and doctrine has contributed to a more dangerous strategic environment in South Asia.

Neil Joeck's essay, "Prospects for Limited War and Nuclear Use in South Asia," explores the nature of limited nuclear war and how it could be affected by the Indian military's adoption of a more proactive, modified conventional military doctrine. Joeck states that India and Pakistan are still working to determine their own rules of the nuclear road and argues that limited nuclear use need not necessarily lead to unlimited, catalytic nuclear war. He contends that thinking through the possibility and logic of limited nuclear war "may prompt India and Pakistan to

consider the limits of strategy in a nuclear environment and whether renewed arms restraint negotiations would help to ensure that, if war occurs, it does not lead to uncontrolled nuclear exchanges."[9]

Dinshaw Mistry's essay, "Missile Proliferation and Deterrence Stability in South Asia," argues that, while both India and Pakistan aspire to missile forces that can provide survivable second-strike forces and thereby increase the credibility of their nuclear deterrent, the resultant proliferation of missile types in South Asia has weakened deterrence stability. He offers a detailed review of both countries' missile programs and an assessment of their respective command and control mechanisms. Mistry concludes that while land-based, medium-range missiles helped stabilize mutual deterrence in South Asia, the pursuit of other nuclear-capable systems, including short-range and very-short-range ballistic missiles, sea-based missiles and new families of cruise missiles, is hindering deterrence stability. He describes these systems as being more vulnerable to attack, weakening command and control arrangements, raising nuclear ambiguity issues, and making escalation control more difficult.

Christopher Clary's essay, "Deterrence Stability and the Conventional Balance of Forces in South Asia," challenges the conventional wisdom of the military imbalance in South Asia, arguing that the current degree of Indian conventional superiority in the sea, air and land domains has been overstated. Instead, in the near term, Pakistan has the potential to deny India conventional victory "on the cheap." Clary assesses that growing conventional asymmetries will, however, increase Pakistan's reliance on nuclear deterrence and limit Washington's ability to manage risk in South Asia. He concludes that India's near-term military options against Pakistan are risky in that India's ability to keep a conflict limited and below the nuclear threshold is in doubt because India's conventional military advantage is not as decisive as is often assumed. Clary suggests that Washington substantially decrease certain conventional military aid to Pakistan and selectively reduce certain destabilizing defense technology transfers to India.

Feroz Khan's essay proposes a "Strategic Restraint Regime 2.0." He notes that in order to create a realistic and sustainable strategic restraint regime, earlier proposals, particularly that of Pakistan after the 1998 nuclear tests, need to be re-examined and revised. Khan states that a "new triangle of economic progress and nuclear and conventional restraint" is the best way forward to creating a new dialogue framework.[10] Khan outlines challenges posed by a competitive regional environment that fuels strategic anxieties, a nonassured security framework due to different prioritizations of security concerns, and strategic modernization programs in both India and Pakistan. He concludes that continued diplomacy and economic liberalization can help develop new constituencies in India and Pakistan that are committed to a strategic restraint agreement.

Zachary Davis' essay, "The Yin and Yang of Strategic Transparency: Tools to Improve Nuclear Stability and Deterrence in South Asia," addresses the benefits and potential drawbacks to transparency measures for deterrence stability and escalation control in South Asia. Noting that excessive transparency clarifies inequality that can, in turn, exacerbate competition, Davis argues that what is needed most is transparency that clarifies assessments for the development and employment of nuclear weapons. He highlights ways that leaders in South Asia could make selected displays of limited transparency — or translucency — including properly functioning military hotlines, the establishment of Nuclear Risk Reduction Centers, the opening of communication

channels for the management of incidents at sea, the establishment of nondeployment zones, the mutual retirement of obsolete nuclear-capable missile systems, and a cooperatively monitored climb-down from the Siachen Glacier.

The last essay in this compilation, "Beyond Incrementalism: Rethinking Approaches to CBMs and Stability in South Asia" by Toby Dalton, explores strategies to pursue peace and stability in South Asia. While incremental steps, intended to foster confidence in small bites, have neither produced stability nor been a "catalyst for change," there appears no viable alternative approach. The essay makes the case for a supplementary approach, based on a mix of incremental steps and bold, symbolic acts, to generate a trajectory characterized by sustained stability, rather than the current cycle of crisis, momentary progress, then stasis.

Notes

1. Karen DeYoung, "New Estimates Put Pakistan's Nuclear Arsenal at More Than 100," The *Washington Post*, Jan. 31, 2011, http://www.washingtonpost.com/wp-dyn/content/article/2011/01/30/AR2011013004136.html.

2. For an extended discussion on missile flight testing in South Asia since 1998, see: Toby Dalton and Jaclyn Tandler, "Understanding the Arms 'Race' in South Asia," (Washington: Carnegie Endowment, September 2012). Available at http://carnegieendowment.org/files/south_asia_arms_race.pdf.

3. It remains unclear whether New Delhi will choose to place nuclear warheads atop the Prahaar and Nirbhay missiles. See Dinshaw Mistry, "Missile Proliferation and Deterrence Stability in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

4. See Ibid., and David O. Smith, "The US Experience with Tactical Nuclear Weapons: Lessons for South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

5. Inter Services Public Relations, "Press Release," No. PR179/2013-ISPR, Nov. 5, 2013. Available at http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2013/11/5.

6. Government of India, "Achievements of Ministry of Defence during the Year 2012," Dec. 18, 2012. http://pib.nic.in/newsite/erelease.aspx?relid=90913.

7. For more on spoilers, see Nathan Cohn, "Appendix II: Spoilers, Mass-Casualty Attacks, and the Disruption of Hopeful India-Pakistan Diplomacy," in *Crises in South Asia: Trends and Potential Consquences* (Washington: Stimson Center, September 2011), 55-61.

8. George Perkovich, "The Nonunitary Model and Deterrence Stability in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013), 21.

9. Neil Joeck, "Prospects for Limited War and Nuclear Use in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013), 109.

10. Feroz Hasan Khan, "Strategic Restraint Regime 2.0," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013), 167.

The Non-unitary Model and Deterrence Stability in South Asia

George Perkovich

Pakistan and India compete sharply in Kashmir and, now, in Afghanistan.[1] Each believes with varying intensity and evidence that the other projects agents of violence to subvert its domestic order. India cites the terrorist attacks on Mumbai in 2008 and on the Lok Sabha in New Delhi in 2001; Pakistan alleges that India abets the insurgency in Balochistan. These causes of insecurity stimulate conventional military preparations and an unregulated buildup of fissile material stockpiles, nuclear weapons and delivery vehicles.

In this environment, the objective of strengthening deterrence stability is highly advisable. The ideal goal of inducing these states to abandon their nuclear arsenals and join the Nonproliferation Treaty (NPT) as non-nuclear-weapon states is impractical, even if the US and others cannot publicly abandon it due to global considerations. The priority now should be preventing war between India and Pakistan, which could too easily escalate to nuclear exchanges. Indeed, deterrence stability is a better framework for conceptualizing and redressing the nuclear challenge in South Asia than is focusing on preventing "loose nukes" and nuclear terrorism. The threat of India-Pakistan war is more immediate than that of nuclear terrorism. In any case, deterrence stability would reduce the risks of terrorists acquiring nuclear weapons. Moreover, India and Pakistan would be more inclined to engage in dialogue and Confidence-Building Measures framed around deterrence stability than they are when the agenda seems to reflect other US priorities such as countering nuclear terrorism or strengthening the nuclear nonproliferation regime.

Theories of nuclear deterrence rely on the assumption that nuclear competitors are "unitary rational actors." Bruce Bueno de Mesquita and William H. Riker concisely express this assumption: "national decisions of such magnitude as acquiring a nuclear capability or using such a capability in a war are made by a single, dominant leader who is an expected utility maximizer."[2] Among other things, this assumption extrapolates to the nuclear domain the key feature of a modern state as defined by Max Weber, that a state exercises a monopoly on the legitimate use of force in and from its territory.

To the extent that analysts and policymakers have worried in recent years about instances when the unitary rational actor model might not obtain, they have tended to focus on the problem of irrationality. Terrorists are presumed to be undeterrable because they do not conform to the prevalent model of rationality. States led by mad men, religious zealots or neo-Hitlerites also are deemed to violate the model. More broadly, as Lawrence Freedman has noted, the unitary rational actor model does not account for "a whole range of psychological and sociological factors — such as mental quirks, lack of awareness, domestic political pressures, value-conflicts or sheer errors of judgment."[3] As will be discussed below, irrationality is a real problem, and it may not be limited to terrorists and militant states, as historical examples from the Cold War suggest. But the greater problem may relate to the first adjective in the "unitary rational actor" model: unitariness. Social scientists have observed, of course, that com-

plex systems such as states are often riven by competing organizations, interest groups and personalities. The internal dynamics within "normal" states render the unitary rational actor model an ideal type rather than a descriptive reality. Nevertheless, when it comes to functions as portentous and centrally controlled as initiating and managing warfare between nuclear-armed states, it is generally assumed that a tight, coherent line of authority operates approximately in ways consistent with the unitary model. If a state is not functioning as a unitary actor, or claims not to be when it is convenient, or is not perceived to be by those who seek to deter it, the implications for deterrence stability are profound.

When India is attacked by actors emanating from Pakistan and with ties to Pakistani intelligence services, it naturally infers that such actions represent the intentions and policies of Pakistani authorities. The projection of violence from Pakistan into India means that deterrence (through non-nuclear means as well as nuclear) has failed to prevent aggression. The task then remains for India to threaten or undertake punishment to compel Pakistan to redress the offense and to deter Pakistan from repeating it and from escalating the conflict.[4] If Pakistan does not redress the original instigation of violence — for example, by genuinely seeking to detain and prosecute the perpetrators — pressure mounts for India to demonstrate through force that it will not be deterred from escalating the conflict in self-defense. But this intertwined process of deterrence and compellence is dangerously complicated by uncertainties over the unitariness of Pakistani authority that arises when terrorism or subconventional aggression occur.

For example, while India could perceive that the terrorist attacks it attributes to Pakistan signal Pakistani aggressiveness, Pakistani leaders (and the public) could perceive the initial terrorist attacks as a reflection that the Pakistani state is merely unable to stop aggrieved citizens from compelling India to make political accommodations, in Kashmir or more broadly. Indian leaders then face a highly unstable dilemma. They could act as if the initial violence reflects the intentions of Pakistan's chain of command and send countervailing signals of retaliatory action according to normal models of deterrence, in which greater credibility and righteousness tend to reside with the defender.[5] But if Pakistani leaders believe or claim that the perpetrators were not carrying out state policies, and India does escalate, Pakistani leaders will feel that India is the aggressor, significantly changing the dynamics of crisis and deterrence stability. "Normal" models of deterrence do not hold in such a situation.

This paper explores the challenge of deterrence stability in the face of real or perceived disunity in the chain of command between top Pakistani authorities and actors who may commit violence against India (or others) of a scale that could lead to interstate war with potential to escalate to potential use of nuclear weapons. In other words, the paper assumes the integrity of the official chain of command from the civilian prime minister down through the military and focuses on the destabilizing effects of non-state actors who project violence into India that Pakistani leaders deny having authorized.[6] It concludes by suggesting policy approaches that the US and other states might consider toward Pakistan to redress this set of problems.

Advantages of the Deterrence Stability Frame

Since September 11, 2001, the US government has placed top priority on preventing Pakistan from being a source of nuclear terrorism. The fact that al-Qaida and other

extremely violent terrorist organizations trained and operated from Pakistan, and that the most notorious leader of Pakistan's nuclear weapon program, A.Q. Khan, had sold nuclear weapons know-how and fissile material production capabilities to North Korea, Iran and Libya (and perhaps others), made Pakistan the clearest focus of concern over nuclear terrorism. The priority of preventing Pakistan from being a source of nuclear terrorism soon became reflected even in congressional debates over providing civilian development aid to Pakistan.

This emphasis on nuclear dangers that Pakistan may pose to the US is natural and perhaps unavoidable. Nevertheless, it also may be counterproductive. It reinforces a Pakistani narrative that the US does not care about Pakistan or Pakistanis but is only interested in Pakistan as a battleground for efforts to counter terrorist threats to the US. The perception that the US only cares about nuclear risks to itself, and not the well-being of Pakistanis, is joined with the perception that the US favors India, and has demonstrated the capability and will to stealthily enter Pakistani territory and carry out daring military operations. Added up, these perceptions make the Pakistani military and media-consuming public feel that the greatest threat to *them* is a potential US effort to steal or neutralize their nuclear weapons (perhaps in cooperation with India and Israel). Public opinion polls in Pakistan now rank the US as a greater threat than India.

To be sure, the stewards of Pakistan's nuclear arsenal in the Army's Strategic Plans Division at the Joint Staff Headquarters, along with other high-level Pakistani policymakers, also worry about the security of their nuclear arsenal from insiders and/or antigovernment groups. They tend to express these concerns privately, however. Their greater and more public priority is to prevent the US and India from knowing enough about the locations and security of this arsenal to be able to target it. This interest can have a benign or even positive effect: some measures the Pakistani military takes to hide and secure the nuclear arsenal from the US are also useful to prevent unauthorized elements within Pakistan from gaining control of fissile materials or weapons. On the other hand, measures to disperse nuclear assets and to prepare for their rapid mobilization in a crisis can make fissile materials and weapons more susceptible to theft or unauthorized use.

When assessing problems and possible solutions, it is useful to ask what the motivations and capabilities are of the relevant individuals and agencies in the state of concern, in this case Pakistan. Nuclear weapons are Pakistan's crown jewels, the ultimate guarantor of national sovereignty in the view of Pakistani security professionals. The military's control over the nuclear arsenal also serves its parochial interest of being able to negotiate terms of a future evolution to genuinely civilian-led democracy: the civilians who are nominally at the apex of Pakistan's National Command Authority would not be able to gain effective command and control over this arsenal without the military's willing cooperation. (According to the National Command Authority Ordinance of 2007, promulgated by then-President, and General, Pervez Musharraf, the president is the chairman, and the prime minister the vice chairman, of the Authority. In 2009, President Zardari ceded the chairmanship to the prime minister, a position that has not been held by military leaders in the past. The chiefs of the military services and the director general of the Strategic Plans Division are also members of the Authority. Given the historic role of the Army leadership in Pakistan, some wonder whether, in a severe crisis, military leaders would follow civilian orders with which they disagreed.)

In terms of capabilities, nuclear security can always be improved everywhere. It is impossible for outsiders to know what the shortcomings are in the Strategic Plans Division's effectiveness. Still, combining the military's security capabilities with its clear motive to maintain control over the nuclear arsenal leads to the conclusion that the security of this arsenal is not the most pressing problem that needs to be redressed in Pakistan. To put it another way, the general level of violence, insurrection and political instability in Pakistan poses the greater long-run threats to the security of Pakistan's nuclear arsenal, either from insiders or outsiders, than do specific nuclear security practices of the Pakistani security establishment. Focusing, as many US officials and commentators do, on the presumed insecurity of Pakistan's nuclear assets distracts attention and effort from the more fundamental objective of redressing militancy and disorder within Pakistan.

The most immediate nuclear risk is that a major terrorist attack on India could instigate war that could then escalate to nuclear use. Deterrence stability requires control over the nuclear arsenal *and* prevention of conflict that can escalate — perhaps unintentionally — to major war between India and Pakistan. These two objectives are related, of course. Some of the same groups that threaten Pakistan's internal security also are most likely to instigate conflict with India. And preventing India-Pakistan nuclear crisis and unintended escalation is related to the objective of securing the arsenal from unauthorized actors: if and when Pakistan were to deploy nuclear weapons for possible use in conflict, these weapons would become most vulnerable to unauthorized use, theft or accident.

Prioritizing prevention of India-Pakistan conflict and augmenting deterrence stability has several implications. It invites a US discourse that is less about saving American lives and more about preventing massive Pakistani casualties. It acknowledges the India-Pakistan dynamic, which is important to the Pakistani security establishment. The India-Pakistan context points to the need to address the causes of conflict, including Kashmir and Afghanistan. The deterrence stability narrative also does not question the effectiveness of the Strategic Plans Division's efforts to secure Pakistan's nuclear deterrent. Rather, it focuses more on the Inter-Services Intelligence's (ISI's) need to stop cultivating and tolerating actors whom they perceive to be useful in bleeding India and protecting Islamabad's interests in Afghanistan, but are increasingly seen as a threat to the unity of Pakistan itself. Concerted efforts to regain the state's monopoly on the legitimate use of force would not only enhance Pakistan's overall future as a modern sovereign state; they also would reinforce deterrence stability.

Highlighting the need to prevent India-Pakistan conflict and stabilize deterrence between the two countries acknowledges that Pakistan like India possesses a nuclear deterrent and that the US is not seeking to eliminate it, but rather to encourage the two states to manage it stably.[7] The potential political-psychological value of this reframing could be significant. It would replace the two counterproductive frames that have shaped US policy, and Pakistanis' perceptions of it: first, that Pakistan (and India) should abandon their nuclear weapon programs and join the NPT, and second, and more recently, that Pakistan poses a grave risk of nuclear weapons getting into the hands of terrorists, and that US policy should concentrate on preventing that from happening perhaps by stealing Pakistan's nuclear weapons.

Another advantage of this frame is that the US can seek to promote India-Pakistan deterrence stability without reference to the future of the US in Afghanistan and without pressing the Pakistani Army to fight the Haqqani network or conduct military

operations in the Federally Administered Tribal Areas (FATA). Whatever happens in Afghanistan or vis-à-vis the Haqqani network, if Washington prioritizes the stabilization of India-Pakistan deterrence and the rolling up of actors that could instigate India-Pakistan conflict, it would signal an abiding interest in staying constructively involved in the region. The character of this involvement would be much less militaristic and therefore less threatening to Pakistanis than has been the case in recent years when the US was seen to concentrate on military operations to achieve its objectives in Afghanistan and perhaps to steal Pakistan's nuclear assets to prevent anti-American terrorism.

Deterrence Stability and the Unitary Rational Actor Model

If the US (and anyone else) is to prioritize stabilization of deterrence between India and Pakistan, it will have to confront directly the challenges to the unitary rational actor model on which established theories and policies of deterrence rest.

Deterrence depends on nuclear-armed states approximating unitary rational actors. Indeed, as noted above, the unity of command and authority over action emanating from a state assumed by this model extends to the nuclear domain the classic definition of a modern state as the entity that enjoys the monopoly on the legitimate use of force within a given territory.[8] This means that the highest authority of the state must be able to communicate and act on its intentions through a chain of command, so that the state that is to be deterred knows that the signals it is receiving are intended by the signaling state. The sending of deterrent threats and the management of potential crisis escalation, war and war termination depend on the linear connection between instruments of violence and the state authorities that order them.

The classical texts on nuclear deterrence, including those that welcome the stabilizing effects of gradual proliferation, treat states as the unit of account and assume that state decisions and actions are made by unitary authorities who rationally maximize values. The passage quoted earlier from Bueno de Mesquita and Riker is emblematic; Kenneth Waltz has echoed it in his writings on the stabilizing effects of gradual nuclear proliferation. For example, Waltz argues that "states are not likely to run major risks for minor gains" and that "nuclear weapons make military miscalculation difficult and politically pertinent prediction easy."[9] The same cannot be said for jihadis, irregular forces or terrorists who act under varying degrees of control by high state authorities.

The rationality requirement in deterrence is obviously challenged if and when terrorists, nihilists or ecstatically violent actors are the opponent. A core assumption of rationality in nuclear deterrence is that actors seek self-preservation. Terrorists do not generally fit this model, nor do state leaders who are unwilling or unable to control terrorists or who are willing to "bring down their own house" if in the process they can destroy their enemies.

To be sure, even the classical model of rationality in nuclear deterrence is more problematic than commonly recognized. Under the classical model of nuclear deterrence, leaders of a "rational" state make threats to initiate the use of nuclear war even if this is likely to trigger retaliation that can destroy them. The potential of mutual suicide is posited.[10] Indeed, it is precisely the suicidal implication of "going nuclear" and the presumed rational imperative of self-preservation that creates the mutual deterrent effect. That is, each competitor acts as if it is willing to risk suicide, but the combination or interaction of these threats leads to a stable standoff and aversion to war that removes

the "need" for them actually to carry out the threat. Nevertheless, if there were not a willingness to risk actually engaging in suicide, the deterrent effect would be attenuated or lost. Deterrence depends on the risk of its failure, that is, that the other side may initiate armed attack, and nuclear weapons will then be used, perhaps in mutually devastating exchanges. Whether it is rational to run this risk can be debated, but states that engage in nuclear deterrence owe it to their citizens and the world community to exert the greatest possible efforts to manage their own affairs and their external relations in ways that minimize the probabilities of armed conflict and its escalation to nuclear use. Indeed, this is a norm that internal and international politics seek to hold states responsible for fulfilling.

Carrying the discussion of rationality further, the willingness to risk a breakdown in nuclear deterrence would only be rational if the threat that is being countered or deterred is of an existential scale. To risk suicide to redress a threat that is not itself mortal would be irrational, because if escalation to nuclear exchanges resulted, it would leave the state taking this risk worse off than it would be if it did not trigger such a nuclear exchange.[11] Retaliatory (as distinct from initial) nuclear use would be less irrational insofar as the initiator of nuclear use already would have demonstrated that the existence of the attacked state was unmistakably in jeopardy. Then the dilemma would be whether to forbear from retaliation in order to keep the level of destruction from being total, or to retaliate in order to demonstrate one's own credibility and retain leverage for war termination.

Irrationality cannot be excluded from a state conforming to the unitary actor model, but irrationality is much more probable in a non-unitary state. Rationality aside, disunity produces dangerous confusion and ambiguity that interfere in the management of deterrence. Who is sending signals through violence that is perceived to be emanating from the state and/or its territory? What is being signaled? To whom does the victim of aggression address countersignals and actions? How does one calculate the interests of the attacker if the putative leaders of the state are not the authors of the perpetrated violence, or are pretending not to be? If states and their leaders are presumed to be rational and to highly value the preservation of their state, but disunity exists, and other actors who may not place a high value on preservation of the state are conducting aggression and may be able to gain control over nuclear assets, how does one manage deterrence and escalation processes in such a situation? In this latter scenario, disunity erodes the rationality on which deterrence is predicated.

The outcomes of confusion prompted by violence whose authorization is ambiguous could be either stabilizing or destabilizing. If, for example, authorities in India believe that authority in Pakistan is splintered, New Delhi may choose to refrain from counterattack, which could reinforce stability and escalation control. Or they could respond with force, risking unintended escalation. However, because leaders of adversarial states must put any immediate conflict in the context of longer term relations, they must think how their action or inaction today could raise or lower the risk of inviting more violence from the adversary in the future. Thus, forbearing counterattack in one crisis can be seen to weaken deterrence of future violence. With each additional crisis that is not met with counterattack, the pressure mounts to act more forcefully the next time in order to restore deterrence.

The Pakistan Case: Perceived or Real Disunity

Pakistan illustrates the unity problem for rationality more acutely than any other nuclear-armed state. Early in its history, Pakistan's military leadership saw the potential value in mobilizing "irregular" forces to augment the regular Army in pursuing the state's objectives vis-à-vis India. These objectives most famously have included wresting the Kashmir Valley from Indian control and/or raising the costs of India's ongoing occupation of the Valley and diverting Indian forces to the occupation. In the 1947 war initiated by Pakistan, authorities falsely claimed that the violence was perpetrated by irregulars outside of state control. In 1971, the Pakistan Army mobilized proxy forces in East Pakistan to combat the Bengali separatist insurgency, which was backed by India.[12] These proxies, who were mostly Urdu-speaking Biharis and activists from the Jamaat-e-Islami party, massacred large numbers of Bengalis. In the 1980s, Pakistan and the United States (with help from Saudi Arabia and others) famously mobilized irregular "freedom fighters" to drive the Soviet Army from Afghanistan. After that successful mission, the Pakistani military and intelligence services shifted these forces to Kashmir, exploiting the opening created by India's rigging of state elections there in 1989. Pakistan nurtured and abetted the growth of jihadi organizations to carry on the struggle with India. Over time, these groups proliferated. There is room to debate the degree to which Pakistani authorities controlled the growth and operations of these groups, but through the present era, Pakistani authorities have not stifled them decisively.

The United States and the Soviet Union during the Cold War used proxies in violent struggles in the Third World, but, importantly, did not extend violence directly into each other's homeland. There are several reasons for this, but one was recognition that attacks in the Soviet or US homeland could escalate to nuclear war. To preserve nuclear deterrence and avoid nuclear war, the two antagonists eschewed the projection of violence into each other's territory. This does not imply that the US or the Soviet Union was acting from virtue; their proxy wars killed many more people than would have been killed if they had held back. Rather, the point is that the projection of violent actors by Pakistan into India or vice versa poses unprecedented risks of deterrence instability.

On Oct. 1, 2001, terrorists rammed a truck filled with explosives into the gate of the Jammu and Kashmir legislative assembly complex in Srinagar, killing 38 people. The Pakistani-based militant group, Jaish-e-Mohammad, at first claimed responsibility for this attack but later denied it. Jaish-e-Mohammad activists also live in India. Two months later, on Dec. 13, a handful of militants attacked the Indian parliament building in New Delhi, resulting in the deaths of seven guards and five attackers. Indian authorities quickly blamed the Jaish-e-Mohammad and the Lashkar-e-Taiba (LeT) for the assault and within days arrested four Indian Kashmiris as conspirators.[13] Pakistan condemned the attack immediately. Subsequently, the government of Pakistan contested Indian allegations that the attackers were linked to Pakistan. As recriminations flew across the border, India mounted a massive military mobilization toward the India-Pakistan border. This force eventually totaled 500,000 troops, backed by naval forces shifted from the Bay of Bengal to the northern Arabian Sea to join the Western Fleet for a blockade of Pakistan.

In explaining this mobilization, which itself resulted in nearly 800 Indian fatalities, India's Ministry of Defense declared that "Pakistani provocation reached a dangerous point with the December 13 attack on the Parliament. A more forceful

response became necessary."[14] By raising the threat of major conventional war, which clearly would have been of a scale that could put the burden of nuclear escalation on Pakistan, India sought to compel Pakistan to take clear measures to curtail the operations of violent actors with ties to Pakistan. This reflected the escalatory continuum between subconventional, conventional and nuclear competition in South Asia. The crisis also exposed the related difficulty of simultaneously pursuing deterrence and compellence: India sought to compel Pakistan to crack down on terrorist groups and to deter it from facilitating terrorist attacks in the future.

Pakistan's leadership responded by denying complicity in the initial attack and by portraying India as the aggressor for having mobilized its conventional forces in such an escalatory way. At the same time, Pakistan's President and Chief of Army Staff Pervez Musharraf pledged that no organization "would be allowed to indulge in terrorism in the name of Kashmir" and that organizations would be barred from using "militant names such as Jaish (army), Lashkar (volunteer force), or Sipah (soldier)."[15] Musharraf announced further that he had banned five Pakistan-based militant organizations, arrested their leaders, frozen their assets and locked up their offices. He called on India to end its own "state terrorism" and to undertake dialogue on Kashmir.

As the risk of war mounted, American diplomats exerted great effort behind the scenes and publicly to encourage both states to find a diplomatic resolution. To complicate matters further, and to demonstrate the complexity of both sides' grievances, devastating riots erupted in the Indian state of Gujarat in April 2002, leaving more than 1,000 Muslims dead. There was evidence that the BJP government of Gujarat and in New Delhi were complicit in failing to prevent or limit the carnage. Musharraf's January pledge to disband militant organizations and arrest their leaders was now called into question as prominent jihadis were released, and supposedly-disbanded organizations re-emerged under different names. After US remonstrations, Musharraf in late May reasserted pressure on militant organizations. However, cross-border terrorism continued in the prelude to Kashmir elections. This violence paradoxically was made easier by the deployment of Indian forces away from Kashmir to the central India-Pakistan border.

The on-again off-again crackdown on jihadi organizations in Pakistan, and the ongoing cross-border infiltrations of militants from Pakistan into Kashmir, raised questions about the unity of authority in Pakistan. Was President Musharraf being duplicitous? Was he changing his mind? Was he capable of ensuring that his decisions to disband terrorist groups were enacted down through the ranks of the Army's intelligence service and the state's security apparatus, which had tolerated if not nurtured the jihadi organizations that continued to operate in Pakistan despite his pledges? These questions indicate the real or perceived, or purposely projected, erosion of top-down control by Pakistani leaders over actors capable of starting war.

By the time US Deputy Secretary of State Richard Armitage visited the region in June 2002, it was clear that India was not going to unleash its force. The crisis formally ended in October when India announced a demobilization.

The 2001-2002 crisis, which followed only two years after the Kargil conflict that had been initiated by Pakistan, motivated the Indian military to seek a new military doctrine and capabilities to deter Pakistan from undertaking similar low-intensity aggression in the future. Indian security officials and experts conceptualized the challenge in terms of deterrence, especially nuclear deterrence. They perceived that

Pakistan was emboldened by the possession of nuclear weapons to believe that India would not risk escalation in response to terrorist attacks or irregular-force incursions in India. Therefore, nuclear deterrence was providing Pakistan a shield behind which it could stab India at will. India thus needed to deploy capabilities that could allow it to retaliate to low-level attacks emanating from Pakistan with conventional military operations that would be limited enough to deter Pakistan from running the risk of counterescalation that could rise to the nuclear level. The existence of such capabilities and related operational doctrine could also compel Pakistan to resolutely curtail the recruitment, training and projection of militants into India.

Of course, developing such capabilities and using them precisely enough not to trigger nuclear war is easier said than done and is inherently risky. The calibration of escalation is exceedingly tricky and requires unattainable confidence in one's knowledge of the opponent's red lines — what level of conventional retaliation would the adversary be willing to withstand without countering with greater escalation, including the use of nuclear weapons?

The calibration and management of such deterrence signaling and military operations are all the more difficult when the competitor, Pakistan, denies that the perpetrators of attacks are carrying out orders of the state. The situation is complicated further in Pakistan when the nominal leaders of the state — the president and prime minister — are civilians, but the dominant actors are military. This troublesome dynamic could be seen early in the Zardari government's tenure when it tried to impose civilian control over the ISI but was compelled within days to reverse itself. In such cases where formal authority is contradicted by the realities of power, it is difficult to ascertain at any given time what the civilians actually know and, therefore, whether what they say is true when they deny state authorship of an attack. With whom should India communicate? New Delhi's leadership may think it most relevant to address the military directly, but India cannot choose whom Pakistani authorities designate to manage communication and signaling. And if there is long-term value in promoting civilian authority in Pakistan, seeking to communicate directly with the military may be counterproductive. An additional asymmetry further complicates communication and potential confidence-building: military-to-military dialogue between India and Pakistan is difficult because the civilian leadership in Delhi will not cede this authority, and even if it did, the Indian military could not communicate on a peer basis with their Pakistani counterparts because they have less information and authority.

Unfortunately, the 2001-2002 crisis was not the last of its kind. On Nov. 26, 2008, terrorists launched 11 coordinated shooting and bombing attacks in Mumbai. By the end of the assault three days later, 164 people had been killed and more than 300 others wounded. The attacks were conducted by 10 young men trained and orchestrated by Lashkar-e-Taiba from Pakistan, despite the organization's nominal ban announced by then-President Pervez Musharraf in 2002. Pakistan, the United States, India and Italy subsequently arrested other suspected participants in the conspiracy.

Repeating earlier patterns from the 1999 Kargil conflict and the 2001-2002 attacks in Srinagar and New Delhi, Pakistani authorities at first denied that the attackers were Pakistani and that Pakistani territory had been used to train and orchestrate them. Investigations by the US and India, including interrogations of the Pakistani-American David Headley, indicated that elements of the Pakistani ISI had facilitated the planning and operation of the terrorists. In slightly more than a month, authorities in Islamabad acknowledged that Pakistani nationals had been involved in the attacks

and that training and planning had been conducted in Pakistan. In November 2009, a Pakistani court charged seven citizens for their role in the terrorist assault, including the operations commander of Lashkar-e-Taiba. Prosecution has been halting, and the leader of LeT has been released from a deferential form of detention.

Perhaps mindful of the earlier experience of the 2001-2002 crisis, Pakistan and India, with encouragement from the United States, took pains to avoid repeating the cycle of recriminations and mobilization of large conventional forces. The horrendous gravity of the attacks, and the clearer evidence of the perpetrators' origins in Pakistan, chastened Pakistanis, including their recently elected civilian leadership. Still, there was at least one episode within the crisis that demonstrated the precariousness of its management, as documented by a recent Stimson Center report. Shortly after the attacks in Mumbai, President Zardari received a phone call from a man claiming to be Indian Foreign Minister Pranab Mukherjee, warning that India would launch a war on Pakistan the next day. Such a threat would naturally prompt the Pakistani military to increase its readiness, if not to launch pre-emptive operations. Fortunately, American officials learned of the alleged call and quickly arranged for Secretary of State Condoleeza Rice to phone Mukherjee to ascertain what was happening. Meanwhile, the Deputy Chief of the US mission in Islamabad, Jerry Feierstein, who was in charge in Ambassador Anne Patterson's absence, was alerted that Washington knew about the call and was investigating it. Rice reached Mukherjee in Calcutta, and he denied having called Zardari. Further investigation concluded that it had been a prank call.

While Pakistan and India managed to prevent the 2001 and 2008 subconventional attacks on high-value Indian targets from escalating into interstate war, these episodes and the ongoing operation of jihadi organizations in Pakistan highlight the grave instability of India-Pakistan relations. Doubts about the monopoly of the Pakistani state's control of forceful actors and actions emanating from the state challenge the unitary rational actor assumptions on which deterrence rests. The precariousness of deterrence stability grows with each crisis. Each presents a pressure on India to counterattack and then on Pakistan to respond in an escalatory action. And each time India refrains, the pressure grows on it not to do so the next time, in order to demonstrate that Pakistan cannot continue to get away either with instigating attack or not acting decisively against those who carry out such attacks.

The implications are profound and have not been addressed adequately by Pakistan, by India, nor by international strategic analysts. In some ways, the operation by ostensibly uncontrolled violent groups acting from Pakistani territory is a violation of Pakistani sovereignty, much like Osama bin Laden's long presence in Pakistan was. In the latter case, the Pakistani security establishment chose to focus on the United States' violation of Pakistani sovereignty in raiding bin Laden's compound, but in subsequent debates increasing numbers of Pakistanis acknowledge that bin Laden's presence also was an embarrassment. When Pakistani authorities deny that terrorists known to be based in Pakistan have anything to do with state agencies or objectives, they implicitly are acknowledging that state sovereignty is woefully incomplete, or they are lying. When they then do not act systematically to curtail the actions of such organizations after they have attacked India (or the US) they reinforce the perception of duplicity or of ineffective sovereignty.

Pakistani security officials naturally are loathe to admit these implications out of pride and fear that the military's standing and competence would be called into question. Nevertheless, the risks that subconventional uses of force could escalate to

conventional and perhaps nuclear war creates a clear interest for Pakistanis, Indians and the international community to treat the uncertain quality of Pakistani state sovereignty as a fundamental strategic problem. The lack of coherence of authority in Pakistan — and of the state's monopoly on the legitimate use of force — calls into question the integrity of Pakistan's chain of command. If the military does in fact retain control over organized perpetrators of violence, its ongoing support or toleration of them poses a grave threat to deterrence stability.

If in fact Pakistani authorities do exert influence or control over organizations that have conducted terrorist operations in India (and elsewhere) and are merely denying it for tactical reasons, Pakistani authorities can fairly be treated as the authors of the signals that are sent by these actors. India can then seek to manage preconflict and intraconflict deterrence according to the traditional model, while still facing severe challenges of escalation control. The challenge certainly is complicated by the ambiguity that Pakistan would be fostering by denying responsibility for future subconventional operations; deterrence stability would be weaker than in "normal" scenarios. But if India were correct in acting on the belief that Pakistani authorities were culpable for such operations, the burden of having stepped first on the escalation ladder would be on Pakistan, and the defender's advantage in deterrence would accrue to India.

The graver problem arises if and when Pakistani leaders are not in control of the perpetrators of violence emanating from Pakistani territory. In that case, when faced with an attack, India would conclude that deterrence had failed or was inapplicable but that if India did not retaliate, it would encourage further attacks and do nothing to compel Pakistani leaders to assert control over violent actors. But if India did retaliate, Pakistani leaders, feeling that they had not authorized aggression against India, would feel that India was initiating war. It is widely recognized that victims of aggression — defenders — are more highly motivated to retaliate because they have suffered an injustice. Knowing this, Pakistani defenders would feel that their threats to escalate in response to an Indian attack would be more credible than if they had been the initiators of the conflict. Indians, of course, would feel that this logic rewards Pakistani authorities for not exercising a monopoly on the legitimate use of force emanating from their territory, precisely the situation they want Pakistan to correct.

Perhaps because the classical model of nuclear deterrence was developed in the context of the bipolar US-Soviet competition in which neither state deployed proxies to commit terrorist or subconventional attacks on the other's homeland, the model is relatively silent on how such low-intensity aggression could or should be deterred. The literature's silence on this problem, and Pakistan's self-interested belief that nuclear deterrence should be applied only to the conventional-nuclear-threat spectrum, further distract analysts and policymakers from wrestling with the problems that subconventional violence pose to deterrence stability. Still, as the psychologist Steven Pinker has elaborated in his masterly book, *The Better Angels of Our Nature*, "the necessity of vengeful punishment as a deterrent … has been demonstrated repeatedly in mathematical and computer models of the evolution of cooperation."[16] Retaliation "is necessary for cooperation, [for] preventing a nice guy from being exploited."[17] If one does not retaliate, it may invite further aggression.

Of course, if competitors merely engage in a cycle of action and retaliation, both end up losing over time. Survival and betterment require someone to break the cycle. The victim of aggression may retaliate and at the same time signal an interest in returning to cooperation in which both sides refrain from further violence. Psychological ex-

periments and computer modeling indicate that the cycle can be broken by "random" grants of forgiveness of an aggression and invitation to cooperate. To make this strategy work over time, of course, the actor who has been forgiven a transgression should display contrition for the transgressive act. Otherwise, the forgiver can be perceived embarrassingly as a sucker, which can trigger powerful emotions of vengefulness.

It is possible that Indian leaders — at least the two most recent, Atal Bihari Vajpayee and Manmohan Singh — have concluded that India's greatest strategic priority is steady economic growth and development and that avoiding provocations to engage Pakistan in war is necessary to achieve this higher good. Moreover, such forbearance of war could even serve strategic purposes vis-à-vis Pakistan, much as Gandhi's strategy of nonviolence ultimately caused the United Kingdom to leave India. That is, each act of terrorist violence projected from Pakistan into India, matched by Indian forbearance, further weakens Pakistan's international standing and increases India's moral-political leverage in pressing Pakistani authorities to act decisively against the perpetrators of cross-border terrorism. The more Pakistan looks like an outlaw to the international community and to its own citizens, and the more stark Pakistan's failure to fulfill international norms against terrorism appears, the greater the chance that Pakistani citizens will eventually put pressure on the security establishment to change its behavior.

This dynamic has been on display in the post-Mumbai relationship between India and Pakistan. India suffered the attack, but Prime Minister Singh resisted pressures to retaliate. In essence, he "forgave" Pakistan in order to avoid an escalatory cycle of retaliation. Pakistani leaders, half-heartedly and ambiguously, signaled regret for the terrorist attacks (while denying direct responsibility for them). The subsequent absence of a major terrorist attack on India since 2008 has created an opportunity for cooperation to stabilize the situation. No matter how justified Pakistanis might feel for the acts of jihadis operating in India, and how much they feel India should "get over it," they would be wise to recognize that India's interests in reinforcing deterrence, in not looking like suckers, and in satisfying emotional impulses for revenge make the situation quite precarious in the event of another terrorist attack emanating from Pakistan. Today's Indian leaders may have strategic reasons for forbearance, but this would not guarantee the persistence of such a policy into the future.

The safest way to defuse this unstable competition and reinforce deterrence stability, of course, is for Pakistan to make unambiguous efforts to restore the monopoly on the legitimate use of force that is central to modern statehood. Achieving this objective will be difficult at two levels. In terms of motivation, if Pakistani military and intelligence authorities see some advantage in claiming that they do not control jihadi organizations, they will be reluctant to exert themselves fully to exercise control. In terms of capabilities, it is no doubt difficult for Pakistani authorities to demobilize and contain all of the militant organizations that have evolved in the country since the 1980s. Moreover, if they decided to do so without careful preparations and public education, they would prompt attacks against the security establishment itself, as happened after the operation against the Red Mosque in Islamabad in 2007. Fortunately, Indian (and American) officials recognize the latter problem. What they most want is for Pakistani leaders to demonstrate not only in words but also in constant deeds a determination to delegitimize violence against India and arrest and prosecute actors who violate the law. Perfection in accomplishing this objective would not be expected, but clear and uncompromising effort would be.

There is a political logic for holding the Pakistani state accountable for acting to prevent the projection of terrorism. Political change requires time and a confluence of drivers. It tends to occur when existing practices violate norms the salience of which is increasing, and groups within a society mobilize to demand the abandonment of delegitimized practices. In simplistic terms, this is how witch-burning and slavery were ended in the West and how the Muslim Brotherhood and Fatah abandoned terrorism in Egypt and Palestine.

The international norm against the export of terrorism has grown since 2001. It is now reflected in legally binding international law. In the words of a recent *Cornell International Law Journal* article,

> A state is required to prevent extra-state forces, which engage in hostile acts towards other states, from operating within its borders. In particular, the United Nations Security Council has said that 'every state has the duty to refrain from … acquiescing in activities within its territory directed towards the commission of such acts, when such acts involve a threat or use of force.'[18]

UN Security Council Resolution 1373, of 2001, makes this obligation legally binding under Chapter VII of the UN Charter. States are bound to prevent and suppress terrorists' efforts to recruit, organize, train, fundraise and carry out attacks. Of course, such laws are not self-enforcing, and there is not a world government to enforce them. But the laws and norms against terrorism may provide a basis for civil society and political leaders in Pakistan to press the security establishment to act more decisively against those whose external violence could lead to nuclear war.

There are some recent indications that key Pakistani authorities are joining modern elements in civil society in recognizing the intolerable effects of violent militancy within Pakistan and directed at India. Whereas five years ago visitors to Pakistan would hear even well-educated counterparts deflect attention from the internal and external militancy problem by blaming the US or India for it, today the same circles volunteer that distinctions between "good" jihadis and "bad" jihadis are self-defeating. Militants are destroying Pakistan from within, and terrorism against India has harmed Pakistan severely. This view also is now inculcated in National Defense University courses for Pakistani officers.

Most remarkably, perhaps, Chief of Army Staff Gen. Pervez Kayani devoted his August 14, 2012, speech on Independence Day to the imperative of combating "extremism and terrorism."[19] It is extremism when one tries to impose one's opinion on others, he continued and "if one tries to enforce his opinion through use of gun, it becomes terrorism. … If this is the correct definition of extremism and terrorism," Kayani said, "then the war against it is our own war, and a just war too. Any misgivings in this regards can divide us internally, leading to a civil war situation." This clear expression of national interest and priority was all the more remarkable insofar as Gen. Kayani did not "balance" it with excuses or bellicosity relating to India. The only oblique reference to outside powers was that "the forces hostile to our motherland are benefitting from internal weaknesses." And here, Kayani said, "Blaming such anti-Pakistan elements aside, our efforts must be directed towards stabilizing the internal front."

Potential Policy Approaches to Redress the Disunity Challenge

Stabilizing India-Pakistan deterrence and encouraging Pakistani security agencies to re-assert the state's monopoly on legitimate instruments of violence is a necessary condition for saving Pakistani lives and creating conditions for peaceful democratic politics as well as for deterrence stability. Indeed, it is necessary if Pakistan is to regain this central attribute of a modern sovereign state. By framing its objectives this way, the US could begin a long-term process of rebuilding public support for its role in Pakistan.[20]

Framing is vitally important. The troubled political psychology of US relations with Pakistan has enormous material implications for both states. To restore their political will to pursue shared interests, they need to build an understanding of each other's intentions to cooperate in at least some key areas, recognizing that interests diverge in others.

Framing can be dismissed as too easy or too conceptual to be a serious policy recommendation, yet "merely" changing the frame and discourse of US-Pakistan relations is extremely difficult. This is clear to participants in the interagency process in the executive branch and even more so with Congress in recent years as US officials have struggled to reconceptualize US policy in recognition that Pakistan does not share US interests regarding Afghanistan. The difficulty of changing frames is also evident in civil-military dynamics in Pakistan, where no consensus exists on the goals and scope of US-Pakistan relations. This can be seen when Pakistani military and civilian leaders diverge over when and how to blame unpopular events or policy choices on the US, even in cases where the central cause of the difficulty is internal. Sometimes the military blames the US for speaking and acting in ways urged by Pakistani civilians, while at other times civilians blame the US for cooperating too closely with the military.

Within the large frame of deterrence stability, a vital subsidiary concept is that a state cannot be a responsible possessor of nuclear weapons if it does not have sovereign control over organized perpetrators of international violence operating from its territory. The absence of such sovereign control impedes efforts by state authorities to ensure national preservation and minimize risks of escalatory conflict that risk annihilation. To put it colloquially, US officials could say to Pakistanis, "We do not challenge your possession of nuclear weapons. Our objective is to promote in any way we can the responsible management of nuclear forces. First and foremost, this means sovereign control over all organizations that can project violence from your territory, which is also an obligation under international law. Second, and relatedly, it means you should not tolerate acts that could start wars with other nuclear-armed states, because that would be suicidal and therefore irrational. Given the global implications of nuclear war and the breaking of the nuclear taboo, all states have a shared interest in Pakistan's coherence, sovereignty and responsible nuclear stewardship."

With shared interests defined this way, it follows that the US would naturally offer Pakistan, as requested, assistance to help responsible state agencies to control actors that could challenge the state's monopoly on the legitimate use of force, both internally and outside Pakistan's borders. To the extent that the police in Pakistan can and should play a more effective role in this mission, the US could re-emphasize willingness to provide training and equipment to them, if this would be welcomed.

More problematic is counterterrorism cooperation. Such cooperation was sharply curtailed after the raid on Osama bin Laden and the November 2011 US/NATO killing of 24 Pakistani servicemen on the Afghanistan-Pakistan border. Both of these

trust-destroying episodes highlighted the divergence in American and Pakistani priorities regarding which "terrorists" should be priority targets and by what means. Any future restoration of cooperation would depend on clearer agreement on who is to be targeted and why. The proposal here is to explore potential agreement in prioritizing cooperation in arresting or, if that is impossible, killing actors who conduct violence within Pakistan and also against India.

The Pakistani security establishment's wariness toward offers of assistance in counterterrorism and policing should not be underestimated. The torturously complex motivations and perceptions surrounding US and Pakistani policies toward al-Qaida, the Haqqani Network, the Pakistan Taliban and Lashkar-e-Taiba will not be reconciled easily or completely. Lashkar-e-Taiba is perhaps the most important organization from the standpoint of instigating conflict with India, and it is difficult to imagine Pakistani authorities cooperating with the US to target it. The group enjoys some public support and is dispersed throughout the Punjab. LeT has the will and the capacity to retaliate violently against the Pakistani security establishment. It may be too strong to challenge frontally today. Nevertheless, the concept of focusing on the restoration of the state's sovereign monopoly on the legitimate use of force offers a basis for beginning a process of reconciliation between the US and Pakistan. The US could say to Pakistani counterparts, "If you share this fundamental objective, then you tell us what would be a feasible strategy over time to pursue it, and what, if anything, we can do to assist, and what would be reasonable metrics to evaluate progress. And if there are actions we think you should take but you think are unnecessary, premature or infeasible for the overall objective defined this way, explain why."

In any such discussion, Pakistani counterparts will ask, "What about India? India is a threat; you are helping to make it stronger; the Indians are simply trying to wish away the Kashmir problem without meeting our fundamental requirements." The US cannot pretend to be able to compel India to meet Pakistan's demands vis-à-vis Kashmir or to desist from building up its military capabilities as its economic growth allows and as China's power increases. But there are some steps the US can take.

India-Pakistan deterrence will not be stabilized if Pakistan's relationship with India is not normalized and pacified. Nor is Pakistan likely to get on track to reform itself if it is perpetually at loggerheads with India. More normal civil-military relations within Pakistan — which are essential for state coherence — depend on more normal relations between Pakistan and India. Otherwise, the Army will resist initiatives to reduce its role in shaping not only national security and foreign policy but also in the political economy. The sense of threat from India has justified Army predominance within Pakistan, and the Army's obsession on India has kept the sense of threat high. But history and institutional interests suggest that greater civilian ascendency in Pakistan will be necessary to transform the India-Pakistan relationship. The 2013 general elections in Pakistan pointed in this direction when Nawaz Sharif, the candidate most avowedly seeking to improve relations with India, won an unexpectedly large victory. Improved economic prospects within Pakistan, which also are necessary to augment state coherence, will be inherently limited if India-Pakistan trade and investment do not grow.

The challenge is enormous, obviously, but it is not impossible due to the vital fact that India does not harbor offensive intentions toward Pakistan. India does not covet territory that Pakistan controls. India does not wish for Pakistan to be dismembered. Indian leaders recognize that it is in their country's interest for Pakistan to develop economically, to democratize politically and to live in peace. India does not want

Pakistan's problems to spill over into its territory or restive Muslim populations. The two countries diverge in their visions for an ideal political outcome in Afghanistan, but could settle for an Afghan state that does not allow itself to be a base for hostile actions against Pakistan and India. The fundamental point is that India will not be a military or security threat to Pakistan if Pakistan will cease pursuing offensive strategies (albeit of a low-intensity nature) against it.

Of course, Pakistani military leaders continue to view India as a mortal threat and to justify the Army's financial and political privileges on its role as protector of the nation against this threat. Authorities in Rawalpindi and Islamabad bristle at Washington's contentions that India does not harbor offensive intentions. It will take much time and effort for India and the US to shift the Pakistani security establishment's mindset. Much will depend on how Afghanistan evolves and the roles that the US and India play in this. Still, Washington and New Delhi can repeatedly remind Pakistani counterparts that India did demonstrate its defensive intentions and remarkable restraint in the aftermath of the 2001-2002 crisis and 2008 Mumbai attack. In each of these instances, Washington exerted its influence to encourage Indian restraint. These cases demonstrated that India's and America's interests in India's ongoing development and accretions of power should not come at Pakistan's expense.

The US has a clear interest in continuing to demonstrate that India does not and will not pose an offensive threat to Pakistan. India's plans and wherewithal to augment its conventional military power through arms imports, including from the United States, can alarm Pakistan. Knowing this, Washington and India would be wise to minimize Pakistani alarm by taking pains to demonstrate that their defense cooperation will not challenge Pakistan's capacity to deter and defend against Indian forces. All three states have an interest in deterrence stability. Shaping and communicating US-Indian cooperation in terms of deterrence stability can reinforce this. To make their intentions credible, the US and India could describe what sorts of Indian capabilities would undermine deterrence stability and vow not to undertake them if Pakistan demonstrates its commitment to deterrence stability by acting to control organizations that project force from Pakistan against India. In other words, if Pakistani authorities make fulsome efforts to impose a monopoly on the legitimate use of force from Pakistani territory, India and the US will be more forthcoming in policies that could reinforce deterrence stability. India would not then need capabilities and plans (which Pakistanis view as threatening) to compel Pakistan to disable terrorist groups. Indeed, deterrence is most stable when competitors pursue defensive strategies and postures, which should be a clearer objective of US interactions with India and Pakistan and of India's and Pakistan's relations with each other. This could include US arms sales to India.

India-US cooperation in developing ballistic missile defenses poses a particular challenge. There is considerable evidence that offensive forces can always be expanded and adapted to defeat defenses[21] and that developing even theoretically effective defenses requires a web of super-sophisticated and expensive technologies beyond India's technical and budgetary reach. Recent reports by the US Defense Science Board and the National Academy of Sciences indicate that the US, after decades of effort and expense, still does not possess anything like an effective national missile defense system. Nevertheless, India's defense science establishment claims to be on the way to developing missile defenses, and some within the US would like to contribute (for a price) to this effort.

If and when the US (and Israel) were to join forces with India in developing missile defenses with a theoretical capability to intercept Pakistani missiles, Pakistanis will naturally feel that the deterrent relationship is being destabilized. The most knowledgeable leaders of the Pakistani nuclear establishment volunteer in private that such defenses will not work and can be readily circumvented by Pakistani cruise missiles and other means.[22] Moreover, India could limit the technological ambition and cost of missile defenses by seeking to defend only its national command and control apparatus in New Delhi. Were such limited defenses effective, they could reinforce India's confidence in its No First Use policy, which in turn enhances deterrence stability. Indians could then more readily believe in their capacity to retaliate after a Pakistani first strike, obviating the need for India to reverse its No First Use policy. The limited scope of such a defense could, in turn, reassure Pakistani leaders that India is not seeking to negate Pakistan's nuclear deterrent but, rather, to protect the Indian leadership against a very limited decapitation strike or an unauthorized nuclear attack by a rogue military unit.

Leaving aside whether even a limited missile defense would be effective and affordable, deploying any form of missile defense that would be highly touted in India (which would be necessary to motivate spending on it) would reanimate a broader Pakistani narrative that the US and India are colluding to take away Pakistan's deterrent. Such a development would not augment deterrence stability (unless there was unprecedented improvement in India-Pakistan relations at the highest levels, which itself would be made less likely by Indian-American collusion on missile defense). Most likely, missile defenses in India would exacerbate arms race instability.

To further the general objective of deterrence stability, the US can encourage and, where welcome, facilitate official or unofficial India-Pakistan dialogue on the subject. The Indian and Pakistani strategic communities of retired diplomats, military officers and longtime defense analysts have met for years in countless Track II and Track I.5 dialogues. The foreign secretaries of the two countries have met occasionally, as have government-appointed back channels. But deterrence stability has not been a central topic of such discussions nor have active-duty military officers participated in these forums. It is worth considering whether and how the two governments could be persuaded to task relevant military officers and security professionals to conduct private workshops on deterrence stability. It would behoove the US government to task its own strategic and military experts who work on South Asia to analyze the deterrence stability challenge and offer to share this analysis if Pakistanis and Indians would find it helpful.

Deterrence stability in South Asia presents unique analytic difficulties as well as political-diplomatic obstacles. The "classical" models of deterrence on which most experts have been trained derive from the bipolar competitions between the US and the Soviet Union and, more recently, the US and Russia and the US and China. Modeling explores the interaction between conventional balances and operations on the initial spectrum of the escalation dynamic, transitioning to nuclear use and intrawar deterrence of escalation. But the classical models do not account for the dynamic between India and Pakistan, where conflict may start through subconventional use of force and then transition up through conventional to nuclear war. The subconventional-conventional-nuclear escalation problem is significantly more complicated for reasons suggested above. It is especially problematic when subconventional actors are not operating — in fact, or according to Pakistani claims — within the unitary state apparatus

on which deterrence models depend. This is primarily a problem for Pakistanis and Indians to address, but given the global interests and responsibilities of the US, there is reason for American officials to mobilize talented, regionally knowledgeable personnel to analyze the subconventional-conventional-nuclear deterrence challenge as well.

To the extent that arms control can be useful to manage deterrence stability, another new and difficult challenge emerges. Nuclear arms control is a well-developed field due to the decades of US and Soviet/Russian experience. Conventional arms control is a less understood and practiced field. The interactions between conventional and nuclear arms control is even less analyzed or experienced. When the challenge of verifying efforts to constrain subconventional violent actors is added to the problem, there is no historical or analytic work upon which to draw. Even if Pakistan were prepared to commit itself genuinely to make all feasible efforts to curtail the actions of groups that seek to export violence, what are reasonable ways to verify this commitment? This is extremely important insofar as it is possible that, even in the midst of concerted state efforts to "disarm" militant actors, some may persist and carry out attacks. To maintain stability, the recipient of such attacks (and the international community) would need some basis for judging that the attacks did not reflect the intention of the state from whence the attackers originated. Indeed, Pakistani efforts to curtail the operations of violent actors could prompt these actors to undertake retaliatory attacks in Pakistan or against India that could challenge deterrence stability.

To undertake the policies suggested here, the US government would need to address the problematic separation of AfPak from India in the National Security Council and the State Department, and the division of responsibility between United States Central Command (CENTCOM) and United States Pacific Command (PACOM), whereby the former deals with Pakistan and the latter with India. These bureaucratic divisions make it nearly impossible to develop and sustain a strategy and diplomatic program to address the organic nature of the India-Pakistan deterrence problem and US policies to attenuate it.

Finally, the concept and practice of deterrence stability can be reinforced further by declarations and policies of the other nuclear-armed states. The US, Russia, China, the UK, France and Israel have reinforced the taboo against the use of nuclear weapons, which emerged after the nuclear attacks on Hiroshima and Nagasaki in 1945.[23] In varying degrees, these states over time also have eschewed making threats to use nuclear weapons. In recent years, they have accepted political obligations pursuant to the indefinite extension of the NPT to reduce the role of nuclear weapons in their national security policies. These states still fall well short of meeting global demands to eliminate all nuclear weapons, but this need not prevent them and other states from making further efforts to strengthen the taboo against using nuclear weapons. If the highest leaders of these states were to make regular declarations that they recognize the disastrous consequences that would follow any use of nuclear weapons, and the shared imperative to resolve conflicts without resort to nuclear threats or use, they would strengthen moral and political incentives for Indian and Pakistani leaders and publics to explicitly uphold the nuclear taboo in South Asia. The younger generations of urban Pakistanis and Indians aspire to live in societies and states that embody the positive values of more peaceful, prosperous and democratic societies. In multiple ways, they express desires to overcome the post-partition legacy of conflict between India and Pakistan. The futures of India and Pakistan depend on the mobilization of these younger generations to demand and support enlightened national policies. The

idea that nuclear war should never be fought and cannot be won would bolster the centrality of deterrence stability as a strategic objective for Pakistan and India.

Notes

1. The author thanks Michael Krepon, Toby Dalton, Sadia Tasleem and Marvin Miller for their critical comments on this paper, while accepting all responsibility for its flaws.

2. Bruce Bueno de Mesquita and William H. Riker, "An Assessment of the Merits of Selective Nuclear Proliferation," *Journal of Conflict Resolution*, vol. 26, no. 2 (June 1982): 292.

3. Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: Palgrave Macmillan, 3rd edition, 2003), 173.

4. Deterrence and compellence can be difficult to distinguish. Broadly, deterrence seeks to mobilize threats of punishment to induce an adversary to forego aggression or, if conflict has already begun, to forego escalation. Deterrence essentially seeks to preserve a status quo. Compellence seeks to motivate an actor to change the status quo, for example by withdrawing forces from occupied territory, or to end the projection of militants into one's territory. In a conflict where deterrence has failed and an opponent has used force, a state may also act to deter future repetitions of aggression.

5. To follow the logic of proportionality and avoidance of dramatic escalation, India conceivably could retaliate against terrorist attacks attributed to Pakistan by instigating similar attacks against Pakistani targets. Yet, if India's larger strategic and normative purpose is to delegitimize terrorism, then using similar means would be both wrong and counter-productive.

6. If Pakistani officials deny authorizing or facilitating an attack which in fact was conducted with the connivance of state authorities.

7. Critics of this approach argue that recognizing that India and Pakistan will retain nuclear weapons as long as China, the US and others possess them will undermine the goal of making the NPT universal. However, a strong case can be made that dealing with South Asian realities the way that Pakistan and India perceive them is more likely to lead eventually to conditions that would motivate them to eliminate their nuclear arsenals than will policies of simply demanding their nuclear disarmament.

8. A number of states, of course, fail to impose a perfect monopoly on the projection of violence from their territory, in the sense that some of their citizens may be members of terrorist groups and leave home to commit acts of terrorism abroad. This has occurred in the US, Germany and many other states. The point here, however, is that states are obligated to prevent such actions and to vigorously prosecute those citizens who conduct terrorist acts. It is this standard to which Pakistan can and should be held to account.

9. Kenneth N. Waltz and Scott D. Sagan, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton & Company, 2003), 6, 9.

10. States have in the past and may in the future seek to escape from the deterrent effect of mutual nuclear suicide by seeking through a combination of offensive and defensive capabilities to destroy an adversary's capacity to effect nuclear retaliation. Such attempts at escalation dominance are meant to remove or attenuate the mutuality of deterrence and instead enable the advantaged state to deter an adversary (or adversaries) without being reciprocally deterred. To date, however, in the US-Soviet/Russia experience and the India-Pakistan experience the condition of mutual vulnerability has prevailed.

11. "Better dead than red" was a catchy slogan during the Cold War, but it was not a sound basis for state policy.

12. Ahmed Rashid, *Pakistan on the Brink* (New York: Viking, 2012), 47.

13. The Indian Supreme Court subsequently acquitted two of the Kashmiris and reduced the sentence of a third, while upholding the death penalty of one, Mohammad Afzal.

14. Quoted in P.R. Chari, Pervaiz Iqbal Cheema, Stephen P. Cohen, *Four Crises and a Peace Process* (Washington: Brookings Institution Press, 2007), 154.

15. Ibid., 157.

16. Steven Pinker, *The Better Angels of Our Nature* (New York: Viking, 2011), 532.

17. Ibid., 534.

18. Andrew C. Orr, "Unmanned, Unprecedented, and Unresolved: The Status of American Drone Strikes in Pakistan Under International Law." *Cornell International Law Journal*, vol. 44, no. 3 (Fall 2011): 736.

19. COAS Speech, August 14, 2012, http://www.ispr.gov.pk/front/mainasp?o=t-press_release&id=2123.

20. Former President Pervez Musharraf told *CNN* May 26, 2011, that "if Pakistan disintegrates, then it can be dangerous. Otherwise, if Pakistan's integrity is there, and which I'm sure it will be there as long as the armed forces of Pakistan are there, there is no danger of the nuclear assets or strategic assets falling in any terrorist hands." Piers Morgan Tonight, *CNN*, May 26, 2011.

21. Interview with former high-ranking leader of US Strategic Command.

22. Interview with high-ranking leader of Pakistan's Strategic Plans Division, Sept. 13, 2012.

23. North Korea is also nuclear-armed. While prospects of its contributing to global norms of responsible nuclear stewardship are dubious, the implications of its role in this regard are less important because the nature and practices of the North Korean regime are not models that dignified states seek to follow.

Pakistan's Nuclear Strategy and Deterrence Stability

Michael Krepon

This essay is highly conjectural. The guardians of Pakistan's nuclear arsenal are trained to keep secrets. They publicize few details of their nuclear programs. The analysis below is therefore based on a limited public record, inferences, and 20 years of visiting Pakistan and following Pakistan's nuclear program. The essay begins with a brief recapitulation of what most Pakistanis view as a success story and how, over time, Pakistan's military has gained control over Pakistan's nuclear-weapon-related programs. I next turn to some of the ramifications of this success story, particularly how difficult it has become to alter the current growth trajectory of Pakistan's nuclear arsenal. Next, I discuss four main pillars of Pakistan's nuclear doctrine, after which I offer speculation about Pakistan's nuclear targeting. I then turn to the small circle of individuals who decide Pakistan's stockpile requirements and end with a discussion of the implications of my analysis for deterrence stability on the Subcontinent.[1]

A Rare Success Story

Most Pakistanis proudly view their nuclear weapon programs as a rare success story. Their country is beset by many problems.[2] Economic growth lags behind population growth. Pakistan's relations with two of its neighbors — India and Afghanistan — are strained, and a third border, with Iran, marks the Sunni-Shia divide within Islam. Domestic social services are in decline. Governance is widely conceded to be poor at both the national and provincial level. Many extremist groups have found shelter in Pakistan. Some fight the military; others have colluded with it. Over the past five years, Pakistan ranks second (only to Iraq) in the incidence of mass-casualty deaths due to sectarian and politically inspired domestic violence.[3]

Amid these indicators of national decline — and in the face of concerted efforts by the United States and other nations to prevent Pakistan from crossing key production thresholds — Pakistan now possesses a considerable and growing nuclear arsenal, which is publicly estimated to include perhaps 90 to 110 weapons.[4] It is hard to identify another governmental or military enterprise in contemporary Pakistan that has been more successful in identifying goals and implementing them than Pakistan's nuclear-weapon-related programs. Most Pakistanis who bemoan the problems they face in everyday life feel pride in the accomplishments of testing and producing nuclear weapons. They begrudge governmental corruption and incompetence but not money spent on the Bomb.

Pakistan's serious pursuit of nuclear weapons began with Zulfikar Ali Bhutto, who famously declared in 1965 — well before taking charge of the country and the program — that his compatriots would "eat grass" and suffer other deprivations in order to possess nuclear weapons. This priority became more focused after the 1971 war with India that resulted in Pakistan's grave humiliation, vivisection and Bhutto's

ascendancy as president, and subsequently, as prime minister. Ghulam Ishaq Khan, a powerful political figure who became president of Pakistan from 1988 to 1993, provided continuity of oversight over the nuclear program after Bhutto's demise and during a period of revolving prime ministers. As with other nuclear programs in other countries, "first generation" scientists in defense establishments also played key roles in nuclear development programs, most notably Munir Khan and Samar Mubarakmand of Pakistan's Atomic Energy Commission and A.Q. Khan of the Khan Research Laboratories.

The transfer of Pakistan's nuclear-weapon-related programs to military control was realized in stages, beginning with the imprisonment in 1977 and subsequent execution of Zulfikar Ali Bhutto by Gen. Zia ul-Haq. Military supremacy in all military-related nuclear matters was reaffirmed after Ghulam Ishaq Khan's forced resignation from the presidency in 1993 and was consolidated further when, in February 2000, then-Chief Executive and Chief of Army Staff Gen. Pervez Musharraf implemented plans for a directorate to focus on nuclear issues — the Strategic Plans Division (SPD) at Joint Staff Headquarters — that the recently deposed Prime Minister Nawaz Sharif had dawdled over.[5]

Operationalizing Pakistan's nuclear deterrent meant placing it even more firmly in military hands. Military control was progressively strengthened with the death or retirement of critically important scientists and civilian political leaders involved in Pakistan's nuclear programs, as well as the revelations of A.Q. Khan's nuclear commerce and lax security procedures at the laboratories that bear his name, after which the SPD assumed responsibility for security at sensitive production sites.[6] Scientists still play critical roles in development programs, and civilians are included in and nominally sit atop the National Command Authority (NCA) that oversees crucial nuclear decision-making, but there can be little doubt that real decision-making authority lies with men in uniform and one retired military officer, Khalid Kidwai.

Ramifications of Success

Pakistan's national security decisions are usually choreographed between senior active-duty military officers in Rawalpindi and government officials in Islamabad. If military leaders feel strongly about a particular policy or initiative, they can usually count on the consent of government officials. Conversely, if political leaders do not have military support, their favored initiatives are likely to fail. Consequently, there is little daylight between Rawalpindi and Islamabad with respect to nuclear weapons. While outsiders see nuclear weapon programs as a drain on resources for domestic needs, as excessive to presumed requirements of minimal deterrence, and as susceptible to diversion and tragic events, most Pakistanis perceive these programs as providing essential capabilities at acceptable cost and at a small fraction of the size of the US arsenal. They view harsh external critics as being guilty of hypocrisy, the warnings of outsiders as being alarmist, and as serving hidden agendas detrimental to Pakistan's nuclear deterrent.

Pakistan's stockpile is likely to grow as long as key constituencies within the country view their nuclear programs as a success story, domestic critics can be easily dismissed, relations with India remain contentious, and India's nuclear capabilities continue to grow along with a sense of Pakistan's international isolation. Perceived nuclear requirements could be revised downward as a result of an increased sense of national security, the advent of new Pakistani leaders with unconventional views

about nuclear weapons, improved relations with India that have significant domestic backing, severe economic perturbations within Pakistan, and/or a perception-shattering event that causes nuclear advocates to rethink their assumptions.

India's nuclear stockpile, like that of Pakistan, has approximately doubled over the last decade to perhaps 80 to 100 warheads.[7] The pace of New Delhi's efforts has seemed satisfactory to Indian political leaders who have viewed nuclear weapons as political, message-sending instruments rather than as weapons to carry out war plans. The ambivalent Indian approach to nuclear weapons was been well chronicled and is deeply rooted.[8] Pakistan's programs, unlike India's, are controlled by military officers who view nuclear weapons as military, as well as political, instruments. As Feroz Khan has noted,

> Pakistani leaders also believe that nuclear weapons have to be configured for war-fighting roles if only to retain their deterrent value. Pakistan therefore has developed and deploys nuclear forces separate from its conventional forces, but has integrated war plans which include targeting policies for conventional and nuclear weapons.[9]

Indian elites resent being compared to Pakistan because, by almost every indicator, Pakistan is receding in India's rear-view mirror. This is not true with respect to Pakistan's nuclear-weapon-related accomplishments. If reports are true that Pakistan is leading India in warhead numbers and operationally mature missiles, and if the stewards of Pakistan's nuclear arsenal continue along current programming trajectories, New Delhi is likely to accelerate stockpile growth and hasten the transfer of missile programs from the Defense Research and Development Organization (DRDO) to the military services. India certainly has the nuclear infrastructure to compete successfully with Pakistan, which is one of the reasons the stewards of Pakistan's nuclear arsenal strive so hard. The tempos of making and implementing decisions in New Delhi are nonetheless not easily accelerated.[10]

Pakistani government officials and senior military officers initially asserted that they would not repeat the Soviet Union's mistake by engaging in, or being bankrupted by, an arms race. These messages were conveyed most strongly after Pakistan tested nuclear devices in 1998. For example, speaking at a think-tank-sponsored seminar in Islamabad in November 1999, Foreign Minister Abdul Sattar emphasized that, "[W]e shall not engage in any nuclear competition or arms race."[11] Similarly, at a May 2000 presentation at the National Defense College, Abdul Sattar declared that, "Our policy of minimum credible deterrence will obviate any strategic arms race."[12]

Open-ended and rising nuclear-weapon-related requirements do not help alleviate Pakistan's economic distress, even if nuclear program costs — which are not revealed — remain a constant fraction of its overall military budget. These costs could grow relative to Pakistan's conventional force posture if dependency on nuclear deterrence grows because of budgetary constraints. One way for Pakistan's national security managers to avoid this trade-off is to accept a leveling off of nuclear requirements.[13] Of late, there are no signs that Pakistan's nuclear requirements might be curtailed. Indeed, Pakistani officials have begun to qualify their certainty about avoiding an arms race, pointing to the US-India civil nuclear agreement, the possibility of Indian ballistic missile defense deployments, and growing Indian conventional capabilities as especially worrisome developments.[14] Zamir Akram, an accomplished Pakistani diplomat, contended that these developments "have radically altered the strategic environment in South Asia."

Alongside the talking point of "minimal credible deterrence," Pakistani interlocutors have begun using the formulation of "full spectrum deterrence" or deterrence "at all levels of the threat spectrum," requiring "flexible deterrence options."[15]

In domestic discourse, Pakistan's nuclear programs have been widely credited with foiling Indian designs on Pakistani territory and forcing New Delhi to stand down during crises. In 1999, Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar wrote that Pakistan's "recessed" nuclear capabilities helped to avert wars with India in the mid-1980s, during the 1986-1987 "Brasstacks" crisis, and in another crisis three years later.[16] In this commonly held view, when Pakistan's nuclear deterrent shifted from recessed to overt, it became a more formidable brake on Indian designs. After the 2001-2002 "Twin Peaks" crisis, Gen. Pervez Musharraf declared that, "We have defeated an enemy without fighting a war.[17] Likewise, Shamshad Ahmad, foreign secretary during the period of the 1998 nuclear tests, asserted that an overt capability "averted the risk of a disastrous conflict that could have resulted from any misadventure by India."[18] Given this widely heralded success story within Pakistan, it is hard for skeptics to argue against expansive requirements for nuclear deterrence — especially as these requirements are determined in private by very few individuals, as is the case for almost all states with nuclear weapons.

Four Main Pillars of Pakistan's Nuclear Doctrine

Nuclear doctrine, as Brig. (ret.) Naeem Salik has written, "is the principle of belief or bedrock on which organizational and force structures are built. It provides the guidelines for force configuration and the nature, type and number of weapons and delivery systems that would be needed to implement the doctrine."[19] Among the principles of nuclear doctrine affirmed by senior Pakistani government officials and military officers, four appear to be of overriding importance. First, they assert that Pakistan's nuclear deterrent is India-specific. Second, Pakistan has embraced a doctrine of credible, minimum deterrence, as noted above. Third, the requirements for credible, minimal deterrence are not fixed; instead, they are determined by a dynamic threat environment. And fourth, given India's conventional military advantages, Pakistan reserves the option to use nuclear weapons first *in extremis*.

Beyond these central tenets, senior Pakistani officials and military officers provide little information about their nuclear doctrine. Unlike the government of India, which has released and revised a doctrinal statement, Pakistani officials have repeatedly indicated that they do not intend to do so, believing that ambiguity best serves national interests on nuclear matters. The origins of New Delhi's nuclear doctrine had an unusual derivation, based on a report issued by a National Security Advisory Board (NSAB) of former officials, retired officers, journalists, academics and nongovernmental analysts.[20] Their "draft" doctrine was unveiled by then-Indian National Security Adviser Brajesh Mishra, thereby giving it an official imprimatur; subsequent modifications were noted in a succinct government release.[21] An unclassified version of India's nuclear doctrine has not been released, and there have been no reports of further modifications to it.

The closest parallel in Pakistan to the Indian NSAB exercise was a long newspaper op-ed by three distinguished commentators — former Foreign Secretary and Foreign Minister Agha Shahi, Air Marshal (ret.) Zulfiqar Ali Khan and former Foreign Secretary (and soon to be appointed Foreign Minister) Abdul Sattar — published after

the NSAB document was released.[22] A draft of this essay was presumably circulated for comment to government officials and military officers. The co-authors of this essay posited their recommendations as a "counterstrategy" to that of the NSAB, which, they asserted, envisaged "in the guise of 'credible, minimal deterrence' a massive expansion of strategic and conventional forces."[23] Succinct, authoritative reaffirmations of doctrine are usually embedded in press releases by the military's Inter-Services Public Relations (ISPR) Directorate after missile flight tests or after meetings of Pakistan's National Command Authority (NCA). Confused messages are rare occurrences. One example was in 2008 when newly installed President Asif Ali Zardari expressed support for a "No First Use" (NFU) policy.[24] Pakistan's military leadership never endorsed Zardari's statement, and Zardari subsequently noted that the adoption of an NFU posture would require significant steps by New Delhi.[25]

With the exception of the first-use option, all of the central tenets of Pakistan's nuclear doctrine have some malleability. For example, Pakistan's nuclear arsenal is not entirely "India specific." Pakistani officials have occasionally expressed concerns about Israeli and US designs against their nuclear capabilities — designs that presumably also require deterrence in some fashion. Concerns about Israeli strikes directed against Pakistan's fledgling uranium enrichment facilities at Kahuta found expression in the Pakistani media in the mid-1980s, as well as prior to Pakistan's nuclear tests in 1998.[26] Gen. Pervez Musharraf explained his decision to lend Pakistan's support for President George W. Bush's "war on terror" partly on the grounds of safeguarding Pakistan's nuclear deterrent, arguing that the Americans undoubtedly would have taken the opportunity of an invasion to destroy such weapons."[27] Concerns over US designs against Pakistan's nuclear deterrent were especially heightened after the US Special Forces operation in May 2011 that killed Osama bin Laden in Abbottabad. Consequently, a recent Pakistani formulation is "to deter all forms of aggression, *mainly* from India" [emphasis added].[28]

The requirements of credible, minimal deterrence are particularly malleable. As Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar wrote, "Obviously our deterrence force will have to be upgraded in proportion to the heightened threat of preemption and interception."[29] The phraseology used in this regard is not always consistent. For example, after a December 2010 meeting of the NCA, the ISPR issued a release that "[A]ll requisite steps will be taken to ensure Pakistan's national security and to maintain credible deterrence."[30] The absence of the modifier, "minimal," prompted speculation about expansive requirements and was subsequently reinserted in public statements.[31]Qualitative upgrades and increased capabilities are consistent with Pakistani views regarding minimal, credible deterrence. Consequently, if Pakistan's nuclear buildup or India's deteriorating relations with Beijing prompt New Delhi to pick up the pace of the nuclear competition, Rawalpindi's instinct probably will be to compete even harder.

The op-ed by Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar was clear on this point: "Of course, minimum [credible deterrence] cannot be defined in static numbers. In the absence of mutual restraints, the size of Pakistan's arsenal and its deployment pattern have to be adjusted to ward off dangers of pre-emption and interception."[32]Newly appointed Foreign Minister Abdul Sattar reaffirmed this corollary almost verbatim in his November 1999 talk at the Institute of Strategic Studies in Islamabad.[33]Former Indian Foreign Minister Jaswant Singh expressed similar sentiments in an interview with *India Today,*[34] asserting that Indian nuclear requirements

were minimal but not a "fixity"; instead, they are adjustable, as indicated by external threats.[35] "Minimal" numbers for credible deterrence in Pakistan also depend on Rawalpindi's targeting strategy, which remains deliberately opaque. Consequently, important aspects of this analysis are conjectural and are labeled as such.

The circumstances under which Pakistani authorities would resort to the first use of nuclear weapons are also deliberately imprecise, reflecting Rawalpindi's view that to clarify red lines might embolden Indian military actions just beneath them. Lt. Gen Kidwai's characterizations of red lines were released in an odd fashion, embedded in a trip report that included a summary of a conversation with two Italian nongovernmental researchers.[36] Before publication, the Italian co-authors sent their report for review to Foreign Minister Abdul Sattar, who did not object to their characterization of Lt. Gen Kidwai's remarks.[37] Pakistani officials subsequently distanced themselves from this report, noting that it was not an official statement nor a precise summary. The key passage in the trip report is as follows:

Pakistani nuclear weapons will be used, according to Lt. Gen. Kidwai, only "if the very existence of Pakistan as a state is at stake." As reported by the Italian researchers, Lt. Gen. Kidwai offered the following explication:

> Nuclear weapons are aimed solely at India. In case that deterrence fails, they will be used if:
>
> a. India attacks Pakistan and conquers a large part of its territory (space threshold)
>
> b. India destroys a large part either of its land or air forces (military threshold)
>
> c. India proceeds to the economic strangling of Pakistan (economic strangling)
>
> d. India pushes Pakistan into political destabilization or creates a large-scale internal subversion in Pakistan (domestic destabilization)

The authors clarify in footnotes their impression of the conversation with Lt. Gen. Kidwai that, "Examples of economic strangling of Pakistan included a naval blockade and the stopping of the waters of the Indus River," and that, "The political destabilization and the internal subversion scenarios are considered as distinct possibilities."[38]

The Pakistani red lines enumerated in the Italian report range from specific to general and from likely to improbable. One notable aspect of these red lines is that almost all of them are far more relevant to the past — particularly Pakistan's 1971 war with India in which Kidwai fought — than to the present or the future. The prospect of the first use of nuclear weapons due to an economic blockade seems unlikely, both because triggering events would presumably be more dramatic and because wars on the Subcontinent are typically of short duration.[39]The first use of nuclear weapons as a result of domestic political destabilization is also improbable, if for no other reason than the sources of Pakistan's domestic instability could operate independently of India.

The loss of "a large part" of Pakistani territory is a puzzling formulation and may not have reflected Lt. Gen. Kidwai's thinking, or that of other key officers, because smaller territorial losses in key sectors could be deemed catastrophic. Indian government officials seem sensitive to this issue, as "proactive defense" plans developed since the "Twin Peaks" crisis in 2001-2002 - alternatively labeled as "Cold Start" - appear to focus on small, punitive gains rather than deep incursions.[40] Indian Prime Ministers

A.B. Vajpayee and Manmohan Singh have previously demonstrated a disinclination to authorize conventional strikes against Pakistan, even after grievous provocation.[41] In South Asia, it is generally easier to defend territory than to seize it, if the defenders have sufficient notice of an impending offensive and if the forces that seek gains are ill-equipped and lack experience in joint operations. Consequently, if a future Indian prime minister authorizes the Indian Army to seize and hold Pakistani territory, the Indian Army may be hard pressed to do so, at least in the near term.[42]

Over time, the disparity in Pakistani and Indian conventional forces could lend even greater sensitivity to the "space threshold." In the meantime, the most likely threshold for first use relates to significant losses of Pakistani combat aircraft in the event of hostilities. There are several reasons for this conjecture. The disparity in purchasing power between the Indian and Pakistani air forces is particularly evident, and the timelines for growing disparity in this sector are shorter than with respect to ground forces. Moreover, future Indian leaders may be more inclined to use airpower than ground forces if faced with another highly provocative mass-casualty attack by members of a group with a history of connectivity to Pakistan's intelligence services. Airstrikes take far less preparation time than ground offensives, plans are more easily scalable, and airstrikes might "go over the top" of short-range, nuclear-capable Pakistani delivery systems. Nonetheless, the risks associated with choosing the rejoinder of airstrikes are considerable. Any use of Indian airpower across the Kashmir divide, and especially against targets elsewhere, such as in Punjab, the base for many violent, extremist groups, would almost certainly result in retaliatory sorties by Pakistan's air force. Previous India-Pakistan wars do not provide insight into the outcome of air-to-air combat between the two air forces, but on paper, the Indian air force enjoys many — and growing — advantages.

This analysis posits that deliberate decisions by Pakistani authorities to cross the nuclear threshold would most likely be triggered by a limited set of circumstances. This chain of events might be sparked by extremist groups based in Pakistan that carry out mass-casualty attacks at iconic Indian targets, prompting New Delhi to authorize retaliatory strikes on Pakistani targets. This scenario has, so far, resulted in severe crises but not in Indian military responses.[43] The probability of Indian military ripostes and Pakistan's first use of nuclear weapons would be reduced considerably if Pakistan's military and intelligence services undertook greater efforts to prevent triggering events. Absent this, additional crises with India can be expected, along with heightened concerns about escalation control — crises that increase readiness to use nuclear weapons, thereby increasing the likelihood of accidents and loss of control over nuclear assets.[44] The probability of first use as a result of accidents and unauthorized use, which will be discussed below, appears greater than a deliberate command decision to cross the nuclear threshold.

Meeting the Dynamic Requirements of Minimal, Credible Deterrence

Pakistan's nuclear-weapon-related programs reflect conservative military planning assumptions against growing Indian conventional and nuclear capabilities. A small number of senior, active-duty Pakistani military officers and one retired officer, Lt. Gen. Kidwai, have the primary authority to set nuclear requirements and then implement them. Political leadership and cabinet secretaries are involved in this process and are supportive of requirements set by military leaders. Absent production bottlenecks, requirements are systematically met. The extent of Pakistani efforts since the 1998 nuclear

tests indicate that either original requirements for minimal, credible deterrence were set quite high, or these requirements have expanded alongside India's economic and military growth. This essay's conjectural conclusion is that both hypotheses are true.

As a highly competent organization, the SPD engages in long-range planning. Presumably, the SPD's planning horizons include five- and 10-year timelines, and perhaps longer. As with other competent organizations, it is reasonable to expect that the SPD's plans are not fixed. Instead, they presumably can be adjusted to address important developments but are usually not subject to radical overhauls. The SPD's first plans were likely drawn up in the 1999-2000 timeframe, when the organization was stood up. If this assumption is correct, this means that around the halfway point in the SPD's first 10-year plan, the George W. Bush administration publicly pledged a civil-nuclear cooperation agreement with India, alongside a commitment to secure an exception to the rules of nuclear commerce from the Nuclear Suppliers Group (NSG).[45] No such agreement was offered to Pakistan, which, unlike India, continues to be denied access to commercial nuclear markets.

The US-India civil nuclear agreement came as a blow to Pakistan because it offered New Delhi an international escort into the nuclear club, while continuing to stigmatize Pakistan with exclusion. Moreover, the prospect of foreign direct investment in India's nuclear power sector was worrisome, as this could free up limited domestic fissile material production capacity for nuclear-weapon-related purposes. The Bush administration asked very little of India in return for these favors: New Delhi placed no fewer than eight domestically produced power reactors outside the scope of the International Atomic Energy Agency's safeguards, India's breeder reactor plans remained unconstrained, and New Delhi was not prompted to sign the Comprehensive Test Ban Treaty or to entertain a moratorium on production of fissile material for nuclear weapons.

Conservative military planners within the SPD could hardly have remained unaffected by the prospective implementation of the US-India nuclear deal. Consequently, halfway into a 10-year planning cycle, the stewards of Pakistan's nuclear weapon programs probably began to revise their substantial initial requirements upward. Two indicators support this conjectural analysis. One is that Islamabad dropped its previous support for negotiating a Fissile Material Cutoff Treaty (FMCT) in the Conference on Disarmament (CD) in February 2010, after other recalcitrant states appeared ready to proceed. While the decision to cast the sole veto against the start of FMCT negotiations could have been the result of pique, or to prompt a bargaining process for Pakistan's benefit, these reasons seem insufficient to warrant being singled out for the CD's impasse. The Pakistani Foreign Ministry's stated rationale for blocking the FMCT focuses primarily on India's increased potential to utilize fissile material for warhead production as a result of the NSG's waiver.[46]

The second indicator of increased nuclear-weapon-related requirements relates to growth in Pakistan's nuclear infrastructure. Prior to the announcement of the US-India nuclear cooperation agreement, Pakistan had begun construction on two new plutonium production reactors, a new heavy water plant and a new reprocessing facility to accompany older plutonium production, reprocessing and uranium enrichment facilities. Published reports indicate that construction of a third plutonium production reactor at Khushab began in 2006. All of these facilities, with the possible exception of the third plutonium production reactor, are consistent with a 10-year planning cycle. Construction on a fourth plutonium production reactor began in 2011, after the US civil-nuclear deal was approved by the US Congress and Indian Parliament.[47]

It is possible that the fourth plutonium production reactor was envisioned as part of an initial 10-year plan. More likely, at least in this conjectural view, the newest production reactor reflected added Pakistani concerns over the US-India civil nuclear agreement, as well as heightened concerns about India's improved ties with the United States and Pakistan's growing internal and external troubles. Peter R. Lavoy has reached a similar conclusion, tracing the expansion of Pakistan's plutonium production infrastructure to an April 2006 meeting of the NCA.[48]

Pakistan will not be able to match India in a long-haul nuclear competition, assuming that New Delhi accelerates the pace of production in delivery vehicles and warheads. For now, however, the stewards of Pakistan's nuclear program appear resolved to do their best to prevent the growing imbalance in conventional capabilities to be reinforced by Indian superiority in nuclear forces.

The pacing and output of these programs suggest that it will be increasingly difficult for Pakistani (and Indian) spokespersons to assert that they will not engage in an arms race. The Pakistan-India dynamic is certainly the most pronounced nuclear competition since the Cold War ended, made even more complicated because New Delhi must factor in China's nuclear-weapon-related capabilities. Since Beijing's nuclear posture can be affected by US ballistic missile defense programs, the interactive nature of the nuclear competition in southern Asia could be no less complex and difficult to dampen than the Cold War competition.

By any definition, Pakistani and Indian programs constitute, at a minimum, a serious competition, and one that could well be intensified in the near future. Key elements of this accelerated, bilateral competition were already in view before the US-India civil nuclear agreement, including ballistic missiles of varying ranges, new cruise missile programs, and the pursuit of sea-, air-, and ground-based capabilities to deliver nuclear weapons. The harder Rawalpindi competes to offset conventional disparities with nuclear capabilities, the more likely it is that New Delhi will pick up the pace of its nuclear programs.

Pakistan's Targeting Requirements

The central purpose of Pakistan's nuclear arsenal, as defined by those who set nuclear requirements, is to protect Pakistan from a predatory neighbor that seeks either its demise or its submissiveness. In this view, New Delhi seeks superior conventional and nuclear capabilities to achieve "hegemonic" goals.[49] This widely held view within military circles remains fixed, even as Pakistan has become increasingly peripheral to India's national ambitions. To acknowledge that a "hegemonic" neighbor has more pressing interests than to punish Pakistan would only magnify a sense of Pakistan's national decline. Besides, Pakistanis who hold deep grievances will not allow India to forget them. Extremist groups within Pakistan have the means to place India on the "back foot" by means of mass-casualty attacks at sensitive, poorly guarded sites. A core objective of Pakistan's nuclear deterrent is to dissuade Indian leaders from taking retaliatory military action after these attacks; to prevent New Delhi from coercing Pakistan, especially during crises; and to wreak devastation on India in the event that deterrence fails.

The particulars of Rawalpindi's targeting objectives are closely held. This analysis, which is highly conjectural, concludes that Pakistani requirements for nuclear weapons reflect a low-, medium- and high-end mix of targeting objectives.[50] The low end of

this mix might include the selective or demonstrative use of tactical nuclear weapons. One or very few nuclear detonations could serve two immediate purposes: to signal New Delhi to cease limited offensive operations and to hasten international efforts to intervene and to pressure New Delhi to desist. A medium set of targeting options could employ the use of many tactical nuclear weapons to counter Indian advances at points where "Cold Start" or proactive defense operations could be conducted along fighting corridors. Low- and medium-mix targeting could quickly slide into high-end options, that is, the destruction of critical infrastructure, leadership-related targets and cities, with the overarching objective to destroy India as a functioning society.

In determining these targeting requirements, Pakistani planners must consider and compensate for the loss of nuclear weapons and their delivery vehicles to an Indian first strike.[51] Rawalpindi places very little credence in India's "No First Use" (NFU) doctrine, which was characterized by Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar as "a cost-free exercise in sanctimonious propaganda."[52] These authors wrote that, "As a rule of thumb, if 50 percent of the counterforce becomes vulnerable, its size should have to be doubled" — at least until mobile missiles become the backbone of Pakistan's nuclear deterrent.[53] Hawkish Indian analysts who argue for preemptive strikes against Pakistan feed into Rawalpindi's tendency toward worst-case nuclear requirements.[54] To counter concerns over Indian preemptive strikes, Rawalpindi must move warheads from storage sites and missiles from main operating bases during severe crises.

Since the managers of Pakistan's nuclear deterrent do not place credence in India's NFU policy, they must take seriously the possible first use of nuclear weapons in extreme circumstances. The first use of nuclear weapons by Pakistan's security managers could invite an overwhelming Indian response, as New Delhi's nuclear doctrine warns. The stark choice of using or losing strategic assets — whether at the low, medium or high end — could grow further as Indian surveillance and targeting capabilities improve, placing more of Rawalpindi's nuclear forces at risk.[55] Robert Jervis has written that, "It is rational to start a war one does not expect to win … if it is believed that the likely consequences of not fighting are even worse."[56] Pakistani decision-makers may well find themselves in reluctant agreement with this view.

Tactical Nuclear Weapons

As conjectured here, the low and medium options for Pakistani first use of nuclear weapons involve battlefield systems. Pakistan's shorter-range missile flight tests suggest targeting objectives either to signal the urgent need to halt a military campaign or to stall advancing armored formations and their logistical support on both sides of the International Border or Line of Control dividing Kashmir.[57] The March 5, 2012, flight test of the 180 km Hatf-2 (Abdali) was advertised by the ISPR as providing an "operational" as well as "tactical-level" military capability.[58] The 60 km range Hatf-9 (Nasr) was first flight-tested in April 2011, clarifying, in Lt. Gen. Kidwai's view, "a very important milestone in consolidating Pakistan's strategic deterrence capability at all levels of the threat spectrum."[59]

The impulse for low- and medium-end nuclear targeting was probably reinforced after the 2001-2002 Twin Peaks crisis, which began with attacks on the Indian Parliament by Pakistani nationals belonging to extremist groups, after which the Indian and Pakistani armed forces mobilized for war. In the three weeks it took the Indian army to assume its battle-ready positions, the Pakistan army assumed defensive

positions, making Indian ground gains uncertain.[60] New Delhi's frustration at the absence of adaptive and timely military options during this crisis led to the development of proactive defense plans,[61] known in Pakistan as India's Cold Start doctrine.[62]

Cold Start has subsequently become a lightning rod for Pakistani concerns that India seeks to seize and hold Pakistani territory or force submissive behavior in a crisis.[63] Pakistani concerns were reaffirmed when senior Indian government officials and military officers spoke of the need to deter future attacks by extremist groups with ties to Pakistan's military and intelligence services by being able to fight limited conventional wars under the nuclear umbrella.[64] The flight tests of ballistic missiles such as the Abdali and the Nasr, other nuclear modernization programs, and the extent of Pakistan's nuclear weapons' infrastructure, suggest requirements that could go beyond countercity, or "countervalue," targeting.

Pakistani officials and commentators expressed no interest in acquiring "tactical" or battlefield nuclear weapons delivered by means of short-range missiles after the 1998 tests of nuclear devices. Instead, interlocutors argued that all nuclear weapons were "strategic" in the context of the Subcontinent; that is, any use of a nuclear weapon, regardless of range, would have strategic consequences. This line of argument suggested that longer-range missiles, being harder for India to target and providing more secure command and control, were preferable to short-range systems. Pakistani statements that initially diminished the value of tactical nuclear weapons also suggested that troubling conventional military imbalances were not so adverse as to require short-range missiles to shore up deterrence against Indian ground forces.

It is possible that tactical nuclear weapons have been part of the SPD's plans all along. Their role is now indisputable. Requirements for short-range nuclear capabilities are unclear and could be substantial. Overt moves such as the flight-testing of the Abdali and the Nasr suggest that the prospect of India's growing conventional capabilities and more proactive military plans have combined to generate shorter-range Pakistani nuclear targeting requirements. If short-range ballistic missiles are deemed essential, other types of tactical nuclear weapons could follow. The flight-testing by India of the 150 km Prahaar missile system in July 2011 likely reinforced this reassessment, even though there is no evidence beyond DRDO public statements — which have been unreliable in other contexts — to indicate that the Prahaar will carry nuclear weapons.[65]

The requirements of Pakistani targeting against Indian armor and logistical concentrations that support advancing units are anything but straightforward. A great many weapons would be needed to kill properly spaced tanks. Zia Mian and A.H. Nayyar estimated the following:

For a tank spacing of 100 meters, one 15 kiloton weapon could destroy about 55 tanks. To destroy this many tanks if they were spaced 300 meters apart would take eight weapons of 15 kiloton yield each. To destroy by blast alone roughly half of a force of 1,000 tanks that were well dispersed would require on the order of 100 nuclear weapons of 15 kiloton yield.[66]

These illustrative spacing calculations might not be correct, but however one calculates the lay-down of tactical nuclear weapons against tanks in the field, requirements appear to be expansive, as well as a poor allocation of plutonium, even for Pakistan's expanded production capacity.[67] Moreover, Pakistan lacks the real-time surveillance capabilities to destroy armored columns, except where they are funneling into bridge

crossings of water barriers. Another target for tactical nuclear weapons might be key logistical nodes on Indian or Pakistani soil in support of advancing units. Using tactical nuclear weapons against advancing Indian armor on Pakistani territory would constitute a significant psychological hurdle, since the purpose of the Pakistan military is not to detonate nuclear weapons on national territory, even to counter an Indian advance. Nor would a very limited first use on Pakistani soil provide insurance against uncontrolled escalation, since Indian doctrine asserts that the use of nuclear weapons against Indian forces, wherever they may be situated, would prompt massive retaliation.[68]

While the credibility of threatening massive retaliation against very limited use of nuclear weapons has always been subject to question, this threat becomes more prone to uncontrolled escalation if Pakistani detonations occur on Indian soil. The likelihood of massive Indian retaliation would grow further if many tactical nuclear weapons were used along the forward edge of battle against advancing Indian formations. Alternatively, the use of one or a few nuclear detonations could signal the urgency of halting an Indian military campaign. Only one weapon would be required for signaling purposes, and longer-range systems would seem far better suited for this role, as they could be used away from the forward edge where they could be better defended, and they could be targeted at an aim point at sea.

Pakistani commentary on tactical nuclear weapons is sparse and does not dwell on the dilemmas posed by forward deployments, accidents, breakdowns of command and control, and unintended escalation.[69] Short-range nuclear weapon delivery vehicles introduce particularly serious command and control issues for Pakistan, whose doctrine embraces first use and whose authorities have asserted that they do not intend to predelegate authority to field commanders. How the introduction of short-range systems affects another safeguard — the separation of warheads and launchers — is an open question.[70] These barriers to unauthorized use and unintended escalation are likely to fall if tactical nuclear weapons and their launchers are deployed close to the forward edge of battle.

Rather than addressing these issues, and operational dilemmas associated with the battlefield use of nuclear weapons, Pakistani commentaries focus on deterrent effects, the perceived need to counter adventurous Indian military doctrine, and, by inference, the lack of utility of longer-range missile systems or air-delivered weapons to address localized threats.[71] Pakistani decision-makers understand that escalation control, even in the event of a single use of a tactical nuclear weapon, would be immensely problematic and could well have profoundly tragic consequences. Nonetheless, they appear to view this option as being less problematic than relying on their other means of nuclear delivery as the conventional military balance with India grows more adverse. Pakistani analysts believe that these dilemmas will become moot because their advertised possession of tactical nuclear weapons will further dissuade Indian leaders from authorizing limited incursions into Pakistani territory.

It is possible that, because tactical nuclear weapons pose so many operational dilemmas, and because scenarios for their successful use are hard to identify, they might not feature prominently in Pakistani targeting requirements. On the other hand, the stewards of Pakistan's nuclear arsenal have not skimped on requirements for other nuclear-weapon-related capabilities. Since Indian advances could occur across long borders, Rawalpindi could conceivably set requirements for various types of tactical nuclear weapons. These requirements will become somewhat less opaque over time.

High-End Nuclear Strikes

While high-end Pakistani nuclear strike packages probably include some military targets, the standard way for new nuclear-weapon states to define minimal, credible deterrence is by means of countervalue targeting, that is, being able to destroy an adversary's large metropolitan areas. There are 10 cities in India with populations of more than three million: Mumbai, Delhi, Bangalore, Hyderabad, Ahmedabad, Chennai, Kolkata, Surat, Pune and Jaipur. Mumbai is a center of commerce, culture and nuclear infrastructure. New Delhi is the seat of government. Chennai and Kolkata are significant regional hubs. Bangalore and Hyderabad represent the new, "rising" India, fueling India's economic growth. Placing these cities, some of which contain very significant Muslim populations, at risk is one way to check perceived Indian designs on Pakistan's territorial integrity.

The United States and the Soviet Union allocated very large numbers of nuclear weapons against military targets in built-up areas, without regard for the overlapping effects these detonations would have, especially with respect to firestorms.[72] Consequently, if superpower targeting plans had been executed during the Cold War, major metropolitan areas would have been destroyed many times over.

This analysis hypothesizes very modest requirements for Pakistani countervalue targeting.[73] Assuming 10 cities and three weapons per city, 30 weapons delivered on targets would be required. These numbers are notional; they may vary from city to city and could be revised upward or downward. Those responsible in Pakistan for planning countervalue targeting against Indian cities would also have to assume losses of nuclear weapon delivery vehicles and storage sites to Indian preemptive or retaliatory strikes. Consequently, if there is a fixed requirement for the laydown of a certain number of weapons against Indian cities, a multiple of this number would presumably be applied to compensate for expected losses. In any event, countervalue strikes against Indian cities could entail a very substantial use of nuclear weapons. All of these planning factors are closely held, so this assessment is highly conjectural.

Indian leaders and hawkish analysts have expressed the view that their country could survive a nuclear war, whereas Pakistan would not. As former Defense Minister George Fernandes said in a 2002 interview, "[I]f he should finally take that kind of step, perhaps out of desperation, he should realize that India can survive a nuclear attack, but Pakistan cannot."[74] Army Chief S. Padmanabhan echoed these sentiments when he reportedly said that "India would severely punish any state that is 'mad enough to use nuclear weapons against any of our assets.' Padmanabhan added, 'the perpetrator shall be so severely punished that his very existence will be in doubt. We are ready for a second strike.'"[75] Likewise, hawkish analyst Bharat Karnad wrote, "The problem here is not one of preventing nuclear war, but with believing that Pakistan can annihilate India, which is not possible, even as the reverse is eminently true."[76]

These assertions have not gone unnoticed by those who set Pakistan's requirements for nuclear weapons. It would be out of character for Pakistan's military leadership to accept the survival of India and the death of Pakistan in a nuclear war. Thus, in this conjectural analysis, Rawalpindi is likely to pursue a "victory denial" strategy in the event of a complete breakdown in deterrence.[77] The growth of Pakistan's nuclear stockpile is commensurate with a targeting objective to exact overwhelming damage sufficient to prevent India from recovering as a functioning society. Denying India "victory" in a nuclear war would constitute the high end of Pakistan's targeting

objectives. These might include, in addition to India's largest cities, its leadership, key industrial facilities, ports, nuclear power plants, dams and other critical infrastructure that are not necessarily situated in large metropolitan areas.

This targeting strategy would not be unique to Pakistan. The first, notional US targeting plan against the Soviet Union had the objective of "immediately crippling the ability of the enemy to wage war." This plan, conceived less than two months after the atomic bombs dropped on Hiroshima and Nagasaki ended World War II, hypothesized the need for a minimum of 123, and preferably 466, weapons in what Alex Wellerstein has characterized as "a nuclear knock-out punch designed to beat another nation immediately into the stone age." According to the first US nuclear targeting plan, 15 Soviet cities with significant industrial capacity were top-tier targets, and 66 other cities "of strategic importance" were identified. US planners decided initially on a notional requirement of three weapons per city.[78]

A targeting doctrine to deny India victory in a nuclear slug-fest would be an unusual and exacting way to define minimal, credible deterrence, but it could well explain Pakistan's production capacity for nuclear weapons and the prospective growth of its stockpile. Peter R. Lavoy has argued that Pakistan's nuclear deterrence strategy is predicated on a commitment to "escalation dominance."[79] In Western strategic analysis, escalation dominance was often linked to "ladders" of applied capability; at each rung of the ladder, the side taking the initiative would seek to clarify its leverage at higher rungs, as well.[80]It is beyond Pakistan's grasp to achieve these capabilities at the conventional level, which might make this objective appear more compelling with respect to nuclear forces. This analysis suggests that escalation dominance, in a Pakistani military perspective, may well entail skipping many rungs in the escalation ladder.

During the Cold War, hawkish US strategists held the view that victory was still possible in nuclear exchanges, even at great cost.[81] Failing that, an adversary's victory could still be denied — and deterrence reaffirmed — by means of expansive nuclear inventories and targeting capabilities. Do the managers of Pakistan's nuclear deterrent believe that they can fight and win a nuclear war with India? In their foundational essay, Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar wrote that Pakistan was "not so unrealistic as to entertain" thoughts of the "use of nuclear weapons for war-fighting or seek to develop capability for preemptive attack." These authors argue that, "India is too large and too well armed to be vulnerable to a disabling strike."[82] This line of reasoning applies as long as India's strategic assets grow, are properly diversified, become more operationalized for deterrence purposes, and if New Delhi becomes more serious about command and control arrangements. It would not require Herculean efforts for Indian leaders to dissuade Rawalpindi that a Pakistani victory in the event of a nuclear war is not achievable. Some have made the case, however, that New Delhi has been lax in assuring retaliatory capabilities and proper force management.[83] While the achievement of victory by Pakistan in a nuclear war with India seems far-fetched, the denial of an Indian victory is another matter. The buildup of Pakistan's nuclear forces is entirely consistent with this objective.

Pakistan's Deciders

Pakistan's nuclear requirements are set by very few active-duty military officers and one retired officer, Khalid Kidwai, with very little civilian oversight or ability to

question military requirements. This absence of checks and balances is reminiscent of the Pentagon's nuclear planning until the arrival of Secretary of Defense Robert McNamara, Deputy Assistant Secretary of Defense Alain Enthoven, and the "whiz kids" in 1961. The civilian whiz kids have yet to arrive in Pakistan.

Those who have been instrumental in Pakistan's successful nuclear weapons programs are likely to be given broad leeway to pursue production requirements that they deem essential. Pakistan has its own version of Admiral Hyman Rickover, the man whose services to the US nuclear navy were deemed so essential by his supporters on Capitol Hill that his retirement from active duty was postponed until the ripe old age of 81. Lt. Gen. Kidwai is Pakistan's Rickover equivalent — the director-general of the SPD since its inception in 2000. Rickover's steel will ruled over questions of submarine design, personnel and related matters. Rickover was imperious; he would circumvent his military superiors when he suspected or opposed their judgment. In contrast, Lt. Gen. Kidwai is a man of low-key demeanor with a sense of humility who works through military channels. Lt. Gen Kidwai, like Adm. Rickover, inspires the view that he is indispensable. Unlike Adm. Rickover, Lt. Gen Kidwai probably believes otherwise.

Time in service is an important factor in considering promotions and retirements in the Pakistan army, as with other military services. After taking charge of the SPD, Kidwai was promoted to lieutenant general in October 2001 and then received an extension in service in 2004 to stay at its helm — a highly unusual personnel action. Lt. Gen Kidwai faced retirement in 2005 because his time on active duty would extend beyond those who were about to out-rank him.[84] His boss, Chief of Army Staff (and President of Pakistan) Pervez Musharraf decided on his retirement, while keeping him in place at the SPD. While many retired military officers have been given plum assignments overseeing civilian institutions in Pakistan, the appointment of a retired military officer to be in charge of a most sensitive joint staff assignment is unprecedented. Gen. Musharraf's decision survived his banishment from Pakistan. Lt. Gen Kidwai's extended tenure at the SPD has meant that his views regarding Pakistan's nuclear requirements will be very hard to overrule, especially by newly elected civilian leaders and newly appointed military superiors.

How many other individuals help determine the requirements to implement nuclear doctrine is a matter of conjecture. Presumably, a small core group of very senior military officers are instrumental in making such decisions, beginning with the chief of army staff, the chairman of the Joint Chiefs of Staff Committee, the head of the Strategic Forces Command, and the chiefs of the air force and navy. A larger group of military officers, scientists and civil servants provides input to these decisions and implements them.

Sitting atop Pakistan's National Command Authority, which was initially promulgated as an administrative regulation[85] at the outset of Gen. Musharraf's rule, and then codified into an ordinance nearing the end of his tenure,[86] is the head of government. With Musharraf's exit, the head of government became a civilian in the person of president, Asif Ali Zardari. In November 2009, President Zardari revised this ordnance, placing the prime minister, then Yusuf Reza Gilani, at the top of the NCA. This passing of the baton was orchestrated in the context of clarifying the transition from a presidential- to a prime-ministerial-led government. The head of government atop the NCA is now Prime Minister Nawaz Sharif. Under the Musharraf set-up, the prime minister served as vice chairman of the NCA. Now it appears that the vice chairmanship is vacant. Two subsidiary bodies of the NCA — an Employment Control

Committee and a Development Control Committee — have deputy chairmen. The deputy chairman of the all-important Employment Control Committee is the foreign minister, a position held by Hina Rabbani Khar during the previous government. At this writing, Nawaz Sharif holds this post, having yet to appoint a foreign minister. The deputy chairman of the Development Control Committee is the chairman of the Joint Chiefs of Staff Committee. Three civilian cabinet ministers also serve on the Employment Control Committee: the minister for defense; the minister for interior, and the minister for finance.

According to an interview Lt. Gen Kidwai gave in 2002, when Gen. Musharraf sat atop the NCA, "practically all (99%) of the nuclear decisions pertain[ed] to the Head of Government."[87] One can certainly envision that when the army chief of staff sat atop the NCA, he held the ultimate authority in determining employment and developmental decisions relating to nuclear weapons. It would strain credulity to assert that this remains the case under a civilian head of government — whether Prime Minister Gilani, his successor, Raja Pervaiz Ashraf, and under the deputy chairmanship of Foreign Minister Khar in the previous government, or under Nawaz Sharif at present. While notional authority now resides in the office of the prime minister, and while cabinet ministers on the NCA are involved in these decisions, real authority lies with the chief of army staff, the chairman of the joint chiefs of staff, Lt. Gen Kidwai, and few others, some of whom may not be involved in decision-making under extreme duress.

Implications for Deterrence Stability

An intensified nuclear arms competition between Pakistan and India has troubling ramifications for deterrence stability, particularly within the context of crises sparked by spectacular acts of terrorism by groups with long histories of association with Pakistan's military and intelligence services. As long as Rawalpindi declines to take sustained preventive action against future attacks by extremist groups, the presumption of continued collusion will remain. Future crises could occur because bilateral ties with India remain badly frayed or, conversely, by official efforts to improve ties that extremist groups wish to stymie. The primary reason for escalation control during past nuclear-tinged crises has been that Indian leaders have chosen not to respond militarily to severe provocation. Instead, they have given the pursuit of economic growth a higher priority than the punishment of the perpetrators of mass-casualty attacks. New Delhi also has been concerned about escalation control in the event of retaliatory strikes. If this calculus of decision remains firm, deterrence stability can withstand future challenges. If future Indian leaders feel impelled to respond militarily to severe acts of provocation, deterrence stability and escalation control will become increasingly challenging.

India and Pakistan have signaled resolve during severe crises by increasing the launch readiness of their ballistic missiles and by carrying out missile flight tests.[88] Key indicators of a decision to attack during full-scale mobilizations are well understood. Critical troop movements and preparations can be monitored by human intelligence and by technical means.[89] In addition, the United States has relayed information derived from high-level visits as well as information-gathering efforts by defense attachés and national technical means to dampen apprehensions during crises. US crisis management has been especially helpful in rebutting false rumors and confirming de-escalatory steps.[90] Because authorities in India and Pakistan have wished to avoid major wars, have been familiar with the choreography of full-scale mobilizations, and

have mutually agreed to accept a significant US crisis management role, severe crises since 1990 have been managed, albeit with difficulty.

Several of the conditions for war avoidance and crisis management have changed or may no longer apply, making deterrence stability more difficult to reinforce in crises. To begin with, Pakistani and Indian nuclear-weapon-related capabilities have diversified and grown. Added capability does not automatically equate to added deterrence stability. To the contrary, more nuclear weapons repositioned or forward-deployed in a crisis could result in less deterrence stability.[91] In the US-Soviet context, the growth in number and sophistication of nuclear arsenals — including assured retaliatory capabilities — was not mutually reassuring. Instead, these nuclear buildups heightened a mutual lack of trust and aggravated serious, unresolved grievances. This is also likely to be true for the Subcontinent.

Moreover, Pakistan and India possess new nuclear capabilities that have not figured prominently or at all during prior crises, including tactical nuclear weapons, cruise missiles and nuclear weapons at sea. There has been one reported instance of the forward deployment of Indian short-range missiles — the Prithvi-1 — in late May or early June 1997.[92] At the suggestion of the Clinton administration, Prime Minister I.K. Gujral quietly directed that these missiles be moved back to their base at Secunderabad.[93] The movement of short-range ballistic missiles in a future crisis would be a significant signaling device.

The introduction by India and Pakistan of cruise missiles and sea-based deterrents adds further difficulties for deterrence stability and escalation control. Detection capabilities for ballistic and especially cruise missile launches would be challenging, let alone the prospect of successful intercepts. The movement of cruise and ballistic missiles to sea could provide challenging tests for command and control. The nuclear deterrents of India and Pakistan consist primarily of ballistic missiles, which makes deterrence in South Asia army-centric. The two air forces have played an important, but secondary, role in the past. This could change significantly, if New Delhi chooses to respond to attacks by extremist groups with a punish-and-leave, as opposed to a seize-and-hold, strategy. The two navies will be hard to employ for nuclear signaling purposes, while presumably more useful for an assured retaliation role. Rawalpindi seems intent to deploy cruise missiles at sea,[94] while New Delhi intends to deploy both cruise and ballistic missiles at sea.[95]

With diversified nuclear deterrents, integration, joint operations, and command and control across military commands and services become increasingly important. The armed forces of Pakistan and India have been particularly resistant to joint operations and integrated war fighting. One prominent example was the 1999 Kargil operation, in which a small group of officers within the Pakistan army planned and executed an initiative with high escalatory potential, without the knowledge of the air force and navy chiefs of staff.[96] Nor do the Indian armed services excel at joint operations. The position of chief of integrated defence staff to the Chairman Chiefs of Staff Committee, created in 2001, has yet to be filled.[97]

Sea-based and short-range, ground-based nuclear weapons raise new operational questions for Pakistan and India, including whether or how warheads would be maintained separately from launchers. This separation has been one way in which both countries have favorably distinguished themselves from other nuclear weapon-states that rely on a high level of readiness to launch nuclear strikes. In the past,

the timeline required for launch readiness has provided space for signaling, monitoring and crisis management. All of these vital benefits would be very hard to maintain at sea with surface navies and even harder for submarines. The ability to maintain "secure second strike" capabilities can be a positive development for deterrence stability — but only if proper arrangements are in place to avoid an unauthorized crossing of the nuclear threshold.

Another negative development for deterrence stability is that Washington's credibility as an "honest broker" between India and Pakistan has become more problematic as US ties with India.[98] US-Pakistan relations are hard to maintain on an even keel. If another severe crisis erupts with India, Pakistan's security managers will be faced with the potential for military engagements with little prospect for backup from either Washington or Beijing, which has been notably cool to Pakistani requests for assistance during previous crises. While Pakistani leaders no longer trust the United States as an intermediary with India, no substitute to Washington is in clear view. US crisis management would therefore entail familiar moves from a well-used playbook against new uncertainties in the event of more spectacular attacks on Indian targets by individuals based and trained in Pakistan.

Conclusion

Pakistan's nuclear-weapon-related programs have successfully met requirements established by a small group of decision-makers. After surmounting many barriers to acquire these capabilities, Rawalpindi has accumulated a large, growing and diversified arsenal of warheads and delivery vehicles. It appears that the requirements set for minimal, credible deterrence were high at the outset and have grown higher still after the US-India civil nuclear agreement and after the adoption of a more proactive Indian military posture. Earlier Pakistani and Indian claims that their doctrines of minimal, credible deterrence were incompatible with an arms race are now increasingly subject to question. At present, Rawalpindi's nuclear requirements emphasize credibility rather than minimalism. Pakistan is on course to produce a large nuclear arsenal to support ambitious nuclear targeting objectives. At the low end of these requirements, Rawalpindi has developed the capability to signal New Delhi and the international community that hostilities must end promptly. At a medium level, Pakistan appears set to acquire a large number of tactical nuclear warheads for use against Indian integrated battle groups. At the high end, Rawalpindi appears able to engage in significant countervalue targeting and to deny India victory in the event of a complete breakdown in deterrence.

New Delhi has long preferred to focus on Beijing's strategic ambitions and to be disassociated from a nuclear competition with Pakistan. This posture is becoming less tenable the harder Rawalpindi competes. Altering Pakistan's current growth trajectory in nuclear-weapon-related capabilities would require a different orientation toward India by Pakistan's military leaders, severe perturbations in Pakistan's economy, and/or a perception-shattering event that causes nuclear advocates to rethink their assumptions. New leaders are capable of surprising shifts in longstanding nuclear and national policies, as exemplified by Mikhail Gorbachev, Ronald Reagan and Deng Xiaoping. Army chiefs in Pakistan have been a diverse lot; it is possible for one to be appointed who believes that a more relaxed nuclear posture toward India is warranted.

Pakistan's continued economic woes might be a factor in this decision, but shrinking budgets could just as easily result in more emphasis being placed on nuclear deterrence as conventional capabilities decline relative to India. The leaders of the three major

political parties in Pakistan have vocalized their interest in improved relations with India, especially with respect to trade, but the extent to which they are able to bring Rawalpindi on board is in question. Pakistani prime ministers, along with their Indian counterparts, will continue to find it difficult to normalize bilateral relations when extremist groups seek to blow up progress.

Perception-shattering events on the Subcontinent could have negative or positive effects for deterrence stability. A settlement of the Kashmir dispute is hard to envision, and even if it were to occur, it is unlikely to affect the agendas of extremist groups based in Pakistan. An accident at a nuclear facility on the Subcontinent would surely impact domestic plans for growth in this sector and could generate public opposition to military programs, as well. Political upheavals in Pakistan that usher into power religious parties and jihadist groups remain unlikely. Of all the perception-shattering events one can envision in Pakistan, the most likely would be dramatic and severe economic difficulties, rather than a continued, steady economic decline. This scenario, more than any other, could significantly alter the role of the military in Pakistan's society and its outsized share of budget allocations — including those for nuclear-weapon-related pursuits. This scenario could also spell great difficulties for maintaining the safety and security of Pakistan's nuclear arsenal.

The safest route to reducing nuclear dangers remains patient, persistent, top-down efforts to normalize relations between Pakistan and India. Success in this pursuit is dependent on the recognition by Pakistan's military leaders that they possess a sufficient arsenal for the defense of national sovereignty, that their current path does not strengthen or stabilize deterrence, and that Indian leaders seek a properly functioning Pakistan more than a submissive one. Is this scenario realistic? Perhaps not in the near term, but deterrence built on very weak economic foundations is unsustainable. Given the large economic stake that Pakistan's military holds, and the jeopardy it faces in the event of continued economic decline, sustained efforts to increase cross-border trade and investment appear to be the path of least resistance to normalize relations on the Subcontinent.

Notes

1. The author wishes to thank Stephen Cohen, Toby Dalton, Gregory Jones, Dan Markey, Polly Nayak, George Perkovich, David O. Smith, Bruno Tertrais and others who shall remain nameless for their comments and editorial suggestions. The author also wishes to thank Nathan Cohn, Julia Thompson, Drew Stommes and Dylan Rebstock for their assistance. Any remaining errors or weakness in analysis are the sole responsibility of the author.

2. For recent assessments, see, for example, Maleeha Lodhi, ed., *Pakistan: Beyond the "Crisis State"* (New York: Columbia University Press, 2011); Pamela Constable, *Playing with Fire: Pakistan at War with Itself* (New York: Random House, 2011); John R. Schmidt, *The Unraveling: Pakistan in the Age of Jihad* (New York: Farrar, Straus & Giroux, 2011); Ahmed Rashid, *Pakistan on the Brink: The Future of America, Pakistan, and Afghanistan* (New York: Viking, 2012); Bruce O. Riedel, *Deadly Embrace: Pakistan, America and the Future of the Global Jihad* (Washington: Brookings Institution Press, 2012); Irfan Husain, *Fatal Faultlines: Pakistan, Islam and the West* (Rockville, MD: Arc Manor, 2011); Imtiaz Gul, *The Most Dangerous Place: Pakistan's Lawless Frontier* (New York: Penguin, 2011); James P. Farwell, *The Pakistan Cauldron: Conspiracy, Assassination & Instability* (Dulles, VA: Potomac Books, Inc., 2011); Zahid Hussain, *The Scorpion's Tail: The Relentless Rise of Islamic Militants in Pakistan — And How It Threatens America* (New York: Free Press, 2010); Rohan Gunaratna and Khuram Iqbal, *Pakistan: Terrorism Ground Zero* (London: Reaktion Books, 2011); and Stephen Philip Cohen, *The Future of Pakistan* (Washington: Brookings Institution Press, 2011).

3. See Nathan Cohn, "Mass-Casualty Attacks in Pakistan, Appendix IV," in *Crises in South Asia: Trends and Potential Consequences,* eds. Michael Krepon and Nathan Cohn (Washington: The Henry L. Stimson Center, 2011), 71-92.

4. Karen DeYoung, "New Estimates Put Pakistan's Nuclear Arsenal at More Than 100," *Washington Post*, Jan. 31, 2011 http://www.washingtonpost.com/wp-dyn/content/article/2011/01/30/AR2011013004136.html; Robert Norris and Hans Kristensen, "Nuclear Notebook: Pakistan's Nuclear Forces, 2011," *Bulletin of the Atomic Scientists* (July/August 2011): 91-99; Paul K. Kerr and Mary Beth Nikitin, "Pakistan's Nuclear Weapons: Proliferation and Security Issues," Congressional Research Service, May 10, 2010, http://www.fas.org/sgp/crs/nuke/RL34248.pdf.

5. For a history of Pakistan's nuclear-related programs, see Feroz Hassan Khan, *Eating Grass: The Making of the Pakistani Bomb* (Palo Alto, CA: Stanford University Press, 2012). Also see Naeem Salek, *The Genesis of South Asian Nuclear Deterrent: A Pakistani Perspective* (Oxford: Oxford University Press, 2009), 234-239; Feroz Hassan Khan and Peter R. Lavoy, "Pakistan: The Dilemma of Nuclear Deterrence," in *The Long Shadow: Nuclear Weapons and Security in 21st Century Asia,* ed. Muthiah Alagappa (Palo Alto, CA: Stanford University Press, 2008), 215-240; Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability," *International Security* Vol. 34, No. 3 (Winter 2009/10): 38-78; Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements," in *Pakistan's Nuclear Future: Worries Beyond War,* ed. Henry D. Sokolski, (Carlisle, PA: Strategic Studies Institute, 2008), 87-129; and Bruno Tertrais, "Pakistan's nuclear programme: a net assessment," Fondation pour la Recherche Stratégique, recherches & documents, no. 04/2012, June 13, 2012.

6. There are several assessments of A.Q. Khan's dealings, and whether they were sanctioned by civilian and military leaders. His "confession" to military de-briefers, later recanted, can be found at http://www.foxnews.com/world/2011/09/15/aq-khans-thirteen-page-confession/#ixzz1YR3rK6Ud. Also see Mark Fitzpatrick, ed., *Nuclear Black Markets: Pakistan, A.Q. Khan and the rise of proliferation networks* (London: International Institute for Strategic Studies, 2007); David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies* (New York: Free Press, 2010); Bruno Tertrais, "Khan's Nuclear Exports: Was There a State Strategy?" in *Pakistan's Nuclear Future: Worries Beyond War,* ed. Henry D. Sokolski (Carlisle, PA: Strategic Studies Institute, 2008), 13-57; and Gordon Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity, and the Rise and Fall of the A.Q. Khan Network* (New York: Oxford University Press, 2006).

7. Robert Norris and Hans Kristensen, "Nuclear Notebook: Indian Nuclear Forces, 2012," *Bulletin of the Atomic Scientists* vol. 68 no. 4 (July/August 2012), 96-101 http://bos.sagepub.com/content/68/4/96.full.

8. See, for example, George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley, CA: University of California Press, 1999); Ashley J. Tellis, *India's Emerging Nuclear Posture: Between Recessed Deterrent and Ready Arsenal* (Santa Monica, CA: RAND, 2001); and Itty Abraham, *The Making of the Indian Atomic Bomb: Science, Secrecy and the Postcolonial State* (Hyderabad: Orient Longman, 1998).

9. Feroz Hassan Khan, "Pakistan's Perspective on the Global Elimination of Nuclear Weapons," in *National Perspectives on Nuclear Disarmament,* eds. Barry M. Blechman and Alexander K. Bollfrass (Washington: Stimson Center, 2010), 218.

10. See Verghese Koithara, *Managing India's Nuclear Forces* (Washington: The Brookings Institution, 2012.)

11. "Strategic Issues," Institute of Strategic Studies, Islamabad, March 2000, 2-3.

12. Salik, *Genesis,* 232.

13. See Feroz Hassan Khan, "Pakistan's Perspective on the Global Elimination of Nuclear Weapons," in *National Perspectives on Nuclear Disarmament*, eds. Barry M. Blechman and Alexander K. Bollfrass (Washington: Stimson Center, 2010), 15.

14. See Adil Sultan, "Pakistan's emerging nuclear posture: impact of drivers and technology on nuclear doctrine," *Strategic Studies,* Institute of Strategic Studies, Islamabad, vol. XXXI & XXXII, nos. 4 & 1 (Winter 2011 & Spring 2012), 147-167, http://www.issi.org.pk/publication-files/1340000409_86108059.pdf; and "The South Asian Nuclear Balance: An Interview With Pakistani Ambassador to the CD Zamir Akram," *Arms Control Today,* December 2011. http://www.armscontrol.org/act/2011_12/Interview_With_Pakistani_Ambassador_to_the_CD_Zamir_Akram.

15. Inter-Services Public Relations, Press Release No. PR130/2012-ISPR, May 29, 2012, http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2074. Also see Adil Sultan, "Pakistan's emerging nuclear posture," 163.

16. Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, "Securing nuclear peace," *The News*, Oct. 5, 1999.

17. "Warning forced India to pull back troops, says President," *Dawn*, Dec. 31, 2002. Musharraf also referred to the value of Pakiustan's nuclear deterrent in his memoir. See Pervez Musharraf, *In the Line of Fire* (New York: Free Press, 2006), 286.

18. Shamshad Ahmad, "A South Asian Reality," *The News*, May 28, 2012, http://www.thenews.com.pk/Todays-News-9-110930-A-South-Asian-reality.

19. Naeem Salik, *Genesis*, 219.

20. See Arvind Kumar, ed., "Report on a Workshop on The Draft Indian Nuclear Doctrine" (National Institute of Advanced Studies, Bangalore, India, 2001); P.R. Chari, "India's Nuclear Doctrine: Confused Ambitions," *Nonproliferation Review* vol. 7, no. 3 (Fall–Winter 2000): 125, http://cns.miis.edu/npr/pdfs/73chari.pdf.

21. Rupert Cornwell, "India unveils nuclear weapon policy," *The Independent,* Aug. 18, 1999; "Draft Report of National Security Advisory Board on Indian Nuclear Doctrine," Pugwash Conferences on Science and World Affairs, Aug. 17, 1999, http://www.pugwash.org/reports/nw/nw7a.htm.

22. Agha Shahi, Zulfiqar Ali Khan, and Abdul Sattar, "Securing Nuclear Peace," *The News,* Oct. 5, 1999.

23. Ibid.

24. Jawed Naqvi, "Zardari suggests accord to avoid nuclear conflict in S. Asia," *Dawn*, Nov. 23, 2008, http://archives.dawn.com/2008/11/23/top1.htm; also see James Lamont and Farhan Bokhari, "Pakistan in trade and arms offer to India," *Financial Times*, Nov. 23, 2008; and, "Interview with President Asif Ali Zardari," *CNN Larry King Live*, Dec. 2, 2008.

25. Shubhajit Roy, "Won't use nukes first, says Zardari, but adds a rider," *The Indian Express*, Nov. 22, 2008, http://www.indianexpress.com/news/wont-use-nukes-first-says-zardari-but-adds-a-rider/389304/.

26. Feroz Hassan Khan, "Nuclear Security in Pakistan: Separating Myth from Reality," *Arms Control Today* (July/August 2009), http://www.armscontrol.org/act/2009_07-08/khan. There is debate whether these concerns were genuine or expressed to serve other domestic purposes.

27. Pervez Musharraf, *In the Line of Fire* (New York: Free Press, 2006), 202.

28. Adil Sultan, "Pakistan's emerging nuclear posture," 147.

29. Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, "Securing Nuclear Peace," *The News*, Oct. 5, 1990.

30. Inter-Services Public Relations, Press Release No. PR506/2010-ISPR, Dec. 14, 2010. http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2010/12/14.

31. Zahir Kazmi, "Neo-nuclear apartheid," *Dawn*, Dec. 31, 2010, http://dawn.com/news/594849/neo-nuclear-apartheid.

32. Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, "Securing Nuclear Peace," *The News*, Oct. 5, 1990.

33. Abdul Sattar, "Pakistan's Nuclear Strategy," inaugural address at a seminar on 'Pakistan's Response to the Indian Nuclear Doctrine,' organized by Islamabad Council for Foreign Affairs and Institute of Strategic Studies, Islamabad, Nov. 25, 1999. (printed in 'The Nuclear Debate,' *Strategic Issues* (Islamabad: Institute of Strategic Studies, March 2000), 3; Inter-Services Public Relations, "Press Release," No. PR166/2011-ISPR, July 14, 2011, http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1796; Khawar Ghumman, "N-deterrence to be pursued," *Dawn*, July 15, 2011. http://dawn.com/2011/07/15/n-deterrence-to-be-pursued/.

34. "An Interview with Shri Jaswant Singh, Minister for External Affairs," *India Today,* Jan. 11, 1999.

35. Also see "India Not to Engage in a Nuclear Arms Race: Jaswant Singh, External Affairs Minister," *The Hindu,* Nov. 29, 1999.

36. Paulo Cotta-Ramusino and Maurizio Martellini, "Nuclear safety, nuclear stability and nuclear strategy in Pakistan," Jan. 21, 2002, http://www.centrovolta.it/landau/content/binary/pakistan%20Januray%202002.pdf.

37. Email correspondence with Paulo Cotta-Ramusino, May 19, 2012.

38. Ibid.

39. See Christopher Clary, "Deterrence Stability and the Conventional Balance of Forces in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

40. See, for example, Christoper Clary and Vipin Narang, "Doctrine, Capabilities, and (In)stability in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013); Walter C. Ladwig III, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security* vol. 32, no. 3 (Winter 2007/2008): 158-190; and Vipin Narang,

"Posturing for Peace: Pakistan's Nuclear Postures and South Asian Stability," *International Security* vol. 34, no. 3 (Winter 2009/10): 51.

41. See Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis* (Washington: The Henry L. Stimson Center, 2006), http://www.stimson.org/images/uploads/research-pdfs/USCrisisManagementFull.pdf; and Polly Nayak and Michael Krepon, *The Unfinished Crisis: US Crisis Management after the 2008 Mumbai Attacks* (Washington: Stimson Center, 2012), http://www.stimson.org/images/uploads/research-pdfs/Mumbai-Final_1.pdf.

42. Christopher Clary, "Deterrence Stability and the Conventional Balance of Forces in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

43. Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis* (Washington: The Henry L. Stimson Center, 2006), http://www.stimson.org/images/uploads/research-pdfs/USCrisisManagementFull.pdf; and Polly Nayak and Michael Krepon, *The Unfinished Crisis: US Crisis Management after the 2008 Mumbai Attacks* (Washington: Stimson Center, 2012), http://www.stimson.org/images/uploads/research-pdfs/Mumbai-Final_1.pdf.

44. See Christopher Clary, "Thinking about Pakistan's Nuclear Security in Peacetime, Crisis and War," IDSA Occasional Paper No. 12, Institute for Defence Studies and Analyses, New Delhi, September 2010, 26-28, http://www.idsa.in/system/files/OP_PakistansNuclearSecurity.pdf.

45. Office of the Press Secretary, "Joint Statement Between President George W. Bush and Prime Minister Manmohan Singh," The White House, July 18, 2005, http://georgewbush-whitehouse.archives.gov/news/releases/2005/07/20050718-6.html.

46. "The South Asian Nuclear Balance: An Interview With Pakistani Ambassador to the CD Zamir Akram," *Arms Control Today,* December 2011. http://www.armscontrol.org/act/2011_12/Interview_With_Pakistani_Ambassador_to_the_CD_Zamir_Akram.

47. See David Albright and Paul Brannan, "Pakistan Appears to be Building a Fourth Military Reactor at the Khushab Nuclear Site," Feb. 9, 2011, http://isis-online.org/isis-reports/detail/pakistan-appears-to-be-building-a-fourth-military-reactor-at-the-khushab-nu/12.

48. Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in *Pakistan's Nuclear Future: Worries Beyond War*, ed. Henry D. Sokolski (Carlisle, PA: Strategic Studies Institute, January 2008), 156.

49. For example, see: Asif Ezdi, "Road to hegemony," *The News*, Aug. 15, 2011, http://www.thenews.com.pk/Todays-News-9-62913-Road-to-hegemony; Afzaal Mahmood, "Indo-US nuclear alliance," *Dawn*, Oct. 29, 2005, http://archives.dawn.com/2005/10/29/op.htm; Afzaal Mahmood, "India's big power ambition," *Dawn*, July 12, 2003, http://archives.dawn.com/2003/07/12/op.htm.

50. For other speculative assessments, see Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements," in *Pakistan's Nuclear Future*, ed. Sokolski, 87-129, and Neil Joeck, "Cold Start and Limited Nuclear War," unpublished manuscript, June 2008.

51. See Clary, "Thinking about Pakistan's Nuclear Security," 6-7.

52. Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, "Securing Nuclear Peace" *The News*, Oct. 5, 1990.

53. Ibid.

54. See, for example, Bharat Karnad, *India's Nuclear Policy* (Westport, CT: Praeger, 2008): 12.

55. See Lavoy, in *Pakistan's Nuclear Future,* ed. Sokolski, 129 and 158.

56. Robert Jervis, "The Political Effects of Nuclear Weapons," in *Nuclear Diplomacy and Crisis Management*, eds. Sean M. Lynn-Jones, Steven E. Miller and Stephen Van Evera (Cambridge, MA: The MIT Press, 1990): 29

57. David Smith, "The US Experience with Tactical Nuclear Weapons: Lessons for South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

58. Inter-Services Public Relations, Press Release No. PR34/2012-ISPR, March 5, 2012, http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2012/3/5.

59. Inter-Services Public Relations, Press Release No. PR94/2011-ISPR, April 19, 2011, http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1721; also see Inter-Services Public Relations, "Press Release," No. PR94/2011-ISPR, May 29, 2012, http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2075#pr_link2075.

60. See Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis* (Washington: The Henry L. Stimson Center, 2006), http://www.stimson.org/images/uploads/

research-pdfs/USCrisisManagementFull.pdf; Gurmeet Kanwall, "Lost opportunities in Operation Parakram," *Indian Defence Review,* Dec. 13, 2011, http://www.indiandefencereview.com/spotlights/lost-opportunities-in-operation-parakram/.

61. Sandeep Unnithan, "Hind Shakti to fine tune proactive strategy: Army chief," *India Today,* May 6, 2009, http://indiatoday.intoday.in/story/Hind%20Shakti%20to%20fine%20tune%20proactive%20strategy:%20Army%20chief/1/40638.html.

62. For an alternative view, see Christopher Clary, "Thinking about Pakistan's Nuclear Security," 2010.

63. S. Iftikhar Murshed, "The Mohali wisdom," *The News*, April 17, 2011, http://www.thenews.com.pk/Todays-News-9-42076-The-Mohali-wisdom; Ikram Sehgal, "Pakistan and the FMCT," *The News*, July 28, 2011, http://www.thenews.com.pk/Todays-News-9-59950-Pakistan-and-the-FMCT; Inter-Services Public Relations, "Press Release," No. PR11/2010-ISPR, Jan. 13, 2010, http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1110&search=1.

64. C. Raja Mohan, "Fernandes unveils 'limited war' doctrine," *The Hindu,* Jan. 24, 2000, http://www.hindu.com/2000/01/25/stories/01250001.htm; "India puts its no nonsense face forward," *The Times of India,* Jan. 11, 2002, http://articles.timesofindia.indiatimes.com/2002-01-11/india/27135351_1_general-padmanabhan-indian-army-training-camps.

65. "Short-range 'Prahar' missile test successful," *Times of India,* July 21, 2011, http://articles.timesofindia.indiatimes.com/2011-07-21/india/29799575_1_short-range-missile-single-stage-missile-missile-test.

66. A.H. Nayyar and Zia Mian, "The Limited Military Utility of Pakistan's Battlefield Use of Nuclear Weapons in Response to Large Scale Indian Conventional Attack," *Pakistan Security Research Unit,* Brief Number 61(November 2010), 7. http://www.princeton.edu/sgs/faculty-staff/zia-mian/Limited-Military-Utility-of-Pakistans.pdf.

67. David O. Smith, "The US Experience with Tactical Nuclear Weapons: Lessons for South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

68. See Arvind Kumar, ed., "Report on a Workshop on The Draft Indian Nuclear Doctrine," National Institute of Advanced Studies, Bangalore, 2001.

69. Adil Sultan, "Pakistan's emerging nuclear posture,"159-164; and Zahir Kazmi, "Weapons of Peace," *The Express Tribune,* June 26, 2012, http://tribune.com.pk/story/399425/weapons-of-peace/.

70. B. Muralidhar Reddy, "No chance for accidental n-war with India," *The Hindu,* Jan. 11, 2003, http://www.hindu.com/2003/01/11/stories/2003011103291200.htm.

71. See, for example, Adil Sultan, "Pakistan's emerging nuclear posture,"159-164.

72. See Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation* (Ithaca, NY: Cornell University Press, 2004).

73. For a more exacting view of Pakistani counter-value targeting, see Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements," in *Pakistan's Nuclear Future,* ed. Sokolski, 87-128. Also see Naeem Salik, Appendix 3, "A Suggested Model for Minimum Nuclear Deterrence," in *The Genesis of South Asian Nuclear Deterrence: Pakistan's Perspective* (Oxford: Oxford University Press, 2009), 303-305.

74. Michael Richardson, "Q&A George Fernandes: India and Pakistan are not 'imprudent' on nuclear option," *International Herald Tribune,* June 3, 2002, http://www.nytimes.com/2002/06/03/news/03iht-t4_1.html.

75. Praful Bidwai, "India sharpens nuclear claws," *Asia Times,* Jan. 31, 2002, http://atimes.com/ind-pak/DA31Df03.html.

76. Bharat Karnad, *Nuclear Weapons & Indian Security: The Realist Foundations of Strategy* (New Delhi: Macmillan, 2002): 558.

77. Also see Feroz Hassan Khan, "Pakistan's Perspective on the Global Elimination of Nuclear Weapons," in *National Perspectives on Nuclear Disarmament,* eds. Barry M. Blechman and Alexander K. Bollfrass (Washington: Stimson Center, 2010), 215.

78. Alex Wellerstein, "The First Atomic Stockpile Requirements (September 1945)," http://nuclearsecrecy.com/blog/, posted May 9, 2012.

79. Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in ed. Sokolski, *Pakistan's Nuclear Future*, 133-4.

80. The classic text in this regard is Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York; Frederick A. Praeger, 1965).

81. See, for example, Paul Nitze, "Assuring Strategic Stability in an Era of Détente," *Foreign Affairs* vol. 54, No. 2 (January 1976): 208-232 and Colin S. Gray and Keith Payne, "Victory is Possible," *Foreign Policy,* No. 39 (Summer 1980): 14-27.

82. Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, *The News*, Oct. 5, 1999.

83. See Verghese Koithara, *Managing India's Nuclear Forces* (Washington: Brookings Institution Press, 2012.)

84. Arshad Sharif, "Changes in ministry of defence soon," *Dawn,* March 28, 2005, http://archives.dawn.com/2005/03/28/nat1.htm.

85. Paul K. Kerr and Mary Beth Nikitin, "Pakistan's Nuclear Weapons: Proliferation and Security Issues," Congressional Research Service, July 20, 2011, http://fpc.state.gov/documents/organization/169328.pdf.

86. National Assembly of Pakistan, "An Ordinance to provide for the constitution and establishment of National Command Authority," Ordinance No. LXX of 2007, Dec. 13, 2007.

87. Paulo Cotta-Ramusino and Maurizio Martellini, "Nuclear safety, nuclear stability and nuclear strategy in Pakistan," Jan. 21, 2002, http://www.centrovolta.it/landau/content/binary/pakistan%20Januray%202002.pdf.

88. See, for example, Feroz Hassan Khan, "Nuclear Signaling, Missiles, and Escalation Control in South Asia," in *Escalation Control and the Nuclear Option in South Asia*, eds. Michael Krepon, Rodney W. Jones and Ziad Haider (Washington: The Henry L. Stimson Center, 2003), 75-100; and Rahul Roy-Chaudhury, "Nuclear Doctrine, Declaratory Policy, and Escalation Control in Krepon, et. al. (eds), *Escalation Control and the Nuclear Option in South Asia* (Washington: The Henry L. Stimson Center, 2003), 101-118. http://www.stimson.org/images/uploads/research-pdfs/ESCCONTROLCHAPTER4.pdf.

89. India has launched its own monitoring satellites and both countries can make use of imagery derived from commercial observation satellites.

90. For analyses of US crisis management activities, see: Michael Krepon and Mishi Faruqee, eds., *Confidence-Building Measures in South Asia: The 1990 Crisis,* (The Henry L. Stimson Center, April 1994), http://www.stimson.org/images/uploads/research-pdfs/occasionalpaper17-web.pdf; Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis,* (Stimson Center, 2006), http://www.stimson.org/images/uploads/research-pdfs/USCrisisManagement.pdf; Polly Nayak and Michael Krepon, *The Unfinished Crisis: US Crisis Management After the 2008 Mumbai Attacks* (Stimson Center, February 2012), http://www.stimson.org/images/uploads/research-pdfs/USCrisisManagement.pdf. Also see Michael Krepon, ed., *Nuclear Risk Reduction in South Asia* (New York: Palgrave Macmillan, 2004).

91. See Christopher Clary, "Thinking about Pakistan's Nuclear Security in Peacetime, Crisis and War," IDSA Occasional Paper No. 12, Institute for Defence Studies and Analyses, New Delhi, September 2010, 27-35, http://www.idsa.in/system/files/OP_PakistansNuclearSecurity.pdf.

92. R. Jeffrey Smith, "India Moves Missiles Near Pakistani Border," *Washington Post,* June 3, 1997; and Feroz Hassan Khan, *Eating Grass,* 266-7.

93. Raja Menon, *A Nuclear Strategy for India* (New Delhi: Sage Publications, 2000), 202. http://www.stimson.org/images/uploads/research-pdfs/NRRMBiringer.pdf.

94. Usman Ansari, "Pakistan Acknowledges Sea-Based Nuclear Deterrent," *Defense News*, May 23, 2012, http://www.defensenews.com/article/20120523/DEFREG03/305230004/Pakistan-Acknowledges-Sea-Based-Nuclear-Deterrent.

95. "India to achieve N-arm triad in February," *Times of India,* Jan. 2, 2012, http://articles.timesofindia.indiatimes.com/2012-01-02/india/30580966_1_ins-arihant-first-indigenous-nuclear-submarine-akula-ii; T.S. Subramanian, "Nuclear submarine Arihant to be fitted with K-15 ballistic missiles," *The Hindu*, July 27, 2009, http://www.hindu.com/2009/07/27/stories/2009072755801000.htm.

96. See Peter R. Lavoy, *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict* (Cambridge: Cambridge University Press, 2009).

97. Arun Prakash, "Missing chief of defence staff," *The Indian Express,* Aug. 27, 2007, http://www.indianexpress.com/news/missing-chief-of-defence-staff/212867/1; Rajat Pandit, "Leadership not ready for Chief of Defence Staff," *The Times of India,* Aug. 20, 2002, http://articles.timesofindia.indiatimes.com/2002-08-20/india/27324524_1_cds-post-integrated-defence-staff-higher-defence-management; Pradip R. Sagar, "National task force digs up 10-year-old security ideas," *Daily News & Analysis,* May 25, 2012, http://www.dnaindia.com/india/report_dna-exclusive-national-task-force-digs-up-10-year-old-security-ideas_1693337.

98. For a longer treatment of this development, see Polly Nayak and Michael Krepon, "The Unfinished Crisis: US Crisis Management After the 2008 Mumbai Attacks," (Stimson Center, February 2012), 62-69, http://www.stimson.org/images/uploads/research-pdfs/USCrisisManagement.pdf.

The US Experience With Tactical Nuclear Weapons: Lessons for South Asia

David O. Smith

Soon after its 1998 nuclear tests, the primary focus of Pakistan's nuclear establishment shifted from research and development to fielding a fully operational nuclear force. The Strategic Plans Division (SPD) of the Joint Staff Headquarters was set up in February 2000 to oversee the further development and eventual employment of the country's nuclear weapons and delivery systems and to act as the secretariat of the National Command Authority. For nearly a decade afterward, the consistent "nuclear narrative" by the SPD and others of Pakistan's national security intelligentsia was that Pakistan aimed to have only enough weapons for "credible minimal deterrence" because the country had neither the resources nor the inclination to engage in a nuclear arms race with India.[1] However, in the last few years, this modest nuclear aim appears to have changed as Pakistan reportedly has the world's fastest growing nuclear arsenal. From a currently estimated inventory of approximately 100 nuclear weapons, Pakistan appears to be building between 12 to 15 nuclear warheads a year and may be on track to double if not triple this total within a decade as it brings on line additional plutonium production reactors at its Chasma nuclear complex.[2] Perhaps even more disturbing is that many of these new warheads may be intended for a variety of short-range nuclear systems currently under development. Such systems are commonly referred to as "tactical nuclear weapons."[3]

The pace of development of tactical nuclear weapon delivery systems by India and Pakistan has dramatically accelerated in the past three years. On April 19, 2011, Pakistan tested the Nasr (Hatf-9) short-range ballistic missile. According to the Inter-Services Public Relations (ISPR) press release issued the same day, "The missile has been developed to add deterrence value to Pakistan's Strategic Weapons Development program at shorter ranges. Nasr, with a range of 60 km, carries nuclear warheads of appropriate yield with high accuracy, shoot and scoot attributes. This quick response system addresses the need to deter evolving threats."[4] A Pakistani strategic analyst, Mansoor Ahmed, quickly noted the Nasr test "demonstrated that Pakistan has succeeded in miniaturizing its nuclear weapon designs to the extent that these can be launched by tactical and cruise missiles. … Pakistan can now make air and naval versions of *Nasr* and nuclear tip the Babar and Ra'ad cruise missiles."[5] Soon afterward, on July 21, India conducted the first test firing of its own tactical ballistic missile system, the 150 km range Prahaar, which, according to Indian press accounts, carries a 200 kg conventional warhead and can be fired in salvoes of six independently targeted missiles.[6] Though not expressly stated to be a nuclear delivery system, it could carry a small nuclear warhead should India decide to match the Pakistani capability. Since March 2012, Pakistan has tested no fewer than four relatively short-range missile systems — the 180 km range Abdali, the 750 km range Shaheen 1-A, the 290 km range Ghaznavi, and the 60 km range Nasr — and two cruise missiles, the 350 km range air-launched Raad and the 700 km range ground- or sea-launched Babur. Additionally, the Pakistan Navy inaugurated its Navy Strategic Forces Command on

May 19. The ISPR press release noted that the new command would be the custodian of the nation's "second strike capability,"[7] although the Pakistan Navy had not previously been considered to have a nuclear delivery capability. India also tested two short-range systems in the same time period: the 290 km range BrahMos cruise missile and the 700 km range Agni-1. Following the Agni test, V.K. Saraswat, scientific advisor to the defence minister, announced that the first test of the Nirbhay, India's equivalent to the US Tomahawk land attack cruise missile, would be in August 2012.[8]

What are the implications for nuclear stability in South Asia if the development, refinement and deployment of such systems continue apace? The United States and NATO and the Soviet Union have walked this ground before, with unfortunate results. Based on four decades of experience with the development and employment of tactical nuclear weapons during the Cold War, three unsettling developments can be expected: (1) the development and deployment of new systems will precede the development of doctrines for their employment; (2) India will match (and perhaps even exceed) whatever numbers of weapons Pakistan eventually builds; and (3) the numbers of deployable weapons may be limited only by the fissile material production capacity on both sides rather than the number perceived to be needed for deterrence.

In considering this potentially dismal situation, George Santayana's famous quote is worth recalling: "Those who cannot remember the past are condemned to repeat it."[9] Since Pakistan at present — and possibly India in the future — could develop and produce platforms for tactical nuclear weapons, the lessons of the Cold War deserve careful study by national security analysts and military leaders. Nuclear narratives on the subcontinent hold that lessons learned from Cold War experience have little applicability to South Asia because the geopolitical context is so dissimilar.[10]

This conclusion is unwarranted. Differences with the US-Soviet nuclear competition make the looming nuclear environment in South Asia, if anything, even more dangerous than the Cold War. Whether or not national leaders choose to ignore these lessons, decisions to embrace tactical nuclear weaponry will ultimately require them to deal with the doctrinal implications, increased security and command and control requirements, and the potentially destabilizing implications of deploying such weapons.

This essay will briefly review the history of the US and NATO deployment of tactical nuclear weapons, identify the principal lessons learned about their management and employment, and review the current positions of the United States, Russia and India about their utility. Next, the Pakistani argument for their efficacy will be considered, as will the similarities and differences between the Cold War experience and the present environment in South Asia. Finally, the lessons the United States and NATO learned at such a high cost that are considered relevant to Pakistan will be discussed. While the principal focus of this paper is on Pakistan, these lessons would be equally applicable to India if New Delhi chooses to emulate Pakistan's current trajectory.

The US and NATO Experience with Tactical Nuclear Weapons

This section will focus primarily on the US Army's 15-year struggle to devise a practical doctrine and force structure for the employment of tactical nuclear weapons in land warfare. This approach was chosen because of the similarity between the dilemma confronting the United States in Europe during the Cold War and that faced today by the Pakistan Army on its eastern border: finding a way to deter an opponent possessing an existing and growing conventional military advantage. The need for

such a doctrine and force structure was not as great in other American theaters of operations during this time because the geopolitical context was much different. In Korea and Japan, for example, the overwhelming naval superiority of the United States could be brought to bear more quickly and easily in a relatively narrow peninsula or the Japanese islands than deep in central Europe. Like Europe during the Cold War, South Asia is predominantly a continental theater where India has the ground force advantage, and Pakistan, as the United States did in the 1950s, sees tactical nuclear weapons as a force equalizer.[11]

The 1940s: Nuclear Monopoly and Strategic Deterrence

The first American nuclear weapons were massive in size and weight. The only feasible method of delivering them was by heavy bombers, a mission tailor-made for the soon-to-be-independent US Air Force.[12] In October 1945, the Joint Chiefs of Staff, in their first study of the subject, concluded,

> The atomic bomb … will be primarily a strategic weapon of destruction against concentrated industrial areas vital to the war effort of the enemy nation. … On the other hand, the atomic bomb is not in general a tactical weapon suitable for employment against ground forces … because they normally offer targets too widely dispersed to justify the use of a weapon of such limited availability and great cost.[13]

With the US monopoly expected to endure for several years, little thought was given to any use other than for strategic purposes, but the unanticipated end of that monopoly in 1949 stimulated other thinking. Soon there were two distinct streams of thought about future nuclear weapons development: the "super," promoted by scientists like Edward Teller, who wanted to build thermonuclear fusion weapons, and the "little bomb" advocates, led by J. Robert Oppenheimer and others, who were unconvinced about the technical feasibility of thermonuclear weapons and saw more practical utility in smaller fission weapons. Teller's view prevailed, but, in due course, Oppenheimer's recommendations for lower-yield nuclear weapons were also implemented, although the Truman administration focused mainly on the "super." Vannevar Bush, who, as head of the Office of Scientific Research and Development, was involved with the Manhattan Project and was a key scientific advisor to President Truman after World War II, expressed the prevailing wisdom when he opined, "There will be no shells for guns carrying atomic explosives, nor will they be carried by marine torpedoes or small rockets or in any other retail way. Atomic bombs will be used only against important targets to which it pays to devote a large effort."[14]

This attitude was echoed in the US military establishment. Shortly after Bush's statement, the Commandant of the Army Command and General Staff College at Fort Leavenworth, Brig. Gen. Herbert Loper, trenchantly observed, "Show me how to use this weapon in tactical roles, if you can. It is <u>not</u> a tactical weapon."[15] The Chairman of the Joint Chiefs of Staff, Gen. Omar Bradley, put the military's view before a much wider audience in a Saturday Evening Post article in October 1949:

> This train of thought represents so much compound folly that it is hard to answer patiently. … It foolishly assumes that the atom bomb is omnipotent. It fails to explain how, if some millions of invader troops moved into Western Europe and were living off the country, we could use the bomb against them without killing ten friends for every enemy foe.[16]

Despite high-level military ambivalence about the utility of nuclear weapons in a tactical role, and the complete absence of doctrine for their use, the Army continued to work on two potential nuclear delivery systems conceived during the latter stages of World War II. This was no doubt an attempt, during a postwar period of military austerity, not to be seen as irrelevant in comparison to the newly independent US Air Force, which seemed to have a lock on the prestigious nuclear delivery mission. Begun in 1944, the 75-mile range Corporal missile was first launched by an all-military crew in 1947 and approved as the Army's first nuclear delivery system in December 1950. And no doubt to the dismay of Vannevar Bush, a 280 mm artillery system begun in November 1944 fired its first conventional artillery round in 1951 and the world's first nuclear artillery projectile in May 1953. Work on a shorter range surface-to-surface missile, initially with a range of only 15 miles, the Honest John, began in 1950, entered full-scale development in August 1951, and was certified for troop issue in 1954. In what would become a familiar pattern, lacking both a requirement and doctrine for their use, these and other new systems were simply added to the Army's existing force structure.[17]

The 1950s: Eisenhower's "New Look"

Two events in the early 1950s dramatically altered the US military's view of tactical nuclear weapons and ended any ambivalence about them in senior leadership circles. In early 1951, the Army, Navy and Air Force service secretaries jointly commissioned an assessment of the implications of nuclear weapons on the defense of Europe. The study was conducted by a mixed team of military experts and civilian scientists from the California Institute of Technology. Its report — code-named VISTA because the work was done at the Vista del Arroyo Hotel in Pasadena — concluded that tactical nuclear weapons would be a more effective way to stop Soviet armies than strategic bombing. The Air Force strongly opposed this conclusion and tried unsuccessfully first to modify the report and then to suppress it entirely. The VISTA report also concluded that the Army had not fully assessed its vulnerability to nuclear fires and that its existing force structure was inadequate for the nuclear task. Particularly damning was the absence of knowledge about nuclear effects or the ability of soldiers to function in a nuclear environment. The study also noted that while the Army was well along in the fielding of its three nuclear–capable delivery systems, it had virtually no ability to acquire targets for them.[18]

The second major event was the election of President Dwight D. Eisenhower, whose national security team in October 1953 promulgated NSC 162/2, the Basic National Security Policy, popularly known as the "New Look." The New Look was decidedly favorable to the battlefield use of nuclear weapons, concluding that "The present policies will gradually involve the use of atomic weapons and conventional weapons for tactical purposes."[19] The idea was to substitute cheaper nuclear weapons for expensive Army force structure in Europe. Consequently, the Army budget was to be reduced by 38 percent and its end strength slashed by one-third from 1.5 million to 1 million soldiers. If the Army wished to remain a relevant instrument of military power — and protect its remaining budget and manpower — it needed to get on board the nuclear train and embrace the battlefield use of nuclear weapons.

On December 28, 1953, only five days after Defense Secretary "Charlie" Wilson approved the plan of the Joint Chiefs of Staff (JCS) to implement NSC 162, the Army's Chief of Staff, Gen. Matthew Ridgway, ordered the Chief of Army Field Forces to

prepare a long-range study of the future organization of the Army in this new environment. Within weeks, the Army War College and the Army's Command and General Staff College began independent assessments of the problem, the former focusing on the nature of future warfare, while the latter focused on the implications for Army force structure. They ultimately reached dramatically different conclusions, which have not been fully resolved to this day. The War College study concluded that the Army's existing force structure and doctrine were totally inadequate for a nuclear battlefield. It recommended a radically different force design in which ground maneuver units would have only three functions: conduct reconnaissance and screening missions to develop targets for nuclear missiles, locate and destroy enemy nuclear and chemical weapons, and provide local security for command posts and guided missile units. In sharp contrast, the Command and General Staff College adopted the view that nuclear and conventional battlefields were essentially the same; the problem was only how best to adapt tactical nuclear weapons to the existing Army force structure.[20]

Faced with reconciling these two sharply divergent views, the JCS approved a series of exercises to evaluate the existing force structure and a new hybrid force design, the Atomic Field Test Army (AFTA). After two inconclusive exercises in 1954, Follow Me and Blue Bolt, NATO conducted a major exercise in June 1955, Operation Carte Blanche, to test its ability to defend against a Soviet invasion across the North German Plain by employing tactical nuclear weapons. The results were disturbing. Umpires ruled that an estimated 2 million Germans would have been killed; a further 3.5 million would have been injured, burned or irradiated; and the industrial heartland of Germany would have been rendered uninhabitable. Long-term casualties from radioactive fallout were not computed, but in only nine days of simulated nuclear combat, West Germany was judged to have suffered three times the civilian casualties of World War II.[21] The results of the exercise leaked to the press and created a furor in West Germany. Later that year, in November and December 1955, the Army and the US Air Force Tactical Air Command tested a similar scenario in Alabama and Louisiana in the largest ground exercise on American soil since the 1941 Louisiana Maneuvers.

The results of Operation Sagebrush were even more dismaying, as virtually all participating ground units were judged to have been annihilated. Both the Army and Air Force initially discounted the results by saying the result would have been different if the actual enemy had been Soviet rather than American,[22] but the Army's new Chief of Staff, Gen. Maxwell Taylor, was more realistic. He concluded, "We in the Army have a long way to go before we understand the problems of using these weapons … we would have probably destroyed ourselves and all our friends had we tossed atomic weapons about a real battlefield in the way we did in this maneuver."[23] AFTA was quietly terminated in June 1956.

As these events were unfolding, the production of nuclear weapons began to accelerate dramatically. When Eisenhower took office, the US had a total of about 1,000 nuclear weapons, most of them strategic.[24] The New Look strategy would require many more tactical nuclear weapons, and by the end of the decade there would be approximately 3,000 of them deployed in Europe. As the production momentum increased, new orders were placed with the Atomic Energy Commission at enormous cost, eventually consuming nearly 10 percent of the total federal budget. By the middle of the decade, a "nuclear production complex" had been created that absorbed 6.7 percent of the nation's total electrical power.[25]

Not surprisingly, the study of how to employ such a large number of tactical nuclear weapons in land combat became the Army's principal focus in the 1950s. By 1955, nearly 50 percent of the instruction and training at Fort Leavenworth was devoted to tactical nuclear battlefield situations. Even that was thought to be inadequate. In 1956, the Continental Army Command, which oversaw the activities of the Army's educational institutions, directed the Command and General Staff College (CGSC) "to depict atomic warfare as the typical and to treat non-nuclear warfare as modification to the typical" in future training and exercises. That year, the CGSC curriculum included 614 hours of instruction on tactical nuclear weapons.[26]

Gen. Taylor was still faced with the need to develop a leaner force structure because of his steadily declining budget. The Army's 1958 budget required it to reduce from 19 to 17 divisions to meet the 1 million soldier limitation imposed earlier by the Eisenhower administration. Since AFTA was a dead letter, he reached back to the 1953 Army War College study referred to above, the Pentagonal Atomic Non-Atomic Army (PENTANA) study, and approved it in June 1956 as the basis for research and development of new weapons, equipment and organizational design. With the manpower deadline looming, and in an attempt to find a compromise between the War College force structure recommendations for the nuclear battlefield and the Army's existing force structure, Taylor elected to jettison the Army's existing infantry division design in favor of a new "pentomic" division — so named because it scrapped the traditional three-brigade divisional organization in favor of five smaller "battle groups" consisting of five infantry companies. The divisional artillery was similarly organized with each battalion consisting of five batteries. These bold new changes were intended to facilitate unit dispersion on the assumed nuclear battlefield. The Army's armored divisions were not reorganized as their existing organization of three combat commands with heavily armored and mechanized infantry carriers was deemed adequate for a nuclear environment. By the end of the decade, the Army found itself completely reorganized to wage tactical nuclear warfare.

Many senior officers in the Army were appalled by Taylor's abrupt decision, which seemed to them capricious, unfounded and untested. The Army's Chief of Engineers found "the concept completely unacceptable intellectually and scientifically. Rather than a hypothesis tentatively verified by controlled experiment and careful inductive reasoning, the PENTANA Army appears to be a goal to which certain highly artificial arguments have been added." The Commandant of the Command and General Staff College was even blunter: "No reasonable concept of operations has been advanced for PENTANA that I know of … [C]onclusions are being reached by a process that if paralleled in the industrial world would bankrupt any organization."[27]

These criticisms were ultimately found to be justified. Studies of the pentomic division design and doctrine by the Continental Army Command, the Army War College and the Command and General Staff College subsequently confirmed that the new units could not effectively wage two-sided nuclear operations and had no significant advantages over the unmodified 1956 infantry division in a nuclear environment.[28] By 1959, Army planners realized that by attempting to design a single unit capable of operating effectively in a nuclear and nonnuclear environment, they had created a force that could do neither. Soon, new studies were initiated to resolve this fundamental problem: the Modern Mobile Army (MOMAR), the Howze Board on the use of air mobility, and the Reorganization Objective Army Division (ROAD) Study that ulti-

mately would be chosen as the basis to reconfigure the pentomic divisions. As Midgely described it,

> In each case the basic approach remained the same as in PENTANA — design the force and then claim that advanced technology would enhance the Army's ability to fight using nuclear weapons if necessary. The Army's actual ability to apply weapons on the battlefield remained unknown, and the Army's doctrine for the nuclear battlefield became increasingly vague.[29]

Although the Army continued to develop tactics, techniques, and procedures to employ tactical nuclear weapons, the utility of doing so was rarely if ever examined. According to Brig. Gen. (ret.) Robert Richardson, who in the 1950s was a staff assistant to the NATO commander Gen. Lauris Norstad, Supreme Headquarters Allied Powers Europe (SHAPE), SHAPE planners in the 1950s were unable to come up with a single plausible scenario for the employment of tactical nuclear weapons and took comfort only in the thought that it must also be very difficult for planners in Moscow to do likewise.[30] This situation was deeply frustrating to Gen. Lyman Lemnitzer, who succeeded Taylor as Army Chief of Staff and became Chairman of the JCS in September 1960. Not long after assuming this post, Richardson recalled attending a meeting in which Lemnitzer laid bare his frustration with the problem: "We are dead if they use nuclear weapons and we are postured to fight with conventional weapons; we are also dead if we are not allowed to use nuclear weapons and we are postured to use them, because they will then use conventional weapons." After nearly 10 years of doctrinal study and a major force redesign, the US military was no closer to solving the basic dilemma posed by tactical nuclear weapons than when it started. Survival in a nuclear environment required dispersion, while success in a conventional fight required mass and concentration. One force design could not do both simultaneously.[31]

Despite this seemingly intractable doctrinal problem, the deployment of large numbers of newer and smaller tactical nuclear weapons surged ahead. According to one observer,

> Often, it would appear, weapons went all the way through to production and deployment before anyone had the assignment of thinking about their operational use. Otherwise, it is hard to explain how US Army units in Europe came to have the Redstone Missile, which was supposed to function as corps artillery, but which had to be moved about by a nine-vehicle caravan, one component of which was a 25-ton, 90 foot crane. It is equally hard to explain how, after much lighter weapons became available, the Army employed some thousands of jeep-mounted, 2-4 kilometer range, one-quarter to one-half kiloton yield Davy Crockets. When President Eisenhower became aware of this, he said to his Defense aides "that when it comes to supplying small yield weapons to the Infantry and the Marines we are getting into the area of marginal utility." He suggested that we indoctrinate ourselves that there is such a thing as common sense.[32]

The fielding process took on a life and momentum of its own, seemingly unrelated to the requirements of units receiving the weapons and devoid of military input. There was little or no oversight of the development or deployment decision-making process by senior military officers, many of whom apparently lacked confidence in their ability to judge the issues. According to one Air Force expert testifying in a 1957 AEC hearing,

> Most senior officers tend to consider atomic weapons to be beyond their understanding without exhaustive study with which they have neither the interest nor time. Atomic planning is therefore delegated to juniors who have completed various "effects" courses. … The seniors are unable to exert normal guidance. Instead, they are prone to endorse the computations without close questioning and without understanding procedures or implications — and in spite of personal misgivings.[33]

The 1960s: Kennedy's "Flexible Response"

When the Kennedy administration came into office in 1961, and Robert McNamara took over at the Pentagon, the abrogation of military oversight seemed complete, as senior officers were now forced to yield to scores of arrogant RAND "whiz kid" civilian analysts brought into government by the new Secretary of Defense. One of them was 30-year-old Alain Enthoven, who famously replied to a question about nuclear warfare from a senior general, "General, I have fought just as many nuclear wars as you have."[34]McNamara's brash young analysts soon changed the direction of US strategic thinking and reoriented the military toward a strategy of "Flexible Response." The Kennedy Administration believed that Eisenhower's New Look policy of massive retaliation had left the US with insufficient flexibility to deal with challenges that might not meet the threshold for a nuclear response and that a complete range of military responses to other Communist provocations was needed. On May 25, 1961, Kennedy directed the Army to reorganize its still relatively new pentomic divisions into units more suitable for nonnuclear warfare. The force design chosen was the ROAD division, which closely approximated that of the prepentomic division.

Regardless, during this decade the number of deployed tactical nuclear weapons (TNWs) in Europe continued to soar, more than doubling from 3,000 to more than 7,000, as the result of production momentum and earlier weapon deployment decisions. The sheer magnitude of TNW deployment exerted a relentless pressure toward a strategy relying on decentralized nuclear operations. Although the nuclear battlefield was still poorly understood, it became the principal justification for equipment and weapon procurement, if not for force design. As a result, the gap between the technical capabilities of the US military and the tactical capabilities of its delivery units continued to grow.[35]

This was amply demonstrated in October 1962 following another large NATO exercise on West German soil, FALLEX-62 — the results of which were leaked to the German public by the magazine, *Der Spiegel*. The exercise not only demonstrated grave weaknesses in the *Bundeswehr*, but concluded that an estimated 10 to 15 million German civilians would have perished despite targeting efforts to minimize civilian casualties, many times more than in the 1955 Sagebrush exercise. The *Der Spiegel* article concluded, "Civilian destruction at these levels is virtually impossible to explain in terms of rational foreign policy objectives."[36] This news stunned the West German public, and the ensuing political scandal eventually cost Defense Minister Franz Josef Strauss his job.

The Army now made one final effort to develop a workable force structure for the nuclear battlefield. The Continental Army Command conducted an 18-month study of the problem from September 1963 to May 1965. Code-named *Oregon Trail*, this study

filled 21 volumes and was a stunning indictment of the ROAD division's inability to function on a nuclear battlefield. It warned,

> [T]he ROAD force, if conventionally employed, would suffer more than 40 percent casualties in the first 30 days of a two-sided nuclear campaign. … [W]henever the ROAD [division] concentrated sufficiently to conduct successful conventional operations, it offered lucrative nuclear targets which produced massive losses. … [W]hen the ROAD-type force dispersed to avoid nuclear strikes, the units could be defeated by conventional tactics.[37]

In a finding nearly identical to the 1953 Army War College study, *Oregon Trail* called for the employment of smaller combat units organized in-depth to destroy enemy forces by indirect nuclear fires. A major difference, however, was that unlike the earlier study, *Oregon Trail* employed the quantitative modeling formulas so favored by McNamara's civilian experts, as well as nuclear effects data gleaned from nearly two decades of testing and years of unit performance information. Its conclusions seemed irrefutable.

No action was taken by the Army for three months. Finally, the Army's Assistant Chief of Staff for Force Development, Lt. Gen. Theodore Conway, convened a board to study the *Oregon Trail* results and place them in a "wider context." The Conway Board, according to Midgely, "simply defined away the problems identified in the [*Oregon Trail*] study." While Conway acknowledged the inconsistency between nuclear and nonnuclear operations, he insisted only that the Army retain and improve its existing nuclear arsenal and recommended that the ROAD model be retained without change.[38] The Conway Board marked the Army's final effort to resolve the nuclear-nonnuclear force structure dilemma. Henceforth, it would simply pretend the problem did not exist. This head-in-the-sand mentality was buttressed in January 1968 when NATO promulgated MC 14/3, its Overall Strategic Concept for the Defense of the North Atlantic Treaty Organization Area. Specifically addressing tactical nuclear weapons, the document stated,

> Their primary purposes are to add to the deterrence of conventional attacks on any magnitude, and counter them if necessary, by confronting the enemy with the prospects of consequent escalation of the conflict; and to deter, and if necessary respond to, the use of tactical nuclear weapons by posing the threat of escalation to all-out nuclear war.[39]

This was a radically new view. The sole purpose of tactical nuclear weapons would no longer be military, but political — to deter conflict by confronting an attacking force with the prospect of nuclear strikes that would ultimately escalate to a strategic nuclear exchange. The logical conclusion was that there was no longer a compelling need for ground forces to wage a protracted conflict on a nuclear battlefield. NATO would simply fight conventionally against the Warsaw Pact until one side or the other used tactical nuclear weapons. A strategic exchange would ensue, and future tactical operations would be rendered superfluous. In essence,

> Western commanders, faced with imminent defeat, would fire their tactical arms in desperation at advancing Soviet units, commit the whole matter to God, and retreat with as much order and bravery as they could muster while hoping either that the Soviet offensive would collapse or that the United States and its allies could force a cease-fire before things spiraled completely out of control.[40]

Despite its implicit conclusion that tactical nuclear weapons had little utility in a future conflict with the Soviet Union other than to guarantee a strategic nuclear exchange, MC 14/3 did not result in any meaningful reduction in the NATO stockpile of such weapons for the next two decades. As new delivery systems were developed, they simply replaced aging systems that were retired.

The 1970s and 1980s: Return to the Familiar

The end of the Vietnam War in 1973 prompted a major reevaluation by all the services of their war-fighting doctrines and a return to more traditional missions of conventional land, sea and air warfare. Within a few years, in conjunction with the Air Force, the Army created the blueprint for what eventually became known as the first joint service war-fighting doctrine, AirLand Battle. While strategic nuclear war against the Soviet Union was still considered to be a possibility, the services concentrated on developing new tactics to leverage new conventional military technologies like precision-guided munitions and computer-driven command and control systems. They worked "jointly" to create operational synergies and eschewed tactical nuclear weapons as the principal means of offsetting the Soviet Union's massive advantage in numbers and equipment. In the Army's *Field Manual (FM) 100-30 (Test)* published in August 1971, tactical nuclear warfare was defined as a conflict "in which nuclear weapons are limited to the defeat of opposing forces in a theater of operations. Implicit in this definition is the condition that a strategic nuclear exchange on the belligerents' homeland does not occur."[41] Since this situation was unlikely ever to exist, there was no need to expend much effort to figure out how to employ the weapons.

This attitude is further illustrated by the 1975 *Department of Defense Annual Report*, which contained nearly 20 pages of analysis about strategic nuclear warfare against the Soviet homeland and less than one page about tactical nuclear weapons, merely noting the unlikelihood they would ever be used:

> As a practical matter, the initiation of a [tactical] nuclear engagement would involve many uncertainties. Acceptable boundaries on such a conflict would be extremely difficult to establish. A nuclear engagement in the theater could well produce much higher military and civilian casualties and more widespread collateral damage than its non-nuclear counterpart. … [W]e must recognize in our planning that the decision to initiate the use of nuclear weapons — however small, clean, and precisely used they might be — would be the most agonizing that could face any national leader.[42]

When the Army published its capstone doctrinal manual in July 1976, *FM 100-5, Operations*, the nuclear battlefield was not even mentioned, and by 1977 there were virtually no guidelines on the battlefield employment of tactical nuclear weapons. Commanders knew how to request the use of nuclear weapons and fire them but not how to fight with them in a tactical battle once permission was given.[43]

In 1980, US Army Maj. John P. Rose, in a withering critique of Army doctrine pertaining to tactical nuclear warfare, accurately captured the state of thinking on the subject:

> Currently, what the Army views as tactical nuclear doctrine is nothing more than conceptual guidance on how to plan a corps nuclear package. … In essence, Army tactical nuclear warfighting doctrine does not exist. … Under current doctrine US ground combat forces may never attain a

> decisive defeat of the enemy and consequently may never be able to terminate the conflict on acceptable terms. … Tactical nuclear weapons are not seen by the Army as a war winning and warfighting instrument.[44]

Rose's critique was actually an attempt to stimulate the Army to once again think about how best to employ tactical nuclear weapons to defeat Soviet ground forces in a European environment. In this, he failed miserably because by the end of the 1980s, and despite the massive numbers of weapons deployed in Europe, there was little remaining doubt within the NATO alliance in general and the United States in particular about their lack of utility on the battlefield. As one observer put it, "Over the past 30 years, it has become generally accepted that NATO's battlefield nuclear weapons are neither militarily effective nor politically reassuring to the allies in whose countries they are based. There is much less agreement, however, about how the Alliance should respond to this problem." Another had a different explanation: "The continued presence of battlefield nuclear weapons in Western Europe is hard to explain in rational terms; it is more readily explicable by organizational and political inertia."[45]

The fall of the Berlin Wall in 1989 and collapse of the Soviet Union and Warsaw Pact two years later essentially rendered the issue of tactical nuclear weapons moot, at least for the United States. In September 1991, President George H.W. Bush ordered the unilateral withdrawal of all ground-launched short-range theater nuclear weapons and encouraged Soviet President Mikhail Gorbachev to do the same. President Gorbachev responded positively and proposed that the reduction also include similar naval weapons. By July 1992, the United States announced it had completed the worldwide withdrawal of all surface and naval weapons. Only an estimated 400 to 600 air-delivered gravity bombs remained operational.[46] Today, this number has dwindled to an estimated 150 to 200 US tactical nuclear weapons assigned to NATO with the remainder stored in the continental United States, while Russia, the successor state to the Soviet Union, retains approximately 2,000 nonstrategic warheads for potential use by ships, aircraft and air defense forces, all presumed to be in central storage.[47] Several key NATO nations, Germany particularly, would like to remove the few remaining weapons, but their continued presence on European soil is less for any war-fighting purpose than as a demonstration of the Western commitment to the security of several former Warsaw Pact members who have since joined the alliance and who continue to view Russia as a historic existential threat to their independence.[48] These divisions within NATO on the subject of tactical nuclear weapons resulted in maintaining the status quo, which was reaffirmed at the NATO Summit held in Chicago in May 2012.[49]

US Lessons Learned About Tactical Nuclear Weapons

As this brief historical survey illustrates, despite 15 years of effort, the US military failed to develop any coherent doctrine for the use of tactical nuclear weapons or to devise a workable force structure to employ them. Four decades of deploying, securing and training to use tactical nuclear weapons revealed several other shortcomings, not the least of which was escalation control. Taken together, these problems have created a general consensus, at least among knowledgeable US and NATO analysts, that tactical nuclear weapons simply do not belong on the modern battlefield for the following reasons.

Tactical nuclear weapons add little to deterrence. What deterred the Warsaw Pact from attacking NATO forces deployed on the North German Plain was not the possession of tactical nuclear weapons, but NATO's conventional capability plus the risk — virtually the guarantee — of escalation to the strategic level once tactical nuclear weapons were employed. As one analyst writing in the late 1980s noted,

> Battlefield nuclear weapons add little, if anything, to deterrence. What deters nuclear war in Western Europe is the threat of nuclear retaliation. If the Soviet Union is not deterred from nuclear attack by the 10,000 plus warheads in the American nuclear arsenal capable of being delivered against the Soviet Union, it is hard to see how another 3,500 warheads intended for battlefield use will make any difference.[50]

Tactical nuclear weapons invite preemption. During the Cold War, the bulk of NATO's tactical nuclear weapons deployed in West Germany were stored in approximately 20 distinctive sites, all probably known by the Soviet Union and all presumably carefully monitored by sophisticated technical systems or human means. In accordance with a 1946 four-power agreement, Soviet Military Liaison Mission teams had relatively free access to all but a small portion of West German territory and moved freely looking out for any indications of NATO offensive or defensive troop movement. According to a high-ranking Soviet military officer, "We had confidence in our knowledge of when NATO was preparing to launch nuclear weapons. We would detect mating of warheads to missiles and uploading of nuclear bombs and artillery. We listened to the hourly circuit verification signal and believed we would recognize a release order."[51] Any movement of weapons from the sites would have been spotted almost immediately, prompting the need for a decision by Soviet leaders about whether to attack the sites before the weapons could be completely dispersed. A decision to attack and destroy these sites would in turn have guaranteed immediate NATO retaliation on similar storage sites in Warsaw Pact countries and started both sides up the nuclear escalation ladder.

Tactical nuclear weapons are not effective against mobile or armored forces. According to unclassified US Army weapons effects manuals, a 1 kiloton nuclear device would have to detonate within a 90 meter radius of a tank to inflict even moderate damage on that vehicle. In fact, prompt radiation from such a weapon is far more lethal to the crew of a tank than the blast effect, incapacitating crew members within a 360 meter radius.[52] However, such a blast would not kill that many tanks or even incapacitate that many crew members in a deployed armor battalion maneuvering in battle. This was quickly recognized by Soviet military experts:

> The advantage of the tank is that its armor protects the crew against light radiation and decreases the effect of penetrating radiation, while the tank's actual weight gives it stability which protects it against the shock wave. … Thus, the conclusion can be drawn that the appearance of nuclear weapons not only failed to diminish, but on the contrary, only strengthened the role of the tank in battle.[53]

An additional factor to be considered is the speed of advance of armor forces, especially in exploiting a gap in defenses, the precise situation that might necessitate the use of tactical nuclear weapons. As one analyst observed it,

> They move too fast for a decision to be made to request permission for release authority, to obtain it, to unlock the weapons, to identify a tar-

> get, and to gain the tactical commander's permission to fire. At best, the time to do this would take hours; at worst, it would take a day or two while political and military leaders thrashed out the implications.[54]

Tactical nuclear weapons complicate command, control and communications. Nuclear command, control and communications (C3) systems should be reliable, redundant and separate from normal tactical command and control networks. They add a degree of complexity in C3 that does not exist on the conventional battlefield. Unless they are used first in preemption against an anticipated enemy attack, the need to employ tactical nuclear weapons will almost certainly occur in the midst of a tactical crisis. Thus, the need for nuclear C3 will come at precisely the time the communications system is most severely taxed and vulnerable to enemy disruption. Additional peacetime security measures like Permissive Action Link (PAL) technology to safeguard tactical nuclear weapons against unauthorized use add a further degree of complexity in wartime. According to Sigal,

> PALs increase the likelihood that battlefield nuclear weapons, once dispersed, will be much harder to use since matching up weapons and transmitting the right messages to the right people would be difficult in a stressful communication environment of crisis or war. Yet unlocking the PALs before dispersal would only increase the chance of unauthorized use.[55]

A final complication is the problem of war termination in a nuclear environment. As Bracken notes,

> The difficulties of limiting nuclear war once some weapons have actually exploded is compounded by the fact that ambiguous command will be overlaid onto a disconnected, broken up control system in which information and authority have become decentralized by reason of the attack. Under these circumstances, isolated forces could continue to salvo, effectively destroying any tacit cease fire that had developed.[56]

Nuclear release authority for tactical targets is difficult to obtain. As discussed above, obtaining a political decision to use tactical nuclear weapons in a battlefield crisis is likely to be time consuming. The 1976 version of *US Army FM 100-5* suggested the likelihood of a minimum 24-hour delay between a request from a field commander and the political decision to authorize their use. Even this degree of delay is probably generous. The weapons might not be readily available if the tactical crisis occurs in the initial stages of a conventional defense because the political decision to move them out of their storage sites would be difficult to obtain because of the increased risk of preemption.

Tactical nuclear weapons are difficult to secure when deployed and require scarce manpower. As long as they are in their peacetime storage locations, tactical nuclear weapons are reasonably safe and secure. However, upon deployment, their security becomes an additional responsibility for the delivery unit. Unless augmented by additional security personnel, there are normally not enough personnel in a tactical delivery unit to adequately guard them on a 24/7 basis. This creates a heightened risk that deployed weapons might be seized or destroyed by an enemy's special operations forces. The postdeployment security problem was well understood but never entirely solved in Europe by US forces despite a massive and expensive effort to do so. By one estimate, as much as 10 percent of US manpower in Europe in the 1980s was required for the protection and special handling of tactical nuclear weapons. As the number

of nuclear delivery units increased, the number of personnel required to secure them increased, and the numbers of personnel available for purely conventional military operations grew smaller. Gen. Bernard Rogers, the Supreme Allied Commander Europe (SACEUR), stated in May 1985, "What is happening is as I get spaces for ground-launched cruise missiles, I am bringing in nuclear weapons and sending conventional forces home."[57]

Nuclear launch units must be withdrawn from battle to ensure their survivability. Another dilemma field commanders will face is when — or whether — to withdraw or withhold dual-capable nuclear delivery forces from conventional battle in order to ready them for nuclear use. This will generally have to be decided when the conventional fight is at its most intense, and the outcome still in doubt — when their participation in the conventional battle is most urgently required. To compound the problem, an enemy might detect the withdrawal of these forces from the battlefield and interpret the event as a precursor to their use against his forces — and thus decide to launch his own pre-emptive nuclear strike.

Tactical nuclear weapons are not decisive. Most importantly, there is little prospect tactical nuclear weapons would actually be decisive if used in battle. As Victor Utgoff and William Christenson have noted, NATO "studies have concluded time and time again that a two-sided exchange of battlefield nuclear weapons would quickly destroy both sides' forward combat forces, after which the Warsaw Pact could win the ground battle by bringing forward reserves that NATO could not match."[58] Faced with defeat by an enemy's conventional forces, the other side would either expend tactical nuclear weapons or escalate directly to the strategic level. The ultimate effect of either decision would be the same — a strategic nuclear exchange.

Current Attitudes about Tactical Nuclear Weapons: Russia, India and the United States

Not all nuclear weapons states, certainly Russia and Pakistan, and possibly India, have reached these conclusions. Russia maintains a large stockpile of tactical nuclear weapons, albeit mostly in storage, while Pakistan and India are developing and procuring short-range battlefield systems. Russia's retention of a large stockpile of tactical nuclear weapons is the easiest to explain. After the collapse of the Soviet Union, Moscow had to adapt to a greatly changed security environment and a vastly diminished military capacity. While rejecting the Soviet Union's no-first-use pledge in 1993, Moscow seemed to view nuclear weapons as a defensive deterrent to conventional or nuclear attack and as a means to retaliate if an attack were to occur.

This continuing reliance on tactical nuclear weapons reflected the fact that Russia could no longer afford to maintain large and effective conventional forces. Subsequent conflicts in Chechnya and Georgia demonstrated glaring weaknesses in Russian conventional forces, as new threats emerged in former Soviet states along Russia's southern periphery. Many analysts believed that by threatening, even implicitly, that it might resort to nuclear weapons, Russia hoped to deter similar regional conflicts in the territory of the former Soviet Union. Russia's perception of increased vulnerability was further magnified by NATO enlargement and concern that former Warsaw Pact nations who joined NATO would bring NATO nuclear weapons closer to Russia's borders.[59] While Russia can be expected to maintain a robust strategic nuclear capability, its reliance on tactical nuclear weapons may diminish as political stability and an

improved economy allow it to improve its conventional forces. There are indications it has already eliminated tactical nuclear weapons for ground forces, while retaining only naval, air-delivered and air defense weapons.[60]

India's position on tactical nuclear weapons is murky. Despite a large conventional military superiority over Pakistan, it has regional (if not global) aspirations driving the growth and capability of its military forces far beyond what is ostensibly required to deal with Pakistan — a situation that contributes undoubtedly to Pakistan's insecurity complex. While not formally acknowledging the utility of tactical nuclear weapons, New Delhi is currently developing 11 short-range platforms that could be modified to carry nuclear warheads.[61] In 1999, India released an unclassified version of its nuclear doctrine that seemingly rejected the notion of limited nuclear war-fighting:

> India shall pursue a doctrine of credible minimum nuclear deterrence. … [A]ny nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor. The fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any State or entity against India and its forces. India will not be the first to initiate a nuclear strike, but will respond with punitive retaliation should deterrence fail.[62]

Publicly, senior Indian military leaders continue to assert this position. Rejecting what he characterized as continuing, veiled threats by Pakistan to use tactical nuclear weapons as a deterrent to India, Indian Chief of Army Staff Gen. V.K. Singh stated in January 2012, "Let's be quire clear on it. … Nuclear weapons are not for war-fighting. They have got a strategic significance and that is where it should end."[63] Some hawkish Indian defense analysts agree with this approach. In a paper laying out the inherent difficulties in developing and deploying tactical nuclear weapons, Brig. (ret.) Gurmeet Kanwal strongly advocated that India reject the temptation to match the Pakistani tactical nuclear weapons arsenal or attempt to fight a limited nuclear war in the event Pakistan uses a nuclear weapon on Indian forces. Instead, he argued,

> The only sensible option may perhaps be to call Pakistan's nuclear bluff and plan to launch Strike Corps operations to achieve strategic gains in as early a time frame as is militarily possible. This approach will need to be combined with a declaratory policy that a nuclear strike against Indian soldiers, even if they are deep inside Pakistani territory, will constitute the use of nuclear weapons against India and will invite massive counter value and counter force punitive retaliation against Pakistan.[64]

Other Indian analysts, including Manoj Joshi and Brahma Chellaney, differ sharply, arguing respectively for tactical nuclear weapons on the grounds that, without them, should deterrence fail, India's culture of restraint would inhibit the countervalue response presumed in the Indian Nuclear Doctrine. In their view, India requires other nuclear options along the ladder of escalation that allow the opportunity for a deal to be struck with Pakistan before any future conflict escalates to a general nuclear exchange.[65] Doubtless this debate will continue. For now, it appears a major change in thinking in both the military and civilian senior leadership in New Delhi must occur before India embraces tactical nuclear weapons.

Admittedly, the United States, in addition to the 150 to 200 weapons it has assigned to NATO, maintains another 850 to 900 nonstrategic nuclear weapons in storage in

the continental United States.[66] Nevertheless, both the Bush and Obama administrations have been committed to substituting enhanced conventional weapons for the ever-diminishing number of tactical nuclear weapons remaining in the US inventory. This small stockpile of nonstrategic weapons probably continues to exist for three narrow purposes, none of which are for war-fighting: to reassure anxious Eastern European NATO allies of the US commitment to their defense, as a potential bargaining chip in future negotiations with Russia to reduce overall numbers on nonstrategic weapons, and to retain the capability for a new generation of hardened nuclear penetrators to attack deep underground facilities. The current number of weapons is expected to decrease even further, as the Obama administration has stated it plans to retire all remaining nuclear-armed sea-launched cruise missiles and retain only a small number of B-61 air-dropped gravity bombs.

This leaves Pakistan as an outlier state in terms of its advocacy for tactical nuclear weapons employment, presumably because its senior military leaders believe that such weapons are a relatively inexpensive means to offset India's conventional superiority. The remainder of this essay will concentrate primarily on Pakistan's embrace of tactical nuclear weapons, with the stipulation that, should New Delhi begin to move in the same direction, the same logic will apply to India.

Pakistan's Argument in Favor of Tactical Nuclear Weapons

There is as yet no authoritative statement from the Pakistan military about the justification for developing new short-range nuclear-capable systems other than occasional references to systems designed for each level of warfare along the spectrum of conflict.[67] Following the March 2012 test of the Abdali short-range ballistic missile, the ISPR press release noted that it "provides an operational level capability to Pakistan's Strategic Forces, additional to the strategic and tactical level capability, which Pakistan already possesses."[68] During calls on him by visiting US government and academic visitors, Lt. Gen. (ret.) Kidwai occasionally refers to the Indian Army Cold Start doctrine and notes that the intent of Pakistan's short-range systems is to "Pour cold water on Cold Start."[69]

Nevertheless, Pakistan's new tactical nuclear weapons narrative can be gleaned from the published works and presentations made at recent Track II seminars and conferences by Pakistani national security analysts, academicians with close ties to the Pakistani military, and retired senior military officers. For the sake of brevity, the narrative can be summarized as follows:

- India's massive military modernization program is eroding the reasonable conventional military balance that Pakistan has traditionally relied on to deter war. As a consequence, this "weakening of the conventional fence encourages adversaries to initiate limited blackmailing or adventurous military operations which are prone to risk escalation. … [T]he threat of tactical nuclear weapon use will deter limited war between India and Pakistan."[70]

- India's provocative Cold Start military doctrine seeks to create space for a conventional war with Pakistan while remaining below the threshold of Pakistan's presumed nuclear "red lines." According to Adil Sultan, this new war-fighting doctrine poses a direct challenge to Pakistan's present strategic nuclear deterrent. "In response to limited

> military incursions by the Indian forces," he explains, "the threat to destroy New Delhi or Mumbai seemed incredible and disproportionate. … In addition to [existing] strategic-level deterrence capability, Pakistan aims to build credible deterrence capability at the operational and tactical levels, which could possibly be described as a 'Strategy of Assured Deterrence.'"[71]
>
> • Tactical nuclear weapons can be used in the event of an Indian "proactive defense"/Cold Start-style contingency without triggering a wider Indian nuclear response. Maj. Gen. (ret.) Qasim Qureshi notes the significant risks inherent in any use of tactical nuclear weapons, "and the chances that something goes wrong resulting in a nuclear exchange cannot be ruled out. It is precisely this danger and uncertainty that from Pakistan's point of view will ensure stability of deterrence in the conventional domain."[72] Mansoor Ahmed similarly acknowledges the danger of nuclear escalation, noting that the Indian military has already indicated that any use of tactical nuclear weapons against its conventional forces will trigger a massive nuclear response. However, he believes that "Pakistan's eventual development of assured second strike capabilities would largely exclude the possibility of such an Indian retaliation/disproportional response."[73]

Maria Sultan, an Islamabad-based Pakistani analyst who is currently Director General of the South Asian Strategic Stability Institute, has proposed a new doctrine for the employment of tactical nuclear weapons. In an article published in the Pakistan Army's Hilal magazine and serialized in a major English-language newspaper in Pakistan, Sultan described her theory of Integrated Strategic Equivalence, which calls for maintaining centralized control of strategic nuclear weapons (defined as having ranges from 300 to 3,500 km and up to 1,000 kg payload) while delegating authority to deploy and employ tactical range weapons (having ranges of 100 to 300 km). She also advocates "selective target engagement on the Indian side" at the onset of a Cold Start-type operation of three categories of targets: first, the extended lines of communication into India; second, offensive corps command and control centers (specifically to be attacked by tactical nuclear weapons); and third, unspecified countervalue targets in India, presumably cities. This would allow Pakistani decision-makers to have "initiative dominance of the battlefield while maintaining control and decision at the strategic level."[74]

The Relevance of the American Experience to Pakistan

As previously stated, a part of Pakistan's general nuclear narrative is that the US Cold War experience is not a good model for Pakistan. A former military official notes that the disparity in conventional military forces is "generally where the comparison ends," noting that the United States and Soviet Union forward deployed tactical nuclear weapons on the territory of client states; that the numbers, yields and variety of weapons deployed was different; and that only the Conventional Forces in Europe (CFE) — not the Intermediate Nuclear Forces (INF) — arms control process could be considered as relevant.[75] He is partly correct — there are many obvious differences between the Cold War standoff and the situation faced by Pakistan and India. The United States and the Soviet Union were global superpowers deploying tens of thousands of nuclear weapons against each other around the world. While India may one day become a superpower, Pakistan cannot aspire to reach that status, and neither can likely

afford a superpower-sized nuclear arsenal. Currently, India and Pakistan probably have no more than about a hundred nuclear weapons apiece, and at the current estimated rate of production, neither is likely to double that total for nearly a decade.[76] Although the United States faced a huge conventional military imbalance against its principal adversary, it had a stronger economy, more advanced weapons systems, better command and control, and stronger synergy between its armed services to narrow the conventional gap. Pakistan's economy is only one-seventh of India's and steadily declining relative to it, and it has only limited numbers of high-technology weapons and increasingly limited access to Western arms. India, on the other hand, has increasingly unfettered access to Western technology and a sufficiently robust economy to buy as much military equipment as its political leaders deem necessary.

There are four more significant differences between the Cold War and South Asia models. The first involves the way the two sides have treated each other. Despite their often tense and chilly relationship, Washington and Moscow never severed relations, practiced regular and robust summit diplomacy, settled many post-World War II territorial issues in Europe, and struck a series of far-reaching strategic arms control and reduction agreements spanning several decades. In comparison, New Delhi and Islamabad have often severed diplomatic relations during and after severe crises and remain diplomatically stuck over the Kashmir issue. They have been unable to finalize an agreement on any of several other outstanding territorial disputes and have not negotiated a meaningful military or nuclear-related Confidence-Building Measure in more than a decade.

Second, the United States and the Soviet Union established a clearly understood, if informal, set of rules governing their behavior. While they occasionally fought proxy wars, these were always far from each other's homeland. Both sides exercised great caution in Europe and other areas where their military forces directly confronted each other. During the 1962 Cuban missile crisis, for example, both sides blinked rather than force the other to the nuclear brink: the Soviet Union elected not to challenge a US naval quarantine of Cuba, and President John F. Kennedy ignored a belligerently worded message from Premier Nikita Khrushchev and answered a more benignly worded message sent earlier. Kennedy later quietly removed Jupiter missiles from Turkey, an action Moscow no doubt had considered as provocative as their missiles in Cuba were to Washington.

In comparison, Pakistan and India have fought wars three times and taken actions bringing them to the brink of war on several other occasions. During the last two major crises, the 1999 Kargil war and the Twin Peaks crisis of 2001-2002, external diplomatic intervention by the United States and others arguably helped defuse both before either crisis reached a culminating point. Such interventions cannot be guaranteed in the future. What makes the current situation potentially ever more explosive is that for the past 20 years, Pakistan has provided training and operational support to extremist groups conducting terrorist operations not only in Kashmir but also in India's major cities, all the time relying on its nuclear capability to forestall Indian military retaliation. While some argue that support for violent extremism is provided only by low-level operatives or retired military personnel and is not approved at higher levels of the military or intelligence chains of command, India's perception of Pakistan Army culpability will inevitably influence its response, if a future high-profile terrorist event occurs.

A third major difference is the security environment of the territory in which nuclear weapons are stored. All US and Soviet nuclear weapons were stored in territory fully under their own control or that of their allies. In peacetime, there was very little concern about the safety and security of nuclear weapon storage sites whether they were in West Germany, South Korea, or on the territory of other NATO allies. In Pakistan, the security environment is far less benign with some areas beyond the writ of the State of Pakistan and no area safe from mass-casualty acts of terrorism. As Chaim Braun explains,

> Due to its unique characteristics, history, and the nature of its internal as well as external politics, Pakistan has allowed the emergence of an entire infrastructure of terrorist organizations within its borders. Up to 50 to 60 active or partially active terrorist groups are estimated to operate in the country in pursuit of their own nihilistic, sectarian or pan-Islamic goals. … In addition to this terror infrastructure, one should consider simmering regional and sectarian strife between the Punjabis and the Sindhis, the Punjabis and the Baluchis, and between the majority Sunni and minority Shia communities. On top of all these, we should consider the existence of large-scale foreign terrorist base areas within Pakistan, only partially controlled by the government, if at all. In this category, we include the Taliban and the International Islamic Group (al-Qaeda and their associate Chechen, Uzbekistani, Arab and other groups).[77]

The final difference between the Cold War and India-Pakistan cases is that of nuclear "red lines." Because of the relatively short distance between the inter-German border and the Rhine River — the first major natural obstacle on which to base a second line of defense — NATO forces in West Germany were required to defend against a Warsaw Pact invasion as far forward as possible. The same military imperative exists for Pakistan. However, NATO's nuclear "red lines" were far more conservative than Pakistan's appear to be. The triggering event for a request to use tactical nuclear weapons by NATO ground commanders would likely have been the imminent tactical defeat of a NATO corps, a situation that would have unhinged its conventional defense scheme. By the time release was likely to have been granted, NATO land forces would almost certainly have been compelled to withdraw to the Rhine River, a distance of at least 120 km.[78] Pakistan's nuclear red lines, while deliberately ambiguous as a matter of policy, were until recently considered by Western analysts to be generally those enunciated by Lt. Gen. (ret.) Kidwai to a visiting team of Italian scholars in 2002: nuclear weapons would be used only if Pakistan's national existence were threatened, and triggering events would likely be the loss of significant territory, the destruction of large parts of the Pakistan Army and/or Pakistan Air Force, economic strangulation caused by a blockade or cutoff of water resources, and large-scale internal subversion that threatened domestic stability.[79] However, Pakistan's new tactical nuclear narrative implies that these traditional red lines have changed and that a decision to employ tactical nuclear weapons could be made well before Pakistan finds itself *in extremis*.

Amid these differences in the two cases, there is at least one area of similarity: the problem of defining what is or is not a tactical nuclear weapon. One of the first lessons learned by US officials during decades of strategic arms negotiations with the Soviet Union is that it is extremely difficult to define the word "tactical." The definition could not be based solely on yield because a 300 KT gravity weapon carried by a tactical fighter-bomber aircraft — clearly a tactical weapon — far exceeded the 150

KT yield of a warhead atop a Trident ballistic missile — clearly a strategic weapon. Some analysts argued the designation should be based on use, with nuclear weapons employed on counterforce targets being considered "tactical" and those aimed at countervalue targets being considered "strategic," but even that definition would have made many relatively short-range systems capable of destroying strategic targets. In the context of the Strategic Arms Limitation Talks (SALT) during the 1970s and the Strategic Arms Reduction Talks during the 1980s, nonstrategic nuclear weapons eventually came to be considered by both sides as those carried by tactical air forces, naval vessels and aircraft, sea- and land-based cruise missiles, air-launched cruise missiles with ranges less than 600 km, artillery and atomic demolition munitions, and ballistic missiles with a range less than 5,500 km. However, from the Russian perspective, the targeting dimension of these nonstrategic systems also had to be considered. For example, at the beginning of the SALT I negotiation, the Soviet side indicated that NATO's intermediate- and short-range nuclear missiles must be considered strategic if they were targeted at the Soviet Union.[80]

The problem in South Asia is identical: the proximity of the two sides' nuclear forces makes any attempt to distinguish between "strategic" and "tactical" nuclear systems a fruitless endeavor. During the Cold War, the distance between the closest NATO nuclear missiles and Moscow was approximately 2,000 km. The distance between the India-Pakistan international border and Islamabad and New Delhi is 278 km and 423 km respectively. Logically, if NATO intermediate-range missiles had strategic consequences because they could target Moscow, most Indian and Pakistani short-range systems are no less strategic. The United States and the Soviet Union had a minimum of 30 minutes from detection of a strategic missile exchange to decide on a response; Pakistan and India would have a few minutes at best. Because of this proximity issue, there are essentially no tactical nuclear weapons in South Asia — they all should be considered strategic. This logic seemed to be accepted by both Pakistan military and civilian analysts until 2010, after which time, their nuclear narrative began to change.

While the Cold War model is not exactly analogous to the current situation in South Asia, the latter is infinitely more complex and potentially more dangerous. This does not mean, however, that the US experience in managing and securing tactical nuclear weapons has no relevance for Pakistan, or for India, if New Delhi chooses the same path. Many, if not all, of the lessons learned by the United States and its NATO allies about the complexities and inherent dangers of managing a tactical nuclear weapon stockpile are directly applicable to the subcontinent. If Pakistan continues to produce more warheads for short-range delivery systems as its fissile production capability expands, it will have to address the same dilemmas the United States failed to resolve in four decades of managing and securing its nuclear arsenal during the Cold War. Several of the lessons identified above apply directly to Pakistan:

Pakistan's tactical nuclear weapons will add little to deterrence. If future Indian leaders are so provoked as to consider a military response to acts of terrorism that can be traced back to Pakistan, they will not be deterred by the deployment of short-range battlefield systems like the Nasr or Abdali. They are far more likely to be deterred by the stark realization that no conceivable military gain is worth the risk that Pakistan's longer range missiles and higher yield nuclear warheads might eventually be employed against Indian cities. The repeated references in ISPR press releases and published articles to nuclear systems that are specifically planned for the tactical level of warfare suggest a presumed gap in deterrence at that level, as if the tactical or operational use

of nuclear weapons somehow does not have strategic implications. Prior Pakistani arguments — that even the use of a single nuclear weapon would have strategic implications — are much more grounded in reality.

Pakistan's tactical nuclear weapons will complicate safety and security. Additional tactical nuclear weapons and a larger supporting infrastructure logically mean greater safety and security risks. They also mean more personnel — who will have access to information desired by groups wanting to seize the weapons for their own agendas — will need to be cleared, periodically screened and monitored for reliability. Shaun Gregory estimates the following:

> As many as 70,000 people in Pakistan reportedly have access to, or knowledge of, some element of the Pakistani nuclear weapons production, storage, maintenance, and deployment cycle, from those involved in the manufacture of fissile material, through those engaging in nuclear weapons design, assembly and maintenance, to those who transport and safeguard the weapons in storage and would deploy the weapons in crises. That number will also rise steadily as the size of the nuclear arsenal grows.[81]

These dynamics would add to the risk that one of a plethora of extremist groups currently operating in Pakistan might take advantage of the movement of small-sized warheads to obtain a nuclear weapon. Since warheads for short-range systems are usually fully assembled, with the fissile material already inserted into the warhead, any militant group that obtains such a weapon would have the ability to cause catastrophic damage to Pakistan or elsewhere. This scenario could be checked if Pakistani warheads are manufactured to be "one-point-safe;"[82] that is, they incorporate sophisticated safety devices to prevent a nuclear yield by unauthorized means or during accidents. Pakistan's ability to manufacture one-point-safe warheads is unclear. Even if a fully assembled weapon is not usable after its seizure, its fissile material could be refashioned into an improvised or radiological weapon.

Pakistan's tactical nuclear weapons will invite preemption. India's technical surveillance systems, while not as advanced as those of the Soviet Union, will almost certainly be employed to monitor Pakistan's nuclear storage sites and areas of engagement for forces mobilized to fight. If short-range nuclear delivery systems are fielded during a crisis, they will constitute tempting targets in the event of a decision to take military action. The security forces needed to safeguard the weapons in a tactical environment will also create a larger unit "signature" for Indian analysts to detect, and this will trigger a very short window of opportunity to deliberate the consequences of a preemptive attack. Consequently, what little perceived value short-range nuclear capabilities might add to deterrence will more than be offset by their contribution to crisis instability and the increased risk of inadvertent escalation.

Pakistan's tactical nuclear weapons will complicate command, control and communications. US concerns about C3 apply directly to Pakistan, as noted earlier. Two additional complications could arise for Pakistan, related to the issue of Permissive Action Links (PALs). Pakistani authorities have said little about the status and particulars of PAL technology. The use of PAL technology is a two-edged sword: if employed, PALs add a further complication to C3 at the most critical point in the battle; if they are not employed, their absence adds a further security issue in the event they are captured by extremist groups.

Pakistan's tactical nuclear weapons will add to the considerable expense of a nuclear deterrent. According to Pakistani scholar Pervez Hoodbuoy, the cost of developing Pakistan's nuclear capability was approximately $4 billion, or $200 million per year over 20 years. This amount, if correct, is not insignificant for an economy the size of Pakistan's but a bargain compared with raising and maintaining larger conventional forces.[83] The expense of building a minimum deterrent for delivery by missile forces and the country's existing aircraft fleet will grow further by developing a nuclear triad and tactical nuclear capabilities. Pakistan has established Army, Navy and Air Strategic Force Commands controlling a missile force of intermediate-, short-range and tactical missiles; air, ground and sea-launched cruise missiles; potentially other short-range systems, including nuclear artillery, atomic demolition munitions and nuclear-armed torpedoes; the fissile material production and weapon manufacturing capacity required to build new weapons and their delivery vehicles; dedicated C3 networks to control them; and new units to deliver them.

This appears to be the path Pakistan is on. The financial cost to build such a capability will continue to be substantial, as will be the fixed costs associated with maintaining it at even a minimum level of operational readiness. India can easily afford these costs, which represent an additional burden for the already fragile Pakistani economy.

Conclusion

The American experience with tactical nuclear weapons during the Cold War demonstrated the futility of attempting to develop either doctrine or force structure to employ these weapons on the battlefield. Rather than contributing to deterrence by offsetting the conventional military superiority of the Soviet Union, the use of tactical nuclear weapons instead would have almost certainly guaranteed uncontrolled escalation in the event of a Soviet invasion of Western Europe. Their continued presence in Europe reflects the inertial weight of policies associated with nuclear weapons, their presumed symbolic value of the US commitment to NATO, and as bargaining chips for a future deal with Russia to reduce legacy stockpiles rather than any genuine military utility. Until Moscow becomes more confident of its conventional military forces, more acclimated to an enlarged NATO presence in countries that were formerly part of the Warsaw Pact, and more comfortable with the reality that NATO will not seek to seize and hold Russian territory, tactical nuclear weapons will remain a dangerous Russian crutch.

The situation is far more fraught with danger in South Asia. Some Pakistan Army generals, like their US counterparts two generations ago, seem to be imbued with a form of "nuclear romanticism" that tactical nuclear weapons can help checkmate conventional military imbalances.[84]Possibly within a decade, at the present rate of growth, there could easily be 100 tactical nuclear weapons in Pakistan and perhaps half that number in the Indian stockpile, if New Delhi chooses to respond in kind to Pakistan's tactical nuclear weapons race. Within two decades, there could be several hundred warheads for short-range delivery systems on both sides.[85] Rather than strengthening Pakistan's deterrence of India, these weapons hold far greater potential to lower the nuclear threshold while guaranteeing uncontrolled escalation if the nuclear threshold is crossed. Tactical nuclear weapons will vastly complicate security and C3 on the Pakistan side, at added financial cost. The view of a thoughtful observer writing at the

apogee of tactical nuclear weapon deployment in the 1980s remains no less relevant when applied to this looming situation:

> Leaving a lot of nuclear weapons scattered around the European theater is like wiring a doomsday machine to a roulette wheel. It does raise the risk of nuclear war, but it cannot raise that risk to one side without doing so for both. That is not a strategy, but the abnegation of strategy. Worse yet, it is likely to prove self-defeating both politically and militarily.[86]

At the height of the second phase of the "Twin Peaks" crisis between India and Pakistan in May 2002, the author asked a Pakistani major general in the Inter-Services Intelligence Directorate (ISI) if anyone in the Analysis Directorate of that organization had ever assessed what India's response would be in the event of Pakistan's first use of a single nuclear weapon. His answer was not reassuring: "I suppose it would be a massive holocaust." Somewhat taken aback by his unexpected candor, the author suggested this might be the time to explore the issue in more detail. He simply shrugged his shoulders and replied, "When it's war, its war."[87] This echoed an earlier exchange with then Maj. Gen. Kidwai on this topic. During a visit to Joint Staff Headquarters by a group of visiting US Air War College students, one of them asked Kidwai if he thought a nuclear war between Pakistan and India was winnable. He answered that nuclear weapons were not war-fighting tools but "instruments of deterrence." If one side crosses the nuclear threshold, "We don't know the effect, but we do know it will be a disaster."[88]No doubt Lt. Gen. (ret.) Kidwai is correct.

Instead of continuing down the present path of building and fielding a robust arsenal of tactical nuclear weapons, deterrence stability would be far better served by a tacit agreement between Pakistan and India to halt the development and production of — and to foreswear the deployment of — short-range systems advertised as being nuclear capable. Tacit nondeployment agreements could be monitored by technical means and could be reinforced by very simple Confidence-Building Measures. This could save needless expenditures, avoid significant prospects to undermine deterrence stability, and promote increased crisis stability in the event of a future crisis between Pakistan and India.

Whatever the presumed gains in deterrence from tactical nuclear weapons might be — and this essay finds none — they must be carefully weighed against their enormous risks and liabilities. Any simple and objective cost-benefit analysis will lead to the conclusion that the production and deployment of tactical nuclear weapons and their means of delivery is pure folly.

Notes

1. There is of course much more to Pakistan's nuclear narrative than these two points. The narrative amplifies what Michael Krepon describes as the four main pillars of Pakistan's nuclear doctrine: that it is India-specific, aims for minimum credible deterrence, that it may be subject to future Indian decisions such as the deployment of an anti-ballistic missile system, and that Pakistan does not wish to engage in a costly nuclear arms race with India. Other parts of the narrative are that the US-Soviet Union experience in the Cold War is not a good model to understand the nuclear dynamic is South Asia, that Pakistani nuclear "redlines" are best left ambiguous, that there will be "reasonable transparency" about Pakistan's nuclear program to assuage western concerns, and that Pakistan — as the smaller and more vulnerable state — will always reserve the right to use nuclear weapons first in any future conflict with India. See Michael Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability", in in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

2. Karen DeYoung, "New Estimates Put Pakistan's Nuclear Arsenal at More than 100," *Washington Post*, Jan. 31, 2011 and Shaun Gregory, "Terrorist Tactics in Pakistan Threaten Nuclear Safety," *CTC Sentinel*, June 2011, vol. 4, issue 6: 4.

3. The terms "short range nuclear system," "battlefield nuclear weapon," "non-strategic nuclear weapon," and "tactical nuclear weapon" are often used interchangeably. The definition of what constitutes a tactical nuclear weapon is unsettled, and was often defined differently by the United States and the Soviet Union in arms control negotiations. Any answer cannot be based solely on the yield of the warhead or range of an associated delivery system, but must include the perceived effect on one of the opponents in a conflict. This issue is addressed in more detail below.

4. Inter-Services Public Relations, Press Release No. PR94/2011-ISPR, April 19, 2011. Available at http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2011/4/19.

5. Mansoor Ahmed, "Why Pakistan needs tactical nuclear weapons," The Weekly Pulse, May 6, 2011. Available at http://www.weeklypulse.org/details.aspx?contentID=563&storylist=9. Ahmed is correct. Once the basic miniaturization process is mastered, it is relatively easy to make small warheads for a variety of land-based systems, artillery shells for example, or naval systems like torpedoes and ship-to-ship missiles as well.

6. T.S Subrahanian & Y. Mallikarjun, "'Prahaar' missile successfully test-fired," *The Hindu*, July 21, 2011. Available at http://www.thehindu.com/news/national/article2279166.ece.

7. Inter-Services Public Relation, "Naval Chief Inaugurates Naval Strategic Force Headquarters," Press Release No. 122/2012, May 19, 2012. Available at http://www.defence.pk/forums/pakistan-navy/180815-naval-chief-inaugurates-naval-strategic-force-headquarters.html#ixzz20v0lzfji.

8. T.S. Subramanian, "Agni-1 a Success," *The Hindu*, July 13, 2012. Available at http://www.thehindu.com/sci-tech/science/article3634634.ece?homepage=true. Although the system has not yet been tested, as of September 2012, the Indian media was still reporting the test as being expected "shortly." See http://www.teluguone.com/news/content/technology-33-17564.html.

9. George Santayana, *The Life of Reason*, vol. 1, ch.12. (New York: Dover Publications, 1980. Project Gutenberg, Feb. 14, 2005) Available at http://www.gutenberg.org/files/15000/15000-h/vol1.html.

10. Statement made by retired Lt. Gen. (ret.) Kidwai during a presentation on Oct. 25, 2006, at a Washington, DC think tank.

11. Elbridge Colbert notes three key strategic differences between Europe and the Far East in the Cold War: (1) there was a unitary alliance (NATO) in Europe while the US had to deal simultaneously with many governments in Asia due to the "hub and spoke" nature of the US strategic architecture in Asia; (2) there was more freedom of action to deploy nuclear weapons as neither Japan nor Korea required a dual-key approach; and (3) Asia was a naval theater where the USN had an overwhelming conventional advantage. See Elbridge A. Colby, "US Nuclear Weapons Policy and Policymaking: The Asian Experience", in eds. Tom Nichols, Douglas Stuart and Jeffrey D. McCausland, *Tactical Nuclear Weapons and NATO* (Carlisle, PA: US Army Strategic Studies Institute, 2012), 75-105.

12. From June 1941 until September 1947 when it was designated an independent service by the National Security Act of 1947, the US Army Air Forces functioned as a de facto independent service. Though nominally falling under the US Army, its head during most of this period, Gen. Henry H. Arnold, served as a full member of the US Joint Chiefs of Staff.

13. John J. Midgely, *Deadly Illusion: Army Policy for the Nuclear Battlefield* (Boulder, CO: Westview Press, 1986).

14. William R. Van Cleave and S.T. Cohen, *Tactical Nuclear Weapons: An Examination of the Issues* (New York: Crane, Russak, and Company, 1978), 3-4.

15. G.C. Reinhardt, *Nuclear Weapons and Limited Warfare: A Sketchbook History* (Santa Monica, CA: RAND Corporation, November 1964), 4. Available at http://www.rand.org/pubs/papers/2008/P3011.pdf.

16. Quoted in Paul Bracken, *The Command and Control of Nuclear Forces*, (New Haven, CT: Yale University Press, 1983), 137.

17. Midgely, *Deadly Illusion*, 13-14.

18. David C. Elliot, "Project Vista and Nuclear Weapons in Europe", *International Security*, vol. 11, no. 1 (Summer 1986): 163; Midgely, *Deadly Illusion*, 22.

19. Van Cleave and Cohen, *Tactical Nuclear Weapons*, 4.

20. Midgely, *Deadly Illusion* 38-40.

21. Stephen D. Biddle and Peter D. Fewer, "Roles and Missions of Battlefield Nuclear Weapons", in eds. Stephen D. Biddle and Peter D. Fewer, *CSAI Occasional Paper No. 5: Battlefield Nuclear Weapons: Issues and Options* (Boston: Harvard University Center for Science and International Affairs, 1989), 19.

22. Bracken, *The Command and Control of Nuclear Forces*, 161; *Sagebrush* was conducted in the vicinity of Fort Polk, Louisiana, and involved four complete Army divisions, approximately 100 thousand troops. Army forces simulated nuclear strikes totaling approximately 19,000 kilotons, ranging from 2 kiloton atomic demolition munitions to 200 kiloton Corporal missile strikes. The Air Force simulated weapons with yields up to 500 kilotons. Umpires ruled the strikes would have resulted in 20,000 casualties and destroyed 2,700 Army vehicles. The exercise after action report noted, "[It] should be apparent that concentration of atomic means against targets of these kinds [headquarters, logistic units, artillery units] would soon render infantry and armored units without adequate logistics support, fire support, and command coordination. Infantry and armored units in this situation would appear unable to avoid destruction in detail when faced by enemy forces." Most observers concluded the new AFTA design had failed. See Midgely, *Deadly Illusion*, 51-53.

23. Quoted in *Official History of the US Army*, ch. 10. Available at http://www.history.army.mil/books/lineage/m-f/chapter10.htm.

24. Paul Schulte, "Tactical Nuclear Weapons in NATO and Beyond: A Historical and Thematic Examination," in et al eds. Nichols, Stuart, and McCausland, *Tactical Nuclear Weapons and NATO*, 21.

25. Ibid., 22

26. During the years 1945-1949, *Military Review*, Fort Leavenworth's professional journal, published a total of eight articles on the ramifications of nuclear weapons on warfare. From 1950-1954 it published 32, and from 1955-1959 it published 132. See John P. Rose, *The Evolution of US Army Nuclear Doctrine, 1945-1980* (Boulder, CO: Westview Press, 1980), 57.

27. Midgely, *Deadly Illusion*, 66-67. There seems to be a tradition in the US Army of making sweeping force structure changes with little apparent thought or doctrinal foundation. In 1983, the Army's Chief of Staff, John Wickham, decided in the midst of the Reagan defense buildup to establish five new light infantry divisions. At the time, the Army's principal mission was to find methods to offset Soviet armored units in Europe, a task for which light units were ill-suited. An officer in the Army's Force Development Directorate told the author at the time there was absolutely no doctrinal requirement or any other meaningful reason for the Chief's decision other than perhaps his desire, as a member of the Army's airborne "mafia," to find a mission for airborne and other light units to prevent them from becoming irrelevant. Because, he continued, the Army budget was large and expanding at this time, there was no penalty for doing so. After the decision, the Force Development Directorate ultimately *discovered* (my italics) sound doctrinal missions for these units.

28. Ibid., 73.

29. Ibid., 96.

30. Ernest R. May and Catherine M. Kelleher, "History of the Development and Deployment of BNWs," in eds. Biddle and Fewer, *CSAI Occasional Paper No. 5,* 19.

31. Conference Proceedings, *The History of NATO TNF Policy: The Role of Studies, Analysis, and Exercises*, held Sept. 12-14, 1990, Sandia National Laboratories, Livermore, CA. Available at http://www.osti.gov/scitech/servlets/purl/10132869.

32. May and Kelleher, 18.

33. Ibid., 20.

34. Fred Kaplan, *The Wizards of Armageddon* (New York: Simon and Schuster, 1983), 254.

35. Midgely, *Deadly Illusion*, 112.

36. Bracken, *The Command and Control of Nuclear Forces*, 161.

37. Ibid., 117.

38. Ibid., 121.

39. Document, Final Decision on MC 14/3, A Report by the Military Committee to the Defence Planning Committee on Overall Strategic Concept for the Defense of the North Atlantic Treaty Organization Area, Jan. 16,1968, 16. Cached version available at http://www.nato.int/docu/stratdoc/eng/a680116a.pdf.

40. Tom Nichols, "Preface," to et al eds. Nichols, *Tactical Nuclear Weapons and NATO*, viii-ix.

41. Midgely, *Deadly Illusion*, 130.

42. James R. Schlesinger, *Annual Report, Defense Department, FY 1975*, 19. Available at http://history.defense.gov/resources/1975_DoD_AR.pdf.

43. Midgely, *Deadly Illusion*, 162; The FY 1985 Department of Defense Annual Report avoided the term "tactical nuclear weapons" at all, substituting "nonstrategic nuclear forces" whose role was simply described as "to help deter." See William R. Van Cleave and S.T. Cohen, *Nuclear Weapons, Policies, and the Test Ban Issue* (Stanford, CA: Hoover Institution, Stanford University, 1986), 16.

44. Rose, *The Evolution of US Army Nuclear Doctrine*, 214.

45. Leon Sigal, "The Case for Eliminating Battlefield Nuclear Weapons," in eds. Biddle and Fewer, *CSAI Occasional Paper No. 5*, 34.

46. Federation of American Scientists Intermediate nuclear Forces Chronology, Available at http://www.fas.org/nuke/control/inf/inf-chron.htm.

47. Hans M. Kristenson and Robert S. Norris, "Russian Nuclear Forces, 2012," *Nuclear Notebook,* Bulletin of the Atomic Scientists, 68, 87-92. Available at http://bos.sagepub.com/content/68/2/87.full.pdf+html; and Kristenson and Norris, "US Tactical Nuclear Weapons in Europe, 2011," *Nuclear Notebook*, Bulletin of the Atomic Scientists, 68. Available at http://bos.sagepub.com/content/67/1/64.full. The Stockholm International Peace Research Institute (SIPRI) has an estimate of 200 for US tactical nuclear weapons in Europe but states the Russian figure is approximately 4,000. See http://www.sipri.org/research/armaments/nbc/nuclear.

48. Oliver Schmidt, "The Utility of US Tactical Nuclear Weapons in NATO," *Proliferation Analysis*, (April 27, 2010). Available at http://carnegieendowment.org/2010/04/27/utility-of-US-tactical-nuclear-weapons-in-nato-european-perspective/7q7; Also see Amy F. Woolf, *Nonstrategic Nuclear Weapons*, Congressional Research Service. Available at http://www.fas.org/sgp/crs/nuke/RL32572.pdf.

49. NATO Press Release 063, "Deterrence and Defence Posture Review," May 20, 2012; The press release indicated, however, that the North Atlantic Council would task appropriate committees to ensure the broadest possible participation in nuclear sharing arrangements, including in case NATO were to decide to reduce its reliance on non-strategic nuclear weapons based in Europe. Available at http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease.

50. Sigal, in *CSAI Occasional Paper no.5*, 36.

51. Gordon S. Barras, *The Great Cold War: A Journey Through the Hall of Mirrors* (Stanford, CA: Stanford Security Studies, Stanford University Press, 2009), 297-301.

52. US Army Field Manual 101-31-3, *Nuclear Weapon Employment Effects Data: Planning Staff Officers* (Washington: Department of the Army, 1977), Appendix E.

53. Quoted in Van Cleave and Cohen, *Tactical Nuclear Weapons: An Examination of the Issues* , 67.

54. Sigal, in *CSAI Occasional Paper no.5*, 46.

55. Ibid., 45.

56. Bracken, *The Command and Control of Nuclear Forces*, 230.

57. Sigal, in *CSAI Occasional Paper no.5*, 42.

58. Victor Uttgoff and William Christenson, "Battlefield Nuclear Forces: An Undervalued Option for Improved Deterrence In Europe," in Biddle and Fewer, 98.

59. Amy F. Woolf, "Nonstrategic Nuclear Weapons," Congressional Research Service, May 29, 2012. Available at http://www.fas.org/sgp/crs/nuke/RL32572.pdf.

60. See Ibid., 21; and Kristenson and Norris, "Russian Nuclear Forces, 2012", 89-90.

61. These eleven systems include three variants of the Prithvi SRBM with ranges between 150 and 350 kms; the Agni-1 SRBM with a 700 km range; the Prahaar SRBM with a 150 km range; the Dhanush naval SRBM with a 350 km range; two anti-shipping missiles, the 65 km Ametist and 78 km Popeye; and three cruise missiles, the 1000 km Nirbay, 290 km Brahmos, and 120 km Moskit.

62. National Security Advisory Board, "India's Draft Nuclear Doctrine," Aug. 17, 1999. Available at http://www.armscontrol.org/print/514.

63. Rajat Pandit, "Nuclear Weapons Only for Strategic Deterrence: Army Chief," *Times of India*, Jan. 16, 2012. Available at http://articles.timesofindia.indiatimes.com/2012-01-16/india/30631202_1_nuclear-arsenal-nuclear-retaliation-nuclear-weapons.

64. Gurmeet Kanwal, "Does India Need Tactical Nuclear Weapons?," Institute for Defence Studies and Analyses, New Delhi, no date given. Available at http://www.idsa-india.org/an-may-03.html.

65. See Manoj Joshi, "Ballistic Missile Nasr: A bigger threat from Pakistan," *India Today*, June 2, 2011, available at http://indiatoday.intoday.in/story/pakistans-short-range-ballistic-missile-nasr-is-a-matter-of-concern-for-india/0/140087.html; and Brahma Chellaney, "Nuclear Deterrent Posture," in ed. Brahma Chellaney, *Securing India's Future in the New Millennium*, (New Delhi: Orient Longman Limited, 1999), 209-214.

66. Woolf, Report Summary.

67. These references generally mirror US Department of Defense terminology which defines the three levels in this way: the Strategic Level of War is the level of war at which a nation determines national security objectives and guidance, and develops and uses national resources to accomplish these objectives. The Operational Level of Warfare is the level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. The Tactical Level of Warfare is the level of war at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units. Available at http://usmilitary.about.com/od/glossarytermso/g/o4531.htm.

68. Inter-Services Public Relations, Press Release No. PR34/2012-ISPR, March 5, 2012. Available at http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2012/3/5.

69. The author has heard this quotation attributed to Kidwai from three different sources, each of whom wishes to remain anonymous.

70. Zafar Nawaz Jaspal, "Tactical Nuclear Weapon: Deterrence Stability between India and Pakistan," in Feroz H. Khan and Nick M. Masellis, *US-Pakistan Strategic Partnership, A Track II Dialogue, Sixth Iteration, Phuket, Thailand* (Monterey, CA: Center for Contemporary Conflict, US Naval Postgraduate School, January 2012), 10.

71. Adil Sultan, "Pakistan's Emerging Nuclear Posture: Impact of Drivers and Technology on Nuclear Doctrine," Strategic Studies, ISSI, Vol XXXI & XXXII, Winter 2011 & Spring 2012, Nos. 4, 1. Available at http://www.issi.org.pk/publication-files/1340000409_86108059.pdf.

72. Qasim Qureshi, "Deterrence Stability in South Asia," in eds. Khan and Masellis, 5.

73. Mansoor Ahmed, "Security Doctrines, Technologies and Escalation Ladders: A Pakistani Perspective" in eds. Khan and Masellis, 10.

74. Maria Sultan, "Cold Start Doctrine and Pakistan's Counter- measures: Theory of Strategic Equivalence-III," *The News*, Sept. 30, 2011. Available at http://www.thenews.com.pk/TodaysPrintDetail.aspx?ID=70218&Cat=2.

75. Statement made at a conference in 2012. The person cannot be further identified under the rules governing the conference discussions.

76. Any estimate of Indian or Pakistani fissile material production is speculative at best. Kristenson and Norris estimate India has produced 520 kg of plutonium, sufficient for 100-130 nuclear warheads, but further estimate India has only 80-100 warheads. They note that the planned construction of a second plutonium reactor at Visakhapatnam and a fast breeder reactor at Kalpakkam will significantly enhance its capacity but provide no figures for future warhead production. For Pakistan, Kristenson and Norris cite a 2010 estimate by the International Panel on Fissile Materials that Pakistan has produced approximately 2600 kg of highly enriched uranium and 100 kg of plutonium, enough for 160-240 warheads depending on size and design. They further estimate Pakistan to have 90-110 useable warheads and a current annual production capacity of 120-180 kg of HEU and 12-24 kg of plutonium, an amount sufficient to produce 10-21 warheads depending on size and design. See Hans M. Kristenson, and Robert S. Norris, "Indian Nuclear Forces, 2012", *Nuclear Notebook, Bulletin of the Atomic Scientists*, 68 (4), 96-101. Available at http://bos.sagepub.com/content/68/4/96.full.pdf+html; and Hans M. Kristenson, and Robert S. Norris, "Pakistan Nuclear Forces, 2011," *Nuclear Notebook, Bulletin of the Atomic Scientists*, 67 (4), 91-99. Available at http://bos.sagepub.com/content/67/4/91.full.pdf.

77. Chaim Braun, "Security Issues Related to Pakistan's Future Nuclear Power Program," Strategic Studies Institute, US Army War College (January 2008), 334-335.

78. The distance between Warsaw Pact forces deployed on the inner-German border near the Fulda Gap in south central West Germany and the Rhine River near Mainz or Wiesbaden. The author participated in several major NATO exercises in the 1970s and this event was generally assumed by senior commanders to be the trigger for requesting the selective release of nuclear weapons. With typical black humor, we often joked that "success" could be defined as delaying the Warsaw Pact advance to the Rhine for 96 hours, while "failure" would be delaying for 72 hours or less.

79. Timothy D. Hoyt, "The Buddha Frowns: TNWs in South Asia," in eds. Alexander and Millar, *Tactical Nuclear Weapons: Emergent Threats in an Evolving Security Environment* (Dulles, VA, Brassley's, Inc., 2003), 103.

80. Ivan Safranchuk, "Tactical Nuclear Weapons in the Modern World: A Russian Perspective," in eds. Alexander and Millar, 50.

81. Gregory, *CTC Sentinel,* 5.

82. The US Department of Energy defines a One-Point Safe Nuclear Explosive as a device which in the event of a detonation initiated at any one point in the high explosive system presents no greater probability than one in a million of achieving a nuclear detonation. DOE Order 5610.11, Oct. 10, 1990. Available at http://www.fas.org/nuke/guide/usa/doctrine/doe/o5610_11/o5610_11p.htm.

83. Pervez Hoodbuoy, "Pakistan's Nuclear Future," in eds. Samina Ahmed and David Cortwright, *Pakistan and the Bomb: Public Opinion and Nuclear Options* (Notre Dame, IN: University of Notre Dame Press, 1998), 77.

84. This term was coined by Richard Weitz to describe the "delusional thinking" among the Soviet military high command that nuclear weapons would allow for a decisive victory over NATO. See Richard Weitz, "The Historical Context," in et al eds. Nichols, 6, 31.

85. See endnote 76 for estimated fissile material production rates by India and Pakistan.

86. Sigal, in *CSAI Occasional Paper no. 5,* 41.

87. Meeting with the author at ISI Headquarters in Islamabad, May 30, 2002.

88. Briefing at Joint Staff Headquarters in Rawalpindi on May 13, 2001. The author was in attendance.

Doctrine, Capabilities, and (In)Stability in South Asia

Christopher Clary and Vipin Narang

Barry Posen defines grand strategy as a "political-military, means-ends chain, a state's theory about how it can best 'cause' security for itself." He continues that "military doctrine" is the "subcomponent of grand strategy that deals explicitly with military means." Doctrine answers the question of "for what *military* ends shall *military* means be employed."[1] Posen's definition is consistent with the US Department of Defense official definition, which states doctrine captures "Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application."[2]

Military doctrine is created by military professionals, sometimes with input from civilian bureaucrats and political leaders. Like any bureaucratic standard operating procedure, doctrine has the potential to diverge from its original intent. Rules created to accomplish a goal may inadvertently stymie its achievement. This essay is most concerned with potential disjuncture between national goals and military means. South Asia's current environment makes such disjuncture more likely for four reasons. First, South Asian militaries are modernizing, adopting new technologies and modes of operation, spurring resultant doctrinal innovation. While remaining stuck in old habits can be dangerous if others are changing around you, innovation can also be dangerous because new ideas have not had the accumulated benefit of decades of trial and error. Second, this military modernization occurs simultaneously with debates about the limits of nuclear deterrence in Islamabad and New Delhi. Differing views about the risks of nuclear escalation will directly translate into different doctrinal choices, and those doctrinal choices will in turn shape military conflict and coercive bargaining. As Posen explains, "Initial battles of a war are fought with the equipment at hand. Decisions made long before the war will determine some operational possibilities during the war."[3] Third, civil-military relations in both India and Pakistan are dysfunctional, complicating civilian oversight of doctrinal formation. While civilian views on war are not foolproof, there are enduring reasons to suspect that militaries may be prone to organizational pathologies harmful to national interests.[4] At a more basic level, poor civil-military relations can lead to "errors in translation" between the guidance of civilian leaders and the methods of military professionals. Doctrine is authoritative but requires judgment. Poor civil-military relations might lead to military professionals failing to seek additional guidance from civilian leaders in ambiguous situations or civilian leaders being unable to render judgment in such circumstances. Fourth, and finally, paired with this civil-military dysfunction is scientific autonomy in both countries, but particularly India. Capabilities are pursued often because they are within reach, not because they are needed by either the military end-users or the political overseers. This not only means dangerous systems can be incorporated into the arsenal; it also has the potential to spur arms races without any political purpose, as scientists in one country mirror developments across the border.

In surveying military developments on the subcontinent, three appear to have the greatest potential to shape conventional and nuclear stability. First, the Indian Army has led a multiservice effort to identify ways in which Indian conventional forces can be used to achieve political goals in a conflict with Pakistan. This effort has been primarily one of doctrinal innovation, the results of which have begun to filter into force posture and acquisition decisions. Second, driven in substantial part out of concern with these Indian decisions, Pakistan has demonstrated serious interest in pursuing battlefield nuclear weapons but has not indicated how, exactly, such weapons would be employed to achieve national goals. Third, new technologies have greatly improved the ability of both the Indian and Pakistani militaries to perform long-range precision strikes against the other. These technological changes will require doctrinal innovation, although it is not clear if such innovation has yet occurred. This essay now turns to each of these three areas in turn.

The Rise and Fall of "Cold Start"

India's and Pakistan's mutual nuclearization in May 1998 marked a turning point in their security relationship and a search in both countries for complementary nuclear and conventional doctrines that achieve each nation's security interests. Prior to 1998, India's conventional superiority over Pakistan, which was demonstrated in all three wars the two nations had fought — in 1947-1948, 1965 and 1971 — gave it substantial, though not decisive, coercive advantage over its neighbor. Without a credible nuclear capability to deter Indian conventional superiority, Pakistan was at the mercy of its larger neighbor's quantitatively larger conventional forces. Prior to nuclearization, India had not hesitated to operate deep into Pakistani territory, not only midwifing the birth of Bangladesh out of East Pakistan in 1971, but also operating several tens of kilometers across the international border in 1965.

The nuclearization of the subcontinent through the 1990s and overtly in 1998 radically altered that equation. While India and Pakistan decided to pursue and weaponize for a mix of security, prestige and domestic political reasons, it seems evident in New Delhi that prestige and domestic political components predominated, while in Islamabad and Rawalpindi, security was at the forefront.[5] In fact, very little consideration seems to have been given by the Bharatiya Janata Party (BJP) government about the security implications of testing nuclear weapons, for example, that Pakistan would certainly follow suit and what an overt nuclear Pakistan might mean for India's security. While the BJP stated publicly that it had tested because of Chinese nuclear weapons, it did not seem to consider the consequences of overt Pakistani nuclear possession. India tested first and asked questions later. Indeed, only after India's nuclear tests in May 1998 was any consideration given to questions about who was to manage them, how they were to be operationalized, or what kind of nuclear doctrine India would have. But once New Delhi crossed the nuclear Rubicon, there was no going back. Pakistan's nuclear tests gave it the only military equalizer it could have against India: the threat of nuclear first use against India's conventional forces in a conflict.[6] India's erstwhile strategic concept in a conventional war, popularly known as the Sundarji Doctrine, which relied on a large three Strike Corps thrust through the heart of Pakistan, had, in literally a flash, become neutralized.

Since testing in 1998, India has struggled to align complementary nuclear and conventional doctrines to achieve India's primary objectives: deterring nuclear use against India, conventional adventurism by Pakistan (and China), and mass-casualty

terrorist attacks in its periphery or metropolitan areas. India's nuclear posture has evolved toward one of "assured retaliation" designed to deter WMD use against India or its forces by threatening certain and "massive" retaliation against an adversary's population centers. India's first line of defense is still its conventional forces, and, as such, India pledges not to be the first to use nuclear weapons in a conflict.[7] It has not explicitly developed any tactical nuclear forces, and, for a variety of institutional reasons, India's nuclear forces are managed by a dedicated Strategic Force Command that operates in parallel to the conventional military chain of command and that takes orders directly from the Prime Minister's Office.[8] Because its nuclear forces are presently oriented entirely for nuclear retaliation, India's nuclear weapons serve little deterrent function against limited conventional attacks or against terrorism. Pakistan's nuclear posture, however, has evolved much more aggressively, threatening the first use of nuclear weapons on advancing Indian forces to deter Indian conventional attacks or retaliation.[9] Such a threat is paralytic for India's security managers: if Pakistan were to use theater nuclear weapons on Indian conventional forces that were operating offensively on Pakistani soil, could New Delhi credibly threaten to retaliate with a "massive" and disproportionate strategic nuclear strike on Karachi, Islamabad and/or Lahore? Pakistan is presently betting that it would not and that India would be self-deterred in such a scenario.

The interaction of these nuclear postures is not *ipso facto* detrimental to India's security. However, it is paralyzing for New Delhi in combination with another critical feature of the India-Pakistan dynamic: Pakistan's long-standing revisionist objectives toward India, which spark periodic militarized crises between the two nations. Emboldened by its nuclear capabilities that can now deter Indian conventional and nuclear retaliation, Pakistan since 1998 has been free to more aggressively pursue these objectives against India with virtual impunity.[10] Attacks from elements based in Pakistan have occurred with greater frequency and audacity since 1998. While not all of these attacks are done with the knowledge or acquiescence of the Pakistani state, it is evident that the Indian state perceives widespread Pakistani state complicity in abetting the terrorist violence and that Pakistan's nuclear posture insulates it from Indian punitive attacks.

The 1999 Kargil War involved the infiltration of Pakistan's Northern Light Infantry into Indian-administered Kashmir, which sparked a serious conflict that involved the risk of escalation.[11] Pakistan's nuclear capabilities and some explicit nuclear saber rattling[12] constrained the BJP's military response, including the prohibition imposed by Vajpayee on the Indian Air Force or Army from crossing or striking across the Line of Control (LoC) or threatening to open a second front across the international border — two tactical and strategic options that were staples of the Indian response to previous Pakistani infiltrations.[13]

In December 2001, a group of militants from the Jaish-e-Mohammed, with perhaps some cooperation from the Lashkar-e-Taiba (LeT), attacked India's Parliament building in New Delhi. Unlike previous attacks from militant groups based in Pakistan, attacks were now starting to occur in India's metropolises. This attack triggered a 10-month "Twin Peak" crisis that involved a three-week mobilization of almost 800,000 Indian forces and all three Strike Corps to the international border, poised for a massive conventional assault into Pakistan's Sindh and Punjab provinces.[14] For a variety of reasons, including the slow mobilization time that enabled American diplomatic intervention and Pakistan's explicit nuclear threats, the

Vajpayee government walked back from the threat of war and demobilized India's forces after a 10-month deployment.

In November 2008, individuals trained and equipped in Pakistan carried out a three-day LeT siege of Mumbai, killing almost 173 people including Indian, British, American and Israeli citizens. The level of direct Pakistan state involvement is murky, but the LeT is a group that has been historically protected and funded by the state. Once again, India's government — at the time led by the Congress Party's Dr. Manmohan Singh — contemplated its military retaliatory options. An investigative journalistic account two years after the attack discovered that at the height of the deliberations in the Cabinet Committee on Security (CCS) "the Prime Minister then wanted to know if there was a chance Pakistan could misjudge a conventional strike by India and trigger a nuclear response. There was near silence. … The larger consensus was that you could not be sure about Pakistan's response. It is reliably learnt that it was this uncertainty which halted Indian strategists from fully backing any military response."[15]

Thrice since 1998, then, India's leaders have been paralyzed after overt conventional and terrorist attacks from elements within Pakistan. India's nuclear weapons, and its posture of assured retaliation, are not oriented to deter limited or terrorist attacks — nuclear weapons are largely useless in such a role. But Pakistan's nuclear weapons, and its posture of first use or "asymmetric escalation," *do* deter India's ability to retaliate with significant conventional military power, which generates a pattern of India being forced to absorb spectacular attacks from Pakistan with little ability to respond.

The constraints of deterrence are tight but perhaps not inescapable. Analysts regularly wonder whether a hawkish Indian prime minister would be as circumspect as his predecessors when facing the risk of Pakistani asymmetric nuclear escalation. Even so, the past 15 years indicate that India's decision to test nuclear weapons in 1998 without first thinking through the strategic ramifications partly created the present situation of strategic difficulty and is the most significant example of India's ambitions outstripping its strategic thought and its capabilities. Pakistan likely would have been unable to take the steps necessary to enable an asymmetric escalation posture in the absence of the space afforded it to nuclearize overtly following India's May 1998 tests. The conventional doctrine that was the backbone of India's deterrent and punitive strategy against Pakistan was now completely misaligned with the strategic and subconventional realities of the subcontinent.

So how does India plan to rectify this situation with respect to Pakistan, where it could be argued that nuclearization has cast a dark shadow on India's security and national interests? Indian civilian leaders remain firmly committed to keeping its assured retaliation nuclear posture, and its no-first-use pledge, intact. Though there are hints that some in India's military are skeptical of the benefits of a no-first-use pledge, there is no evidence they have persuaded a majority of their uniformed colleagues or their civilian overseers. Instead, the Indian government's primary approach has been to attempt to generate a credible conventional retaliatory option against Pakistan that needs to feature three characteristics: (1) it would have to be mobilized quickly in order to retain the element of surprise and avoid international pressure (reflecting lessons learned from the 2001-2002 monthlong mobilization); (2) it would have to be significantly punitive to Pakistan in order to deter it from — or punish it for — abetting attacks against India from its soil; and (3) it cannot be so punitive that it risks Pakistan using nuclear weapons. The so-called Sundarji doctrine did not possess

the first and third characteristics. Furthermore, it would seem that the second and third requirements are fundamentally incompatible — any punitive strike that caused Pakistan significant military or territorial pain would, by definition, risk nuclear use on Indian forces. Nevertheless, India's security managers have pressed ahead with developing what is popularly known as "Cold Start," based on a speech by then Army Chief of Staff NC Vij in 2004 but now internally referred to as "proactive strategy options" (PSOs).

The primary aim of PSOs is to give India's political leadership conventional military retaliatory options in-between doing nothing in response to severe injury and a massive three-week three Strike Corps assault envisioned in 2001-2002, which would certainly risk nuclear escalation. A mistake made in the existing treatment of Cold Start/PSOs is an assumption that there is a single, static concept or configuration to achieve the desired aim. Instead, there are many possible versions of PSOs, including the dominant one in the popular press and scholarship that involves breaking up the Strike Corps (which are presently deployed in India's interior) and predeploying elements closer to the border so that offensive operations could be initiated within two to three days from an order to do so from a "cold start."[16] The more aggressive versions of Cold Start have been widely discussed in the media, advanced by quasiofficial think tanks such as the Centre for Land Warfare Studies (CLAWS), which is funded by the Army. Thus, most analysts and certainly Pakistan's military planners had little choice but to base their planning on the assumption that these highly aggressive configurations of Cold Start were government policy.

It turns out, however, that within the Army, an extended process attempted to evaluate various configurations of PSOs to see which ones might achieve their basic aim of quicker mobilization and significant attrition without risking triggering Pakistan's nuclear red lines. As then Army Chief V.K. Singh explained, "There is nothing called 'Cold Start.' As part of our overall strategy we have a number of contingencies and options, depending on what the aggressor does. In the recent years, we have been improving our systems with respect to mobilisation, but our basic military posture is defensive." While calling India's military posture defensive, he added the important caveat that "active defence is part of our defensive strategy."[17] As it considered options, a major concern within the Army was that any prepositioning of forces closer to the international border would provide attractive targets for Pakistani preemption, and defending them added to conceptual as well as logistical challenges. It proved to be a difficult challenge, even though the Indian Army does believe that it can wage conventional conflicts against Pakistan without serious risk of nuclear escalation.

Based on more recent open-source literature and research, these options for a new "doctrine" along the lines of those laid out earlier seem to have been rejected in favor of retaining the old concept relying on the three Strike Corps but focusing on a more rapid mobilization procedure to enable the Indian Army to commence offensive operations within five to seven days of an order to do so (rather than 21). The erstwhile "holding" corps (IX-XII Corps), which were largely defensive units designed to block a Pakistani attack, have been reportedly converted to "pivot" corps by attaching an armored brigade to them — so that they can "pivot" between defensive and offensive operations while the traditional Strike Corps mobilize to the border and provide offensive surge capability. This would allow the Indian Army to begin prosecuting limited offensive operations while the Strike Corps mobilize. This sequence is tricky because any offensive power in the Indian pivot corps would be checked once Pakistan

countermobilizes, making it important that India's Strike Corps mobilize prior to that occurrence. In other words, the development since 2001, when India's long mobilization timetable was seen as an embarrassment to the Army, seems largely to have been focused on reducing mobilization times rather than developing a new "doctrine" *per se*, as is often assumed.

While the Army in particular seems to have made some significant headway in developing these more rapid mobilization options, the larger strategic questions have gone unanswered, again generating a schizophrenic Indian security strategy toward Pakistan. In particular, whether the mobilization timeframe is three versus seven days, what is the broader political goal of Indian offensives? What roles will the Indian Air Force or the Indian Navy play? Who authorizes targeting priorities and decisions? If a local commander is achieving substantial success on the battlefield — either gaining territory or destroying Pakistani military units — what procedures are in place to compel him to stop? If there has been extensive thinking on these questions during Indian deliberations on PSOs, the answers are not yet apparent in the public domain.

Brig. Gen. (ret.) Gurmeet Kanwal, a proponent of some of the more aggressive PSOs, writes, "[The army and air force] should be launching their break-in operations and crossing the 'start line' even as the holding (defensive) divisions are completing their deployment on the forward obstacles. Only such simultaneity of operations will unhinge the enemy, break his cohesion and paralyze him into making mistakes from which he will not be able to recover."[18] In particular, India still envisions making shallow, "salami slice" penetrations across the international border and LoC from a variety of azimuths to confuse Pakistani commanders and to achieve limited objectives without triggering Pakistan's nuclear red lines. The major difference between the popular version of Cold Start and the current PSO configuration is that there seems to be a larger time buffer — a significant characteristic not to be underestimated — for political solutions to materialize before India's politicians would have to make a decision about authorizing the use of force. This larger buffer might also ameliorate Pakistani concerns of surprise offensives.

Two critical assumptions underlie any proactive strategy option: (1) that India actually has the capability to succeed and (2) that Pakistan Army commanders will be forgiving of Indian offensives that penetrate 30 to 50 km into Pakistani territory and that they would not contemplate using nuclear weapons to slow the Indian offensive.[19] Both assumptions are probably false, again revealing the dangerous gamble India might be playing in pursuing ambitions that it does not yet have the capability to achieve.

The Indian Air Force and Army have not instituted the jointness required of such an offensive, and it is certainly not a given that India would be able to achieve rapid and decisive military successes against a formidable Pakistan Army, air defense and Air Force that can still mobilize quicker than India.[20] Indian military planning continues to be Army-centric. While the Indian Air Force and Navy have difficulty in joint missions, they are improving their ability to undertake precision strike. For the United States, land-based or naval airpower is often the instrument of choice in responding to emergent threats or punitive attacks. This may become more attractive to Indian strategic planners going forward. Whether military planning continues to be Army-centric or whether other services predominate, it likely will result in a lose-lose proposition for deterrence and stability in South Asia.

The unanswerable question at this point is that, while the Indian military might present PSOs as one of several choices on the menu during a crisis, under what conditions would a political leadership authorize offensive retaliatory options against Pakistan, given the risk of escalation? It seems highly unlikely that PSOs would ever be authorized under anything but the most extreme Pakistani provocations; they seem mostly designed by the Army to avoid the embarrassingly long mobilization time from 2001-2002.

Even if they are never actually executed, the very existence and advertising of PSOs carry significant negative security externalities for India. Indeed, by even sometimes advertising a capability that it still does not fully possess or even intend to pursue in its entirety, India is potentially exacerbating its security challenges. Citing PSOs, Pakistan has developed its own rapid mobilization procedure and schemes to defend against surprise Indian attacks, tested in the large-scale Azm-e-Nau III exercises in 2010. More disturbingly, Pakistan has tested a battlefield nuclear capability (Hatf-9/Nasr) developed explicitly as a rapid reaction "shoot and scoot" nuclear system to counter surprise Indian offensives, expanded its fissile material production, and likely has plans for loosened command and control and enhanced readiness of relevant nuclear systems to make their use possible and credible in the event of a surprise Indian attack. Given the internal threats in Pakistan that may seek nuclear weapons for their own terrorist agenda, any loosening of safeguards and increased readiness of nuclear weapons in Pakistan is contrary to US and Indian interests.

Advertising an offensive retaliatory option that is not entirely developed has triggered Rawalpindi to pursue risky countermeasures, without successfully deterring terrorist attacks. And certainly once the PSOs are fully developed, the prospect of rapid surprise conventional offensives against a Pakistan that credibly threatens theater nuclear use is not something any Indian political leadership could easily authorize. The nature of Indian war planning is such that these PSOs have largely been developed by the military services in the absence of civilian direction or guidance. Civilian "customers" have shown little public interest in the services' wares. The last serious expression of interest by Indian civilian leaders in limited conventional options was Defence Minister George Fernandes' 2000 speech proposing that India retained limited war options against Pakistan.[21] As India's military develops retaliatory options that come across as more aggressive than they might actually be, options that ultimately have little to no chance of ever being executed, Pakistani responses are real and dangerous to Indian interests. The most dangerous response, Pakistan's development of battlefield nuclear weapons, is discussed below.

Pakistan's Battlefield Nuclear Weapon Option

Since the Indian Army first began publicly to contemplate "Cold Start" and PSOs, Pakistan military leaders have responded primarily in two ways. The first is to refine its conventional defense strategy, previously termed "offensive defense," based on traditional advantages of interior lines of operation that have given Pakistan mobilization advantage over India. Refined concepts have been tested in a series of exercises, most recently Azm-e-Nau III (New Resolve), as noted above.

More disturbingly, Rawalpindi has developed and fielded the Hatf-9 (Nasr), a 60 km solid-fuel, short-range ballistic missile capable of carrying a single miniaturized, presumably plutonium, nuclear warhead designed to target Indian armored formations in the battlefield. Pakistan already favored a first-use doctrine prior to Indian discussions

of "Cold Start," but those discussions appear to have prompted technological development of a delivery vehicle designed to counter shallow thrusts. The February 2013 Inter-Services Public Relations press release of a Nasr test read as follows:

> The test fire was conducted with successive launches of two missiles from a state of the art multi tube launcher. NASR, with a range of 60 km, and inflight maneuver capability can carry nuclear warheads of appropriate yield, with high accuracy. This quick response system, which can fire a four Missile Salvo ensures deterrence against threats in view of evolving scenarios. Additionally NASR has been specially designed to defeat all known Anti Tactical Missile Defence Systems.[22]

The speed and low apogee of the Nasr would make it difficult for any terminal ballistic missile defense (BMD) system to intercept. India has no such capability at present, although it has developmental programs for BMD. Indian research and testing on missile defense appear to have prompted the Pakistan military to announce that it has augmented the Nasr with inflight maneuver capability. If true, this would significantly complicate any missile defense intercept during short flight timelines. With such a short range, the Nasr seems designed to be fielded alongside Pakistani conventional forces in a conflict. Each Nasr battery can carry multiple missiles (some pictures released by Pakistan's Inter-Services Public Relations office show a two-tube mobile launcher, though recent reports depict a four-tube system).

The Nasr has three significant implications on South Asian nuclear stability.[23] First, in terms of command and control, the Nasr appears to be a canisterized system in which the warhead would have to be mated to the missile prior to being fielded. The physical and procedural constraints on unauthorized or accidental launch are unclear nor is it clear who and under what circumstances release would be authorized or physically possible. Even if one has considerable certainty that Pakistani missile units have no ability to launch weapons in peacetime, do they have just as little ability to launch deep in crisis, precisely when Nasrs would be deployed to the front lines? Maintaining this ambiguity is largely rational for Pakistani nuclear planners, who are trying to convince Indian military planners and the civilian leadership that offensives against Pakistan carry the risk of either intentional release of the Nasr on Indian forces or unauthorized release by an officer under extreme pressures at the forward edge of the battle.

Second, the Nasr is technically dual-use, which carries serious complications in a crisis if Pakistan retains a mix of conventionally armed and nuclear-armed Nasrs. How India, or any external observer, could distinguish between nuclear versus conventional Nasrs is unclear. Indeed, any Nasr movement would have to be assumed to be nuclear, which raises the stakes of fielding this capability and adds extreme risk if Pakistan intends to rely on the Nasr for any conventional degradation of Indian forces. The Nasr's capacity to achieve battlefield effects in a conventional role will be dependent on its accuracy, and even an accurate Nasr will be ineffective against advancing armor. An inaccurate conventional Nasr would merely be a weapon for harassment and signaling.

Third, and relatedly, the fielding of Nasr with Pakistan conventional forces carries the risk of inadvertent escalation in the classical sense. That is, Indian forces might target Pakistani conventional assets and mistakenly (or intentionally) target a Nasr battery, which results in a yield-producing event. How both states would respond to the scenario of a radioactive release on Pakistani soil due to an Indian conventional strike is unclear. One can imagine a cycle of increasingly escalatory reprisals.

Generating added risk is not necessarily irrational from the Pakistani military perspective because it could further deter Indian conventional offensives, but it is a dangerous game. The targeting prioritization of Pakistani ballistic missiles on India's targeting lists is also unclear. Risks rise with India's success in being able to locate, target and destroy Pakistani ballistic missiles near the battlefield. Would Indian decision-makers be deterred from strikes against dual-use missile systems? What if the Indian military is successful in destroying some substantial portion of Pakistan's forward-deployed nuclear assets? Would Indian decision-makers have situational awareness of these circumstances? Would Pakistan's National Command Authority view this circumstance as prompting consideration of countervalue targeting? The potential for catastrophic surprise for one or both sides in such a conflict seems abundant.

Longer Range Precision-Strike Options

The Nasr is notable not only for its nuclear payload but also for its advertised "high accuracy." This may be oversell, but other systems, many with long ranges, offer steadily improving accuracy. The advent of weapons that can reach targets across long distances with great accuracy reflects a global trend. Circular error probable (CEP) is an indicator of accuracy for a delivery system. It measures the radius of a circle centered on the target, within which the ordnance carried by the delivery vehicle is expected to land 50 percent of the time. Historically, ballistic missiles had quite large CEPs. An unmodified Scud-B had a CEP of 900 meters,[24] meaning if 10 Scud-Bs were launched at a target, five of them would land within 900 meters of the intended target, and five of them would land further away than 900 meters. This meant that ballistic missiles were useful for the delivery of weapons of mass destruction and perhaps to terrorize civilians living in large cities, but little else.[25]

The spread of Global Positioning System (GPS) and inertial navigation technologies has improved accuracy significantly. These technologies enable precise measurement of launch sites combined with postlaunch maneuvering, resulting in much greater accuracy for ballistic missiles. India's Defense Research and Development Organization (DRDO) almost certainly exaggerated when it announced that the Prithvi-2 had achieved "single digit accuracy reaching close to zero circular error probability" — zero circular error probability being an impossibility — but the gist is clear.[26] Similarly, when DRDO announced the new 150 km range Prahaar missile, it emphasized its speed and "high accuracy."[27] While high accuracy is useful — perhaps even necessary — for conventional missions, for strategic missions this only makes sense as part of a counterforce targeting strategy that requires precision to destroy hardened military targets.

DRDO has also advertised low CEPs for indigenous laser-guided bombs[28] and cruise missiles, while the Indian Air Force has purchased precision-guided bombs from foreign vendors.[29] Additionally, India has expressed interest in the Joint Standoff Weapon (JSOW), a US-made air-launched gliding munition capable of striking targets 130 km away, and has acquired the Kh-59M, a Russian-made missile with a 120 km range.[30] In other words, India could precisely strike targets in all or parts of six of Pakistan's 10 most populous cities (Lahore, Faisalabad, Rawalpindi, Hyderabad, Gujranwala and Islamabad) using the JSOW or Kh-59M without its manned aircraft crossing into Pakistani airspace.

Longer range cruise and ballistic missiles amplify and expand the Indian military's options for striking deep within Pakistan. The BrahMos cruise missile, a joint venture

between Russia and India, has an advertised range of 290 km. There is often speculation that the BrahMos might be more capable than its stated range, since Moscow has a strong interest to announce publicly a range less than the Missile Technology Control Regime's 300 km threshold.[31] Air-launched cruise missiles could fly greater distances than surface-to-surface variants. India is developing an air-launched version of the BrahMos to accompany land and naval versions that are further along in the development cycle. The BrahMos consortium has said that a combination of inertial navigation sensors and data from the US GPS and Russian GLONASS satellite navigation system will provide cruise missiles with single-digit meter CEPs.[32]

As mentioned at the outset of this section, India also has short-range Prithvi-1 and Prithvi-2 missiles with high levels of advertised accuracy and ranges of 150 and 250 km, respectively.[33] While it seems likely that New Delhi reserves the Agni missile for nuclear missions, the Prithvi's short range makes it a poor delivery vehicle for nuclear payloads because it needs to be forward deployed on the battlefield, and its liquid fuel requires cumbersome preparations immediately prior to launch. Further developments on the Prithvi missile make sense if it serves as either a testbed for technologies that India plans to adopt later or if DRDO is interested in adapting the Prithvi for conventional roles. Efforts to improve the Prithvi's accuracy down to very small CEPs make little sense for the nuclear delivery role. India conducted flight tests of the Prithvi-2 as recently as October 2013, suggesting that DRDO remains interested in the delivery vehicle for some developmental or operational purpose.[34]

Between Prithvi and BrahMos, New Delhi already has or will soon have the capacity to strike all of Pakistan's major cities except Quetta without manned aircraft crossing into Pakistani airspace. Advancements in precision and range are likely to substantially erode the distinction between the "forward edge of battle area" and the Pakistani heartland. India is purchasing BrahMos missiles in large numbers (more than 1,000 planned purchases), so the weapon could be employed widely in a future conflict.

India has begun testing of a longer range cruise missile, the Nirbhay, with an announced 750 km range, giving it the ability to strike almost the entirety of Pakistani territory, including as far west as Quetta and the port of Gwadar.[35] To the extent that Pakistan's survivability plans involved medium-range ballistic missiles operating from Baluchistan or Khyber-Pakhtunkhwa, distance alone will no longer be a guarantor of their safety. As Pakistan plans its requirements for robust command and control networks and survivable nuclear delivery capabilities, India's precision deep-strike capacity could inflate Pakistani requirements for greater numbers of warheads and delivery vehicles. Moreover, if the Nasr is designed to generate risk through its presence close to the battlefield, Indian leaders seeking to avoid nuclear risks might paradoxically have incentives to use deep-strike, precision capabilities to target beyond the zone most likely to contain battlefield nuclear weapons. In other words, to keep the battle limited to conventional exchanges, Indian leaders might have incentives to expand the portion of Pakistani territory being targeted for attack.

Pakistan is similarly developing its capacity to strike with precision across long distances. In addition to the short-range Nasr, Rawalpindi has worked steadily on air-launched and ground-launched cruise missiles, named the Raad and Babur, respectively. Both missiles likely have CEPs under 20 m, though Pakistani official sources have claimed even smaller 3 to 10 m CEPs. Both weapons have been advertised as being able to carry 500 kg warheads, with Pakistani official press releases being quite explicit that the cruise missiles are designed to be capable of carrying nuclear weapons.

Raad's announced range is 350 km with the Babur advertised as being able to reach targets at up to 750 km (although a 2013 US government publication lists both missiles as having a 350 km range).[36] Finally, though published reports are minimal, there has been some speculation that Pakistan's H-4 missile is in fact the South African Raptor II, a rocket-assisted glide bomb (similar to some variants of the JSOW) capable of reaching targets 120 km away. The Raptor II has a claimed CEP of 3 m.[37]

India's population centers are largely away from the Indo-Pakistani border, presenting an asymmetry in India's favor with respect to the use of standoff conventional weapons. The H-4 can target Amritsar, Jammu and Srinagar from Pakistani airspace, but few other important commercial or population targets. The longer range Raad can reach Ahmedabad, Jaipur and Ludhiana. But only the Babur (if the announced 750 km range is accurate) can target India's political and commercial hubs of New Delhi and Mumbai.

The air forces of both countries have played modest roles historically in prior conflicts, with much of the effort spent on close-air support or attacks against enemy air assets. The Indian Air Force (IAF) did carry out bombing raids against economic targets in the 1971 war (including oil installations in Karachi) and ordnance factories in East Pakistan. The most notable high-profile target in past conflicts was the IAF's attack on the Government House in Dhaka in 1971, which served as the center of East Pakistan's civilian government. The next India-Pakistan conflict, were it to occur, could be radically different. Both air forces, but particularly the IAF, would have considerable ability to destroy targets deep inside the other country. In any future conflict, targets within Indian and Pakistani cities could be repeatedly subject to attack, something that was not true except for the 1971 campaign in East Pakistan. Future attacks could occur concurrently with land battles or in a conflict with minimal Army involvement.

The potential for inadvertent escalation has grown dramatically in South Asia as a result of increased capabilities to carry out precision strikes at longer ranges. From the perspective of escalation control, attacks against command and control networks and nuclear-related targets are most worrisome. It is still difficult to find, fix and engage mobile targets on the battlefield, which means that both India and Pakistan's mobile missile forces are likely to retain substantial survivability in a conflict. As India continues to make gains in manned reconnaissance aircraft, unmanned aerial vehicles and space-based imagery capabilities, the benefits of mobility for survival will erode asymmetrically, but not disappear, with India having greater advantages over Pakistan.

The key doctrinal question associated with advanced capabilities remains whether Indian security managers have closely considered problems of escalation control in war planning. The process by which targets are selected is too opaque currently to know if concerns over inadvertent escalation factor into these decisions. Additionally, the role of civilian leaders in approving targets — prior to the conflict and as the conflict unfolds — is also unclear. From what little is known of Western and other air campaigns, there is little evidence that militaries left to their own devices will focus on escalation control in the absence of civilian direction. Militaries want unfettered options to gain victory. Historically, Indian civilian leaders have engaged in extensive discussions with their military services during war, but a future conflict would likely involve far more targets engaged in shorter periods of time. Consultation that was possible when directing a lumbering land army is harder when executing large numbers of targets daily for air and missile forces. Pakistani civilian overseers will be hard-pressed to maintain control over targeting decisions once conflict is underway. In sum, Indian and Pakistani security managers are acquiring capabilities that could make future battlefields radically unlike those in past wars.

This analysis implies that a key source of stability in South Asia is the reticence of Indian civilian leaders to authorize the initial use of force. This has been the case in the past and has been reinforced by the advent of nuclear weapons. When combined with other factors, such as the disinterest of India's civilian leaders in defense-related issues, the result has been the absence of major war in South Asia since 1971.[38] Whether these factors will endure is difficult to predict. A future Indian prime minister might be more hawkish and risk acceptant than his or her predecessors. Many of the technological trends highlighted above suggest that once a war fought for limited objectives begins, escalation control could be hard to maintain. The disinterest of India's civilian leadership in national security-related matters has led to the development of capabilities that might have unpredictable and dangerous consequences if employed, but, to date, disinterest has served as a brake on the outbreak of war.

Conclusion

Capabilities have outpaced doctrine in South Asia since the 1998 nuclear tests. There has been considerable thinking about military means and considerable thinking about political ends, but much less thought as to how means are linked to ends. Doctrine and advancing military capabilities are raising the possibility of catastrophic failure of escalation control in the event of a future conflict. This failure would be shared. The success of South Asia's militaries in inducting new concepts and weapons places added pressure on the weak civil-military relationship in India and is occurring in the absence of civilian guidance in Pakistan. The nuclear revolution and the advent of the revolution of military affairs on the subcontinent sharpen political-military disconnects and raise the potential for devastating end-states to military engagements.

Bernard Brodie likened limited war in the nuclear age to "a deliberate hobbling" by one combatant that occurs out of a desire for the other combatant to similarly hobble itself. "No conduct like this has ever been known before," Brodie cautioned.[39] There is something unnatural about the realignment of political goals and military means that occurs following the nuclear revolution. Two decades ago, Barry Posen worried,

> The likelihood that [medium- and small-power] for forces will embrace assured-destruction nuclear doctrines or abandon the kinds of conventional strategies and capabilities that they have had in the past is low. Instead, it seems more likely that these countries would drift into military relationships that manifest the kinds of possibilities for inadvertent escalation [present in the superpower competition.][40]

Posen has been only partially correct. India has remained committed to an assured retaliation doctrine, while Pakistan has felt compelled to shift to one of asymmetric retaliation. Similarly, India has begun to think about altering its strategies to the new environment, but the analysis presented here suggests that these changes are more cosmetic than fundamental. At the level of capabilities, "drift" captures the tendencies in both militaries. Both militaries continue to acquire capabilities for winning wars, capabilities that might make wars more costly for both parties if they were ever fought. Almost without exception, every major military development in South Asia since the 1998 nuclear test has been destabilizing. While the powerful logic of deterrence is likely to hold in the near term, the trends are ominous. The danger of military means becoming unmoored from political ends is real and growing.

Notes

1. Barry Posen, *The Sources of Military Doctrine: Britain, France, and Germany Between the World Wars* (Ithaca, NY: Cornell University Press, 1984), 13-14.

2. Joint Publication 1-02, *DOD Dictionary of Military and Associated Terms* (Washington: US Department of Defense, Nov. 8, 2010, as amended through Dec. 15, 2012).

3. Posen, *The Sources of Military Doctrine*, 31.

4. This essay is more sympathetic to organizational drivers of security outcomes than Posen's work, in part because the security situation in South Asia is less severe than that which Posen studied in inter-war Europe. Posen found when security pressures were severe, militaries tended to make security choices consistent with realism, but when pressures were less severe organizational theories of behavior had more explanatory power. Posen, *Sources of Military Doctrine*.

5. Jasjit Singh, ed., *Nuclear India* (New Delhi: Knowledge World, 1998); George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley, CA: University of California Press, 2001); Jacques Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (New York: Cambridge University Press, 2006); Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability," *International Security,* vol. 34, no. 3 (Winter 2009/10): 38-78.

6. Narang, "Posturing for Peace."

7. Prime Minister's Office, "Cabinet Committee on Security Reviews Progress in Operationalizing India's Nuclear Doctrine," Jan. 4, 2003, http://pib.nic.in/archieve/lreleng/lyr2003/rjan2003/04012003/r040120033.html.

8. There are several developments, however, that suggest India is developing a range of capabilities that could eventually provide shifts in nuclear strategy. In terms of delivery capabilities, the development of lower order use options such as the Prahaar battlefield support missile and cruise missiles are poising India for a range of retaliatory options that it does not presently have. Though the Government of India has not assigned any of these capabilities a nuclear role, DRDO is developing these options which could one day easily carry one. Furthermore, DRDO is developing MIRV capabilities as well as layered ballistic missile defenses which, in theory, could one day provide India with first-strike capabilities against Pakistan. These developments bear watching.

9. Narang, "Posturing for Peace."

10. Sumit Ganguly, "Nuclear Stability in South Asia," *International Security,* vol. 33, no. 2 (Fall 2008): 45-70; S. Paul Kapur, *Dangerous Deterrent: Nuclear Weapons Proliferation and Conflict in South Asia* (Stanford, CA: Stanford University Press, 2007).

11. Peter R. Lavoy, "Introduction: The Importance of the Kargil Conflict," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (New York: Cambridge University Press, 2009); Bruce O. Riedel, "American Diplomacy and the Kargil Summit," in *Asymmetric Warfare in South Asia*.

12. See quotes by Shamshad Ahmed and Mushahid Hussain in Celia Dugger, "Atmosphere is Tense as India and Pakistan Agree to Talks," *New York Times,* June 1, 1999, and Celia Dugger and Barry Bearak, "Kashmir Thwarts India-Pakistan Attempt at Trust," *New York Times*, July 4, 1999.

13. S. Paul Kapur, "Ten Years of Instability in South Asia," *International Security*, vol. 33, no. 2 (Fall 2008): 71-94; Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, NJ: Princeton University Press, forthcoming), ch. 10.

14. Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's 'Twin Peaks' Crisis*, (Washington: The Henry L. Stimson Center, 2006); P. R. Chari, P. I. Cheema, and Stephen Cohen, *Four Crises and a Peace Process: American Engagement in South Asia* (Washington: The Brookings Institution, 2007), ch. 6.

15. Pranab Dhal Samanta, "26/11: How India Debated a War with Pakistan that November," *Indian Express*, Nov. 26, 2010.

16. Walter Ladwig III, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security* vol. 32, no. 3 (Winter 2007/2008): 158-190.

17. Manu Pubby, "No 'Cold Start' doctrine, India tells US," *Indian Express*, Sept. 9, 2010.

18. Gurmeet Kanwal, "Cold Start and Battle Groups for Offensive Operations," *Strategic Trend (Observer Research Foundation)*, vol. 4, issue 18 (June 2006).

19. Obviously, not all 30 km distances are equal. The Indian Army and Indian political leaders are aware of the proximity of Lahore to the international border and likely would conduct much shallower operations in that area than less densely populated portions of the international border.

20. See Christopher Clary, "Deterrence Stability and the Conventional Balance of Forces in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013); Ladwig, "Cold Start for Hot Wars?"; Narang, "Posturing for Peace?"

21. C. Raja Mohan, "Fernandes Unveils 'Limited War' Doctrine," *The Hindu*, Jan. 25, 2000.

22. Inter-Services Public Relations, Press Release No. PR18/2013-ISPR, Feb. 11, 2013. Available at http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2240.

23. Also see David O. Smith, "The US Experience with Tactical Nuclear Weapons: Lessons for South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

24. Janne Nolan, *Trappings of Power: Ballistic Missiles in the Third World* (Washington: Brookings Institution Press, 1991), 70-1.

25. Ibid., 71.

26. Press Trust of India, "Nuclear-Capable Prithvi-II Test Fired," *Times of India*, June 9, 2011.

27. Defense Research and Development Organization, "'Prahaar' – New Surface to Surface Tactical Missile Successfully Launched," Press Release, July 21, 2011. http://drdo.gov.in/drdo/English/PressReleasePraharnew.pdf.

28. V. K. Bhatia, "Building LGB Capability," *SP Aviation*, July 27, 2012.

29. "Lockheed Bags Deal to Supply Laser-Guided Bombs to IAF," *Indian Express*, April 3, 2012.

30. "AGM-154 JSOW (Joint Standoff Weapon) and JSOW-ER," *Jane's Air-Launched Weapons*, updated April 29, 2013; "Kh-59M (AS-18 'Kazoo'/Ovod-M)," *Jane's Air-Launched Weapons*, updated Feb. 11, 2013; Irkut Corporation, "Third Phase Su-30MKI Delivery to India Started," Dec. 7, 2012. http://www.irkut.com/en/news/news_archives/index.php?id48=127.

31. Though the BrahMos's 300 kg warhead is substantially less than the 500 kg MTCR threshold.

32. "India Modifies Brahmos Missile with New Nav System," *RIA Novosti*, Oct. 9, 2012.

33. The National Air and Space Intelligence Center, *Ballistic and Cruise Missile Threat* (Wright-Patterson Air Force Base, OH: NASIC, 2013).

34. Y. Mallikarjun, "Prithvi-II Test-fired Again," *The Hindu*, Oct. 8, 2013.

35. Early press reports advertised a range of 1000 kilometers, but more recent statements have placed the range at 750 kilometers. Compare Sujan Dutta, "Fearless Tomahawk-Type Missile on Radar," *The Telegraph* [Calcutta], July 20, 2007 and Indo-Asian News Service, "India to Test Subsonic Cruise Missile in February," *Times of India*, Jan. 25, 2013.

36. "Hatf-7 (Babur)," *Jane's Strategic Weapon Systems*, updated Sept. 27, 2012; "Ra'ad (Hatf-8)," *Jane's Air-Launched Weapons*, updated Oct. 26, 2012; and NASIC, *Ballistic and Cruise Missile Threat* (2013).

37. "Raptor I and Raptor II (H-4)," *Jane's Air-Launched Weapons*, updated Dec. 20, 2012; also Usman Ansari, "Despite Missile Integration, Nuke Role Unlikely for Pakistan's JF-17," *Defense News*, Feb. 7, 2012.

38. Vipin Narang and Paul Staniland, "Democratic Accountability and Foreign Security Policy," working paper, Jan. 2013.

39. Bernard Brodie, *Strategy in the Missile Age* (Santa Monica, CA: RAND Corporation, 1959), 311.

40. Barry Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell University Press, 1992), 201.

Prospects for Limited War and Nuclear Use in South Asia

Neil Joeck

Fifteen years have passed since India and Pakistan conducted reciprocal nuclear tests in May 1998, fourteen years since the 1999 Kargil War along the Line of Control in Kashmir, and over a decade since the military face-off following the December 2001 terrorist attack on India's parliament.[1] Despite those dramatic and dangerous confrontations, relations between the two nuclear-armed neighbors in the subsequent years have been relatively peaceful, weathering yet another Pakistan-based terrorist attack in Mumbai in November 2008 and the conflict along Pakistan's western border and in Afghanistan. In the summer of 2013, the two sides moved close to resuming dialogue over disputed issues, beginning with water rights and resource access, before multiple incidents resulting in the deaths of soldiers on both sides of the Kashmir divide renewed the strains in the bilateral relationship. Behind the superficial calm, however, both sides have developed military capabilities over the past decade against the day that their relations sour and hostilities erupt. Neither side wants war, but both sides have been taking steps to prepare for it. These preparations suggest that if another war comes, it may be the first time nuclear weapons are used in conflict since 1945. As India has developed a capacity to deploy rapidly and pursue limited military objectives, Pakistan has responded by sharpening its conventional defense capabilities while also expanding its nuclear forces for possible battlefield employment. Despite these developments, it is by no means clear that Pakistan's threat to use nuclear weapons will deter a limited Indian offensive or that India's threat to respond massively to any nuclear attack on Indian forces will deter Pakistan's nuclear use during a conflict it may be losing.

At the end of the "Twin Peaks" confrontation in 2001-2002, Indian leaders declared that they had achieved their primary objective of ending Pakistani support for cross-border terrorist infiltration.[2] In contrast, Pakistani leaders concluded that they had called India's bluff and prevailed in what amounted to an extended game of chicken. Despite New Delhi's claims, it was clear from the elaborate process of preparing for war that India's flexibility in actually prosecuting a war against Pakistan was limited. The defensive structure of India's army at the time, based on what was called the Sundarji doctrine, with large defensive "holding" forces at the front and three strike corps designed for deep penetration of Pakistani territory held in the rear, meant that a long and somewhat ponderous buildup was required to place forces in position to attack.[3] By the time these forces were ready, Pakistan's military had been able to position its own forces appropriately to confront the threatened Indian offensive. The long windup also gave the United States and the United Kingdom time to intervene diplomatically and pressure India's leadership not to attack Pakistan. Once the crisis had passed, it was clear that the Indian Army's structure was not conducive to responding quickly or efficiently to counter the type of attack India faced from Pakistan-supported terrorists or to engage in war that avoided, or at least minimized, the risk of escalation from conventional to nuclear war.

India's army consequently developed a new doctrine, which some have labeled "Cold Start," unveiled in April 2004.[4] India's need for greater flexibility had already been recognized in January 2000 by then-Chief of Army Staff, Gen. V. P. Malik, who argued at an annual security conference in New Delhi that India would need to find "space" between, on the one hand, tolerating low-intensity conflict of the kind Pakistan practiced at Kargil and through its support for terrorists, and, on the other, risking a nuclear exchange.[5] The idea behind Cold Start, therefore, was to restructure the Indian Army so that it could address the defects made evident in 2002. With a new approach, the army's large holding divisions would form eight or 10 smaller integrated battle groups, each of which would be able on very short notice to conduct shallow-penetration attacks across the border with Pakistan. This new doctrine was intended to allow the Indian Army to retaliate swiftly before Islamabad could prepare militarily and before outsiders could intervene diplomatically, while also reducing the risk of escalation once the armies were engaged.[6]

This essay will examine the nature of limited war and how it may play out in South Asia under the new conditions created by the Indian military's plans to prepare for limited war despite Pakistan's nuclear capability. It will examine not only whether India and Pakistan will be able to keep another war limited, but whether limited nuclear use can be avoided should war erupt. I have argued previously that the Kargil war, rather than being an example of deterrence "working" to prevent escalation, was rather an example of India and Pakistan engaging in a competition in risk-taking that only ended when Pakistan backed down.[7] As nuclear rivals, India and Pakistan are still developing the rules of their own nuclear road, but at this point they both appear to be reluctant to back down on the battlefield. Both sides wish to avoid conflict, but certain conditions continue to make peace fragile; the possibility of war and the need to prepare for it continue to shape their relations.

If war occurs, it is possible that nuclear weapons will be used. Limited nuclear use, however, may not lead inexorably to unlimited nuclear use. Although both sides have made statements threatening the massive use of nuclear weapons, many Pakistani strategists believe that Pakistan's options for limited nuclear use are far more attractive than a countervalue strike against Indian cities in response to conventional battlefield defeat. Meanwhile, India's threat to respond even to a limited battlefield nuclear attack with a massive counter-value attack against Pakistan misses a central point: under circumstances that would compel Pakistan's first use of nuclear weapons, Islamabad would already have concluded that it was facing the threat of national dissolution. A country, like a man, cannot be hanged twice. Therefore, threatening Pakistani leaders with nuclear devastation when they already think they are facing the same outcome via conventional means might not deter Pakistan from using its tactical nuclear weapons.

It cannot be assumed that outside powers would be able to prevent such measures since both India and Pakistan see themselves as being the victim, rather than the beneficiary, of US intervention in the past. For many decision-makers in Islamabad, US pressure forced Prime Minister Nawaz Sharif to knuckle under in July 1999 when he agreed to withdraw Pakistan's troops from Kargil.[8] Similarly, many Indian military strategists in New Delhi see US intervention in December 2001 as an important rationale for developing a new strategy, precisely to avoid third-party intervention in India's military affairs. US relations with both states can be fraught, as both remain mistrustful of America's staying power as well as the nature of its relationship with the

other.[9] In any case, India and Pakistan expect a future war to be short and less susceptible to influence from Washington, London or elsewhere.[10] If India and Pakistan find themselves in a war, they will fight it under the shadow of nuclear weapons and according to expectations and doctrinal assumptions that could have unwanted, but perhaps logically predictable, consequences. They would not want to be backed into a corner where nuclear use makes sense — even though, *in extremis*, it may make sense. Taking time now to think through certain rationales for limited nuclear use and the current structure for strategic decision-making may prompt India and Pakistan to consider the limits of strategy in a nuclear environment and whether renewed arms restraint negotiations would help to ensure that if war occurs, it does not lead to uncontrolled nuclear exchanges. If the nuclear threshold is crossed, both sides will want a better postnuclear end game than the death of hundreds of thousands of their citizens.

Thinking about Limited War

Much of the analytic thinking in the West about limited war came in response to the Korean War and was influenced by the introduction of thermonuclear weapons, the linkage between proxy war and direct conflict between the superpowers, and the need to manage alliances.[11] How the United States and the Soviet Union would fight a nuclear war with thermonuclear weapons and avoid nuclear catastrophe was extremely difficult to imagine. The destructive power of a single atomic bomb had been made evident in the attacks against Hiroshima and Nagasaki, but the effects were in a sense measurable. The rest of Japan continued to function while suffering the effects of a devastating war. The consequences of firing even low numbers of thermonuclear weapons, however, each one thousands of times more powerful than the weapons used against Japan, were beyond comprehension. With the prospect that even one thermonuclear weapon would be used in Europe or on Washington or Moscow, "limited" war ceased to have much meaning.

It was also difficult to construct a doctrine that covered all possible conflict scenarios. The US doctrine of massive retaliation, for example, did not prevent the Soviet Union from asserting its will on the periphery of the central European front. Wars did persist on the periphery of the US-USSR contest for power, but they tended to be seen as tests of resolve and commitments to allies rather than as direct challenges to either state. At the same time, both sides were careful not to escalate over these peripheral conflicts, either in conducting them or in assisting the major power's opponent.[12] To reassure allies that they did not need to develop their own nuclear weapons, there was an implied if not explicit commitment that nuclear war would not be confined to the tactical level. It was understood that an almost automatic connection existed between the use of nuclear weapons on a battlefield and their use against the homelands of the United States and the Soviet Union.

As with limited war, preventive war was also considered highly problematic. Military strategists considered the possibility of "strangling the baby in the cradle" — preventing a state (China in particular) from acquiring nuclear weapons — and having the option of using thermonuclear weapons might have increased the likelihood of success. But it was a policy that could only be confidently adopted if the moral question of conducting an unprovoked nuclear attack were answered affirmatively and if the other side had no retaliatory capacity.[13] Once an enemy was armed with nuclear weapons, it became more difficult to calculate the benefits of a preventive strike. Relative advantage mattered in abstract terms, but the possibility that even one bomb could be

used in response to a preventive first strike had a sobering effect on national decision-makers.[14] Deterring nuclear use after acquisition rather than preventing nuclear acquisition in the first place was more palatable politically and strategically. Preventive acts of war were possible in some cases, as Israel demonstrated when it destroyed Iraq's Osiraq reactor in 1981 before Saddam Hussein could produce any nuclear weapons.[15] The United States engaged in preventive war in 2003 when it saw the threat of an Iraqi nuclear weapon as sufficient cause to begin a war against Saddam Hussein. Indian leaders considered an attack against Pakistan in the early 1980s, but Pakistan's potential for conventional retaliation against India's civilian nuclear facilities played an important role in India practicing restraint at the time.[16] In most cases, preventive war has not passed the security or morality tests that most governments require of themselves and, therefore, has rarely become policy.

Unlike conventional war, limited nuclear war and preventive war thus held little appeal for most security managers. Nuclear weapons meant, however, that wars (especially between nuclear-armed states) would have to be limited. Total war, as practiced by the United States during World War II with the demand for unconditional surrender and utter defeat of the German and Japanese regimes, simply became too dangerous for the major powers to consider after the advent of nuclear weapons. War would have to face certain constraints; it would have to be limited in space and time. It could go on long enough to achieve the desired outcomes but no longer, and it could not be fought beyond certain geographical limits. Means as well as ends would have to be limited. The decision not to use nuclear weapons set the most important bar on means, but it was readily identifiable. Placing a limit on the ends was more complicated. As attaining certain objectives (e.g., establishing a democracy, eradicating terrorists, ending a rebellion) became more costly, it would become difficult to force an adversary to halt and to bring troops home. It was also in the interest of the state supporting the proxy — for example, the Soviet Union supporting the Viet Cong and the North during the Vietnam War or the United States supporting the mujahideen during the Russian occupation of Afghanistan — to prolong the conflict as long as possible, in order to sap the strength of the major adversary. Given that the major powers were trying to demonstrate their resolve in proxy wars, they were reluctant to admit defeat and retreat, even when the objective receded from view and the casualties mounted.

In addition to the self-imposed constraints on space, resources, time and objectives, a major problem in limited war is that both sides need to agree to the limits. V. R. Raghavan disputes "the belief that a war between two nuclear adversaries can be kept limited, without a mutual understanding to do so."[17] The limits are difficult to identify, and "understandings" about what is off-limits are frequently violated. The side breaching the limit may know it is doing so but feels a need to take action even though it runs the risk that the other side will escalate in response. The US invasion of Cambodia during the Vietnam War and reciprocal escalation at sea by England and Argentina during the Falklands War are just two examples of states incurring risks in a limited war despite the possibility that the other side would escalate in response.

In the Vietnam War, the United States wanted to limit the war to Vietnam itself, but the Viet Cong and North Vietnamese had been using Cambodia as a resupply route for years. The US invasion of the so-called Parrot's Beak in Cambodia prompted violent protests worldwide but bought Washington and Saigon some time while Hanoi was forced to rebuild its supply chain. When the Argentine government decided to sink the British destroyer HMS Sheffield after the British sinking of the Argentine

light cruiser ARA General Belgrano, the world witnessed a mutual escalation in means during a limited war. Each side felt the other's actions exceeded what was acceptable, but the limits had never been made explicit. British resort to nuclear weapons was never in the cards, but the attack on the Argentine surface ship by a British nuclear-powered submarine was something new in naval warfare and changed the calculations for Argentina and the world. These examples simply make the point that it is tricky to know a) one's own limits, b) what the other side thinks the limits are, and c) how to respond when the limits one thought were mutually acceptable are exceeded. Mutual understanding helps keep a war limited, but communicating to the enemy what is acceptable behavior and what is not can be extremely difficult.

Additional problems arise in keeping a war limited. If you have taken the initiative and wish to gain certain objectives, it is not always obvious when to let up. If the objectives are clear, one's gaining them is tolerable to the enemy, and one has achieved them, then it may be easier to stop fighting and end the conflict. But these conditions are rarely present. Wars often drag on without the objectives being attained or with them being expanded during the conflict. The other side may not be willing to yield without a fight and may escalate. Withdrawing or terminating the conflict without having achieved the objectives in order to avoid a bloody stalemate may look like defeat. If one is prepared to accept defeat short of one's objectives, the decision to engage in the war in the first place may look reckless. Making such a decision is hard enough with a complete picture of the events on the ground, but inevitably it will have to be made with incomplete information. Is the other side about to yield? Is the other side's threat to escalate a bluff? Will the domestic audience see the decision as brave or feckless? Will it be seen as an abandonment of national honor or a sensible prevention of further loss? Once a war is underway, the domestic audience can play an important role, either by forcing politicians to stay engaged longer than they wish or by calling for an end before the political objectives have been secured. None of the answers will be obvious, as the troops may show military resolve on the battlefield and thus reinforce hopes that with one more push, the objective can be attained.

The military's willingness to tough it out and sustain the battle even in the face of reversals underscores another problem in war: it is not a simple matter for armies to disengage once the battle is joined. Either because they want to redeem their honor in the face of reversals or want to follow up on a successful advance, the military may be reluctant to stop. Complicating matters, politicians may be reluctant to let them stop. In the course of battle, positions are gained and armies interlocked in ways that can make disengagement under fire extremely difficult if the enemy has not accepted that the war is over. It is also hard to pull troops back when they have seized the initiative and are creating new opportunities on the battlefield. War is dynamic, and limits imposed at the outset inevitably are subject to events that occur on the battlefield that neither side can control.

Are Limits the Norm in South Asia?

Before evaluating the problems and prospects for India's limited war strategy, the question arises whether past Indo-Pakistani conflicts have been held within limits and if political control would be maintained in future conflicts. India and Pakistan regrettably have more than a 60-year history of crises and conflicts. On close examination, it is not evident that restraint has been the norm.[18] Not every confrontation erupted into war, but not every crisis (e.g., 1984, 1987 and 1990) had a real *casus*

belli.[19] Indo-Pakistani wars (1965 and 1971 specifically) have tended to be of short duration, but the 1947-1948 war in Kashmir was an exception. After the two sides took the winter off after fighting in 1947, India resumed its offensive in the spring of 1948. India's Prime Minister Jawaharlal Nehru then called the war off when India had the advantage and referred the matter to the United Nations. In that conflict, New Delhi was certainly ready to extend the time required to achieve its political objective. Other limits have, however, been observed. For example, civilians were not deliberately targeted in these conventional wars.[20] When the opportunity or need arose, both sides have been willing to escalate beyond limited war. Political objectives, sometimes poorly defined at the outset of war, have expanded as a consequence of battlefield success. The 1965, 1971 and 1999 conflicts are especially revealing of the challenges to keeping war limited in South Asia.

In 1965, after failing to foment discord inside Kashmir, Pakistan's forces — first described as "volunteers" but then admitted to being regular forces — attacked across the Line of Control (then the Ceasefire Line) toward the town of Akhnur.[21] India responded by widening the war and mounting a flanking attack across the international border toward Lahore. Pakistan's leaders initiated hostilities in the hope that New Delhi would confine its response to the disputed state of Kashmir, but India saw that it would be militarily disadvantageous to do so. Pakistan's pre-war expectation of a geographically limited battle was not shared by India, and the war expanded. India may have already decided before the war began that it would not confine its response to Pakistan's point of attack within Kashmir, but the point is that Pakistan expected the war to remain geographically limited and began the war because of that belief.

The 1971 war in East Pakistan provides another example of political objectives changing and expanding as a result of success on the battlefield.[22] In his account of the war, Lt. Gen. J.F.R. Jacob, chief of staff for the Eastern Army at the time, wrote, "Army Headquarters allotted no troops for Dacca as it did not consider its capture to be of importance, and had not spelt it out as an objective." [23] In the draft operating instructions to the Indian Army, "the essentials of the basic strategy and objectives had been left out." [24] India's battlefield success caused the political objective to change. In the end, India's army took the battle right to the capital of East Pakistan and captured all of Pakistan's Eastern Command. The new state of Bangladesh was thus created, well beyond the initial Indian objectives in fighting the war.

The Kargil conflict presents another example, when the Indian Air Force was brought into action, changing the rules of engagement in South Asia. Both sides accepted that artillery was a legitimate tool of war, but the use of aircraft appeared to breach a tacit understanding.[25] Although New Delhi limited its ground action to its own side of the Line of Control, it recognized that the deployment of aircraft was an escalatory step that might cause Pakistan to counter with further escalation.[26] This history suggests, therefore, that limiting war is no less a challenge in South Asia than elsewhere and that future wars may be equally difficult to keep limited.

Is a New Indian Strategy for Limited War Necessary?

The Kargil War made clear to New Delhi that nuclear deterrence alone was not sufficient to prevent Pakistan from engaging in actions that undercut Indian security.[27] Nuclear weapons did not prevent Pakistan from engaging in low-intensity conflict in 1999, which resulted in the death of more than 1,000 soldiers on both sides. Shortly

following the Kargil War, Gen. Malik delivered his speech at an Institute for Defense Studies and Analyses conference, arguing that India could not continue to allow Pakistan to support low-intensity conflict and terrorist infiltration into India. Thus, a new strategy was needed to address that tactic without creating battlefield conditions that might provoke nuclear escalation by Pakistan. Malik had in mind fighting a limited war, defined in terms of means, geography and political objectives. He recognized that maintaining limits on the political objectives would be critical to ensuring that a limited war did not escalate to the nuclear brink. In his view, the restraint demonstrated at Kargil was typical of the tight leash kept on field officers by political leaders; he believed an equally tight leash would be held in future conflicts even under a new limited war doctrine.[28]

The 2001-2002 Twin Peaks confrontation was in many ways the first test of the Malik argument. India was found seriously wanting, as the half-year–long face-off exposed the shortcomings in its deterrent threat and its ability to counter asymmetric warfare.[29] The crisis began Dec. 13, 2001, when terrorists attacked India's parliament building, killing a number of guards but failing in their larger ambition of capturing and assassinating senior members of the Indian government. After examining the gunmen's dead bodies, India determined that the terrorists had been supported and probably directed in their actions by Pakistan's intelligence service. Frustrated by Pakistan's evident willingness to instigate asymmetric warfare against iconic targets despite the reciprocal nuclear tests of May 1998, India responded by deploying upward of half a million men along the Line of Control and the international border that divided the two nations. Almost immediately, however, New Delhi encountered enormous pressure from US President George W. Bush and British Prime Minister Tony Blair not to carry out its threat to retaliate for the attack on Parliament.

Needing Pakistani support for its operations inside Afghanistan, Washington was anxious to avoid a war in South Asia that would draw Pakistan's troops away from the Western border.[30] Senior Bush administration officials placed numerous calls to New Delhi, urging Prime Minister Vajpayee to refrain from responding to the Dec. 13 provocation. Washington argued that Pakistan would soon respond to US pressure to stop infiltration across the Line of Control, and New Delhi should therefore be patient. After a forceful personal intervention by senior US officials, on Jan. 12 Pakistan's President Pervez Musharraf went on nationwide television to denounce terrorism and to call for a jihad against social ills.[31] New Delhi was consequently caught in a diplomatic tangle. Its own improving relationship with Washington required that some deference be paid to American interests. In addition, the logic of the US entreaties made some sense, as now Musharraf was himself denouncing terrorism. The result of all this was that the Jan. 12 speech closed a window of opportunity for India's decision-makers. If they had developed a quick strike capability, as Malik had indicated was needed, it might have been used to counter Pakistan's exploitation of the nuclear overhang on the subcontinent. Instead, New Delhi was left to apply pressure as best it could, weighed down by the Sundarji doctrine, while constrained diplomatically and politically from conducting an outright attack on its neighbor.[32]

Despite India's conventional buildup, it appeared to Pakistan's leaders that New Delhi was hamstrung. In their view, India's movement of forces was a substitute rather than a preparation for action. Even when terrorists attacked the Indian military camp at Kaluchak in May 2002 and ruthlessly murdered family members of the soldiers deployed along the Line of Control, India still held back. The threat of war was palpa-

ble, however, at least at the US Embassy in New Delhi. On May 30, US Ambassador Robert Blackwill ordered nonessential embassy staff and all dependents to leave the country, ominously declaring, "I know things you don't, and my wife is leaving." This was followed by an official State Department travel warning, implying that the possibility of war and of Pakistani use of a nuclear weapon against New Delhi was high enough that Washington could not justify endangering the lives of the embassy workers.[33] The Indian government was outraged and privately accused the Ambassador of capitulating to terrorism. In the end, India's talk of the need for space to conduct limited war appeared to be nothing more than that — talk.

New Delhi's inability to mount a quick response to the Parliament attack resulted in a costly and extensive buildup of conventional forces and was a national embarrassment for the Indian Army. Not only had Pakistani-supported terrorists attacked the symbol of lndian democracy, they had also murdered the dependents of soldiers preparing for a war that was never fought. India never retaliated. Army postmortems on the 2001-2002 confrontation reached a number of conclusions. The Sundarji doctrine may have been appropriate in an earlier time for different needs, but it resulted in a slow motion and lumbering deployment of forces. Malik was right: doctrine would have to change. In addition, Army analysts realized that even if the Sundarji doctrine were successfully implemented, it could very well cross key Pakistani red lines for the use of nuclear weapons.[34] A new doctrine would have to account for Pakistani insecurities and avoid destabilizing intrawar deterrence. Finally, the new doctrine would also have to account for the intervention of third parties. A window for retaliation had been open from Dec. 13, 2001, to Jan. 12, 2002. Washington and London exploited this time to prevail on India's politicians and allow President Musharraf to evade the consequences of terrorist actions. A new doctrine would have to enable India to strike on a very short time scale.[35]

The Goldilocks Dilemma

New Delhi faced a kind of strategic Goldilocks dilemma. A new strategy would have to do just enough to counter asymmetric warfare emanating from Pakistan but not so much that Pakistan would respond with nuclear weapons. In order to avoid a rerun of the "do-nothing" Twin Peaks scenario, however, India would need tactical speed and flexibility to address Pakistani-supported terrorist threats to India's national authority. As V.R. Raghavan has noted, "How deep would be enough for India to obtain its objectives; and how deep would be too much for Pakistan, is unclear and will always remain so."[36] Raja Mohan observed at the time of the initial attacks, "there is a growing belief in New Delhi that the time has come to call Pakistan's nuclear bluff. If it does not, India places itself in permanent vulnerability to cross-border terrorism from Pakistan."[37] The new conventional strategy would need to be agile enough to allow India to engage in conventional war in response to a Pakistani provocation but not force Pakistan to use nuclear weapons. At the same time, India's nuclear strategy would have to be threatening enough to discourage Pakistan at the strategic level, yet credible enough to deter tactical, battlefield nuclear escalation.

The contours of the new strategy beg a number of questions regarding India's and Pakistan's approach to limiting war. In Gurmeet Kanwal's view, one of the more extreme interpretations of the objectives of the Cold Start doctrine would be the destruction of the Pakistan army.[38] This maximal position is almost certainly not endorsed by India's civilian leadership. Once introduced as a possible objective, however, Pakistan

must treat it as at least a possible contingency that could become reality during conflict.[39] Even if New Delhi explicitly rejected this objective, it brings up the problem of finding limits that both sides can accept and communicate. Suba Chandran makes the point that it is "essential to communicate to the other side the extent to which one would go in a limited war situation."[40] However, such communication has been notably lacking in previous Indo-Pakistani confrontations.[41]

In addition to communicating that political objectives are limited, geographical limits will have to be identified. Borrowing from Thomas Schelling's discussion of tacit bargaining in a nuclear environment, New Delhi needs to ask whether new conspicuous stopping places can be mutually agreed if the LoC and international border are breached.[42] This may be difficult, as V.R. Raghavan argues: "there is no mutually agreed set of limitations between India and Pakistan on a future war — as there were none in past wars — neither side has control over the other's saliencies."[43] Pakistani commentators and officials have said that their military would respond to a conventional Indian attack by escalating at the point of attack and expanding the war elsewhere at a point of their own choosing.[44] How will India and Pakistan agree on a new geographical limit once war breaks out and either the LoC or the international border — obvious current limits, whose symbolism was reinforced in Kargil — have been breached? In January 2002, Pakistan's senior nuclear manager Lt. Gen. Khalid Kidwai stated that one of Pakistan's red lines for nuclear use is territorial.[45] If India attacks Pakistan and conquers a large part of its territory, thus violating a "space" threshold, Pakistan may respond with nuclear weapons. Implementing a new strategy without breaching this space threshold may be complicated once a shooting war starts. In addition to reaching tacit understandings about new geographical limits, they must also identify new limits on means. India breached the "no aircraft" understanding during the Kargil War, but communicating new limits with Indian troops engaged in fighting inside Pakistan in a future conflict may be extremely difficult.

India's nuclear doctrine was introduced in draft form in September 1999.[46] It included contrasting strategic objectives, such as a call for nuclear disarmament as well as a triad of air, land and sea delivery platforms, even as it was threatening nuclear retaliation. One line in particular caught the attention of strategic analysts in Pakistan and elsewhere: Any use of nuclear weapons against India and its forces " ... shall result in punitive retaliation with nuclear weapons to inflict damage unacceptable to the aggressor."[47] This sounded similar to the US doctrine of massive retaliation, and India's draft doctrine was received with some of the same consternation that greeted the American pronouncement. On Jan. 12, 1954, John Foster Dulles rolled out the US doctrine of massive retaliation by saying that "local defenses must be reinforced by the further deterrent of massive retaliatory power. ... The basic decision was to depend primarily on a great capacity to retaliate, instantly, and by means and at places of our own choosing."[48] Dulles' statement produced an outcry, and in an article in the American journal *Foreign Affairs* as well as in speeches, he "clarified" the new policy.[49] These clarifications notwithstanding, the threat of massive retaliation guided US strategic policy for the better part of a decade and, as Bernard Brodie put it, "was an implied rejection of limitation on means, that is, on weaponry."[50]

A similar sequence happened with India's draft nuclear doctrine. Soon after K. Subrahmanyam, the head of the National Security Advisory Board that had drafted the document, formally presented it to National Security Advisor Brajesh Mishra, Foreign Minister Jaswant Singh conducted a private interview with *The Hindu*, to

elucidate what was and what was not intended by the draft doctrine.[51] Jaswant Singh tried to downplay the more assertive elements of the draft doctrine, but the central message — that India would respond massively to any use of nuclear weapons — did not change.[52] Indeed, when the document was formalized in January 2003, it explicitly mentioned massive retaliation, in case anyone in Pakistan missed the point.

What Now?

Despite being challenged over the years, India's nuclear doctrine has not changed substantively since the January 2003 announcement. New Delhi has also tried to downplay the importance of Cold Start, preferring the terminology of "proactive defense."[53] Some, including Sunil Dasgupta and Stephen Cohen, discount these plans, arguing that, "Cold Start remains limited to the thinking of the Army. The Indian government has not officially endorsed the doctrine, though the concept informs Indian army modernization. … "[54] Others, including a high-level analytic team in a widely cited 2012 study, assert that the "capture of significant amounts of Pakistan's territory continues to be the primary military objective underpinning the doctrine and organization of the Indian Armed Forces."[55] This study, "Nonalignment 2.0," further muddies the picture by calling on the Indian government to "expand the range of practical options available under the nuclear overhang," while concluding that India will have to be able to "make shallow thrusts that are defensible in as many areas as feasible along the International Border and the LoC."[56] Given these mixed messages, New Delhi's attempt to distance itself from the concept of Cold Start looks from Rawalpindi's perspective as disingenuous at best and an outright prevarication at worst.

In practical terms, New Delhi has not provided adequate resources to the army to conduct ambitious operations. Land purchases to allow for the required deployments have lagged, combined arms operations between the Indian army and air force are problematic, and the army itself has backed somewhat away from ambitious plans. Other options may appear more attractive — aggressive diplomacy in the event of a provocation, legal cooperation between India and Pakistan to bring perpetrators to justice, or "surgical" airstrikes against terrorist camps that presumably would not trigger uncontrolled escalation from Islamabad.[57] Notwithstanding these qualifiers, New Delhi has not given up the option of an army-centric military response, should it be sufficiently provoked. India has been patient in the past and has tolerated significant security breaches traced back to Pakistan. But depending on the severity of another terrorist attack and the clarity of the connection to Pakistan-supported militant groups, patience and recourse to diplomacy may not satisfy either New Delhi's need to defend itself or the Indian public's desire to respond. Many in India want to punish the perpetrators of cross-border terrorism and change Rawalpindi's calculations. As former Ambassador Naresh Chandra said after the 2001 attack on Parliament, "because of our softness, the feeling in Pakistan is that we will take it."[58]

Pakistan's military planners must prepare for the worst. In its largest military exercises since 1989, conducted over four years from 2010 to 2013 and code-named Azm-e-Nau ("New Resolve"), Rawalpindi readied its ground forces for an Indian attack along the lines ascribed to Cold Start.[59] In what may be a positive sign for those concerned about early nuclear use, Pakistan's military leaders apparently gained confidence from the exercise that they would be able to thwart an Indian offensive entirely by conventional means.[60] This has not, however, precluded Rawalpindi from developing short-range, tactical nuclear capabilities.[61] In the event that the results of

Azm-e-Nau are not borne out on a future battlefield, and that Pakistan's forces are overrun by India's, the Pakistan army will take steps to avoid defeat. One possible way of doing so might be to use battlefield tactical nuclear weapons on its own soil "to balance India's conventional superiority and repel any incursion."[62]

Pakistan and India now find themselves in a situation similar to the early days of the Cold War, without the structural restraints on warfare that faced the United States and the Soviet Union. Where the nuclear superpowers relied on deterrence and the threat of prompt escalation to widespread use of nuclear weapons, the situation on the subcontinent is different. Thomas Schelling famously linked deterrence to "the threat that leaves something to chance" — the threat that because conventional war might erupt into a mutually destructive nuclear exchange, war would not break out.[63] This linkage may no longer apply to the India-Pakistan standoff. New Delhi appears to believe it can keep war below Pakistan's nuclear threshold, while Rawalpindi appears to believe it can use nuclear weapons on the battlefield without triggering a more intense Indian nuclear escalation. Thus, if sufficiently provoked by a terrorist attack, New Delhi may choose to respond with a ground attack across the Kashmir divide or international border, believing that it could win ground without crossing any Pakistani nuclear red lines. Rawalpindi is ready to defend national territory using only conventional means, but if that defense fails, battlefield nuclear use is an option.

In this scenario, Indian forces may halt their offensive in response to nuclear threats. Pakistan may also sue for peace without carrying out the threat to use nuclear weapons. Equally plausible, however, is that Indian forces may repeat their behavior in previous wars, taking advantage of battlefield conditions by expanding their objectives. Rajesh Rajagopalan has noted, "the logic of denial begins at the point when deterrence fails," leading Pakistan to conclude that only nuclear use will deny India the fruits of its battlefield success.[64] Quite suddenly, limited conventional war could create new and quite unpredictable conditions on the battlefield.

In *Limited Strategic War*, Klaus Knorr argued that recourse to limited nuclear use would make sense only under certain conditions:

> ... if limited war capabilities are insufficient to contain local aggression, if defeat is unacceptable and recourse to strategic power remains the only alternative, then the feasibility and utility of limited strategic war depend on the degree to which strategic weapons systems are vulnerable to counter-force attack.[65]

Knorr described four situations where limited nuclear use might make sense, one of which may have some application in South Asia.

> Four basic situations can be distinguished. … (1) If the strategic forces of both sides were highly vulnerable to a first strike, any limited employment of these weapons would be obviously dangerous. … (2) If the strategic forces of the local aggressor are strong and relatively invulnerable, while those of the defending state are not … (3) In the reverse situation [the defending side strong and invulnerable, but the local aggressor not] … (4) In the symmetrical situation in which both strategic forces are, on the whole, highly invulnerable to disarming attacks, limited strategic war would seem to offer a reasonable alternative to the acceptance of a major local defeat.[66]

For India and Pakistan, the first situation does not apply as long as both sides take precautionary measures and neither is vulnerable to a first strike. Both sides have a relatively large stockpile, deliverable by missiles and aircraft, and eventually at sea.[67] As a result, neither is vulnerable to a disarming first strike by the other. The second and third situations described by Knorr also do not apply to India and Pakistan since neither is more vulnerable than the other.[68] The fourth situation does apply, since they are in a relatively symmetrical relationship and are invulnerable to a disarming first strike. The question then reverts to Knorr's opening comment: what happens in the case where "limited-war capabilities are insufficient to contain local aggression" and "defeat is unacceptable"?[69] Does recourse to nuclear weapons become Pakistan's only alternative to accepting a major local defeat?

India now expects that, unlike with the Sundarji doctrine, implementing some variant of Cold Start will not result in a major local defeat for Pakistan. Some argue that even if Pakistan follows through on its first use threat, the actual use of nuclear weapons may amount to no more than a "demonstration shot … targeting Indian troops inside Pakistan."[70] Nevertheless, India's nuclear doctrine explicitly threatens to respond to just such first use with "damage unacceptable to the aggressor" in the original 1999 document and "massive punitive retaliation" in the more official 2003 document.[71] To borrow again from Klaus Knorr, Pakistan could conduct limited nuclear strikes seeking to " ... minimize the destruction of military as well as civilian targets and aim at bringing about bargaining and negotiation mainly by attrition of resolve rather than of strategic forces."[72] India's doctrine artfully uses the term "major" attack in specifying when it will respond while also specifying that India "will retain the option" of responding to such an attack.[73]

New Delhi's failure to respond to any nuclear weapons' use by Pakistan, including a "demonstration shot," could have a powerfully negative effect on the morale of Indian armed forces and the Indian public. Rather than making good on its threat of massive retaliation, New Delhi might decide to respond proportionally to Pakistan's use of theater or battlefield nuclear weapons. This would contradict India's 2003 declaratory doctrine that "any talk of a graduated response would undermine" the efficacy of India's nuclear deterrent threat. Stephen Cohen notes the irony here: "India would prepare for a nuclear war, but it would not fight one. Moral qualms made India the first Gandhian nuclear weapons state: having them would make it unnecessary to use them."[74] As National Security Advisory Board Chairman Shyam Saran has noted, the "full text [of India's nuclear doctrine] has not been shared with the public."[75] Whether New Delhi has undisclosed plans for responding to battlefield or other nuclear use remains a secret.

Saran goes on to make two interesting points about India's approach both to nuclear bargaining and the consequences of Pakistan's nuclear policies. He condemns Pakistan for lowering of the "threshold of nuclear use to the theater level" as "nothing short of nuclear blackmail."[76] Saran's condemnation seems to misapprehend both the understandable consequence of India's threatening to attack Pakistan with its superior conventional weapons as well as the nature of the bargaining relationship inherent in a nuclear confrontation. He then tries to broaden the confrontation by saying that "Pakistan's nuclear behavior should be a matter of concern not just to India but to the international community."[77] He seems to imply that the international community shares the responsibility with India to prevent Pakistan from using nuclear weapons, which sidesteps the fact that both India and Pakistan are sovereign states that have made sovereign decisions to develop and then to threaten each other with nuclear weapons.

The responsibility for dealing with the threat that leaves something to chance resides primarily in New Delhi and Islamabad. The international community — much to India's dismay, it should be noted — took extraordinary steps to prevent the spread of nuclear weapons through a range of institutions and practices, such as the Nuclear Nonproliferation Treaty and the Nuclear Suppliers' Group. These efforts failed to prevent nuclear proliferation in South Asia. Now it is up to India and Pakistan to manage the results of their own strategic choices.

Klaus Knorr ends his essay, published in 1962, by calling into question his notions of limited nuclear use:

> I have been told in conversation that this is an absurd war and an absurd strategy. And so, no doubt, it is. From every conceivable point of view it looks like a bad war and a bad strategy. But the question remains whether the available alternatives may not be, or may not come to be, more absurd and worse. ... [78]

Because India and Pakistan face the possibility of such a bad war, they may also face absurd and worse choices. Thinking about the possibility and logic of limited nuclear war may improve the likelihood that absurd and worse choices can be avoided. Knorr added that because "the possibility cannot be ruled out that our [US] choices, and our opponent's [USSR] choices, may become ... absolutely bad ... is one reason why the need for further study is not superfluous."[79] Further study by the soldiers, civilians and scientists making these decisions in Pakistan and India would also not be superfluous. Planning, training and gaming out a limited nuclear war will not increase the likelihood that it will happen. Failing to do so with integrated cross-government engagement and analysis, however, may make absurd and worse choices more difficult to avoid.

Notes

1. Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis* (Washington: The Henry L. Stimson Center, 2006); and Alex Stolar, *To the Brink: Indian Decision-making and the 2001-2002 Standoff* (Washington: The Henry L. Stimson Center, 2008).

2. Gurmeet Kanwal, "Military Dimensions of the 2002 India-Pakistan Standoff – Planning and Preparation for Land Operations" in *The India-Pakistan Military Standoff: Crisis and Escalation in South Asia,* ed. Zachary Davis (New York: Palgrave-MacMillan, 2011), 67-95.

3. Walter C. Ladwig Ill, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security,* Vol. 32, No.3 (Winter 2007-08): 158-190.

4. Ibid.

5. Defence Minister George Fernandes seconded Malik's argument in the inaugural address, "The Challenges of Limited War: Parameters and Options," New Delhi, Jan. 5, 2000. For more, see V. P. Malik, *Kargil: From Surprise to Victory* (New Delhi: HarperCollins Publishers, 2006), 363-366.

6. See Kanwal, *The India-Pakistan Military Standoff*, ed. Davis.

7. Neil Joeck, "The Kargil War and Nuclear Deterrence," in *Nuclear Proliferation in South Asia: Crisis Behavior and the Bomb*, eds. Sumit Ganguly and S. Paul Kapur (New York: Routledge, 2008), 117-143.

8. This sentiment in pronounced within the military. See Pervez Musharraf, *In the Line of Fire: A Memoir* (New York: The Free Press, 2006), 87-100.

9. See Ashley Tellis, *Atoms for War? US-Indian Civilian Nuclear Cooperation and India's Nuclear Arsenal* (Washington: Carnegie Endowment, June 2006) and *India as a New Global Power* (Washington: Carnegie Endowment, July 2005).

10. I am grateful to Alden Mullins for pointing out that this assumption, based on prior wars and current materiel inventories, may be optimistic. Many wars envisioned to be short have gone the other way

around. The state seeking external intervention may also be able to prolong the war to extend the time available for a third party to intervene. Personal communication.

11. This section owes much to a number of scholars, and as Robert Jervis puts it in one of his own footnotes, "the relevant literature is large and familiar." See Robert Jervis, *The Meaning of the Nuclear Revolution* (Ithaca, NY: Cornell University Press, 1989) Ch. 3; Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1959), 305-357; *Limited Strategic War*, eds. Klaus Knorr and Thornton Read (New York: Frederick A. Praeger, 1962), various chapters; V. R. Raghavan, "Limited War and Nuclear Escalation in South Asia," *The Nonproliferation Review* (Fall/Winter 2001): 6-7; Suba Chandran, "Limited War with Pakistan: Will it Secure India's Interest?" *ACDIS Occasional Paper*, University of Illinois at Urbana-Champaign (August 2004), available at http://acdis.illinois.edu/assets/docs/253/LimitedWarwithPakistanWillItSecureIndiasInterests.pdf.

12. The US mining of Haiphong harbor in North Vietnam and providing Stinger missiles to the Afghan mujahideen pushed the envelope, as did Soviet support for the Egyptian Syrian attack on Israel in 1973.

13. For more on preventive war, see Scott Silverstone, *Preventive War and American Democracy* (New York: Routledge, 2007).

14. Furthermore, as new states proliferated, it became advantageous to assume a balancer role. Thus, the US hinted that it would not be indifferent if the Soviets conducted a preventive attack on China.

15. Some recent scholarship suggests that the Israeli attack added motivation to Saddam's desire for nuclear weapons where previously none existed. See Malfrid Braut-Hegghammer, "Revisiting Osirak: Preventive Attacks and Nonproliferation Risks," *International Security* Vol. 36, No. 1, (Summer 2011):101-132.

16. See Sumit Ganguly and Devin Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (Oxford: Oxford University Press, 2005): ch. 3. This also led to the so-called no-attacks agreement whereby India and Pakistan annually exchange lists of nuclear sites that both sides agree not to attack.

17. Raghavan, "Limited War and Nuclear Escalation in South Asia:" 6; Jasjit Singh "Dynamics of Limited War," *Strategic Analysis* Vol. 24, No.7 (October 2000): 1205-1220.

18. See Raghavan, "Limited War and Nuclear Escalation in South Asia:" 7-8 for a related argument.

19. In contrast to the point made here, Ganguly and Hagerty, *Fearful Symmetry*, argue that all six crises and confrontations since 1984 would have led to war had it not been for nuclear weapons. Sumit Ganguly and Devin T. Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (Seattle, WA: University of Washington Press, 2006).

20. East Pakistani civilians were targeted in Pakistan's internal civil war in 1971 that resulted in the Indo-Pak war later that year.

21. See Russell Brines, *The Indo-Pakistani Conflict* (London: Pall Mall Press, 1968).

22. The most complete study of the 1971 war is Richard Sisson and Leo. E. Rose, *War and Secession: Pakistan, India and the Creation of Bangladesh* (Berkeley, CA: University of California Press, 1990).

23. J. F. R. Jacob, *Surrender at Dacca: Birth of a Nation* (New Delhi: Manohar Publishers, 1997), 65-66.

24. Ibid.

25. The conversation between Chief of Army Staff Musharraf and the Chief of General Staff Lt. Gen. Mohammed Aziz revealed Pakistan's response to the introduction of airpower: "He [PM Nawaz Sharif] told Indian PM that they should have waited instead of upping the ante by using Air Force and all other means." See text of conversation in Jaswant Singh, *A Call to Honour: In Service of Emergent India* (New Delhi: Rupa & Co., 2006), 180-187.

26. J. N. Dixit, *India-Pakistan in War and Peace* (London: Routledge, 2002), 55-56.

27. See Y. I. Patel, "Dig Vijay to Divya Astra- a Paradigm Shift in the Indian Army's Doctrine," *Bharat Rakshak Monitor* Vol. 6, No. 6 (May-July 2004); Chandran, *ACDIS Occasional Paper*, 1, adds the failure of dialogue between India and Pakistan and the rise of Jammu and Kashmir militancy as independent variables affecting the decision.

28. Personal interview with Gen. V. P. Malik, June 2003, New Delhi.

29. See Kanwal, in *The India-Pakistan Military Standoff*, ed. Davis.

30. See Nayak and Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis*; and Stolar, *To the Brink*.

31. The text of President Musharraf's speech is available at http://www.nytimes.com/2002/01/12/international/12WIRE-TEXT.html.

32. An important element, the effect of which is difficult to evaluate, is the interview Pakistan's chief nuclear manager, Khalid Kidwai, conducted with Paulo Cotta-Ramusino in January 2002. The interview was issued on Jan. 14, just two days after Musharraf's conciliatory Jan. 12 speech. See Paulo Cotta-Ramusino and Maurizio Martellini, "Nuclear Safety, Nuclear Stability and Nuclear Strategy in Pakistan: A Concise Report of a Visit by Landau Network Centro Volta," *Pugwash Online*, Jan. 14, 2002, available at http://www.pugwash.org/september11/pakistan-nuclear.htm.

33. See Krepon and Nayak, *US Crisis Management in South Asia's Twin Peaks Crisis*, 34-35. The UK issued a similar warning to its nationals in the area and other Western governments subsequently duplicated the State Department announcement.

34. These red lines had been spelled out early in 2002 in the interview with Khalid Kidwai, the Director of Pakistan's Strategic Plans Division; see Cotta-Ramusino and Martellini, *Pugwash Online*.

35. Ladwig, "A Cold Start for Hot Wars?"

36. Raghavan, "Limited War and Nuclear Escalation in South Asia:" 16.

37. Rajesh Basrur, *Minimum Deterrence and India's Nuclear Security* (Stanford, CA: Stanford University Press, 2006), 84.

38. For a defense of a doctrine that would allow for destroying the Pakistan Army, see Subhash Kapila, "India's New 'Cold Start' War Doctrine Strategically Reviewed," South Asia Analysis Group Paper No. 991, May 4, 2004.

39. See Timothy D. Hoyt, "'Cold Start' in Context: Wrong Time, Wrong Doctrine." Paper presented at conference on "Cold Start: India's New Strategic Doctrine and Its Implications," Naval Postgraduate School, Monterey, CA, May 29-30, 2008, 6-8.

40. Chandran, *ACDIS Occasional Paper.*

41. The Kargil war in 1999 made evident how difficult communication can be during conflict. Pakistan's Foreign Minister Sartaj Aziz traveled to New Delhi for discussions with his Indian counterpart, Jaswant Singh. The extent of the communication appeared to be Singh telling Aziz that Pakistan must vacate its positions and stop mistreating Indian soldiers — full stop. Less than that and there was nothing to discuss. Seeing the impasse, Aziz simply returned to Islamabad. External Affairs Minister's Press Conference, June 12, 1999, New Delhi available at http://www.fas.org/news/india/1999/JSingh_June_12_1999.htm. In his own account of the events, Jaswant Singh admitted that Pakistan's call for a "peaceful settlement of the J&K issue ... was a disingenuous formulation, and to me personally, a matter of some considerable resentment." See Jaswant Singh, *A Call to Honor*, 206.

42. Thomas C. Schelling, *The Strategy of Conflict* (New York: Oxford University Press 1960), 67-74.

43. Raghavan, "Limited War and Nuclear Escalation in South Asia," 15.

44. Personal interview with Lt. Gen. Khalid Kidwai, Islamabad, June 2003.

45. Cotta-Ramusino and Martellini, *Pugwash Online*. It should be noted that the territorial red line had already been enunciated in 1999 following India's rollout of its draft nuclear doctrine. In a semi-official editorial response, Agha Shahi, Abdul Sattar, and Zulfiqar Ali Khan argued that India's new doctrine would threaten Pakistan's ability to respond. They stated that any attempt by India to occupy large parts of Pakistan's territory could cause Pakistan to use nuclear weapons. See "Securing Nuclear Peace," *News International*, Oct. 5, 1999.

46. "Draft Report of National Security Advisory Board on Indian Nuclear Doctrine," Section 2.3 (a), Aug. 17, 1999. Available at http://www.pugwash.org/reports/nw/nw7a.htm.

47. Ibid.

48. Brodie, *Strategy in the Missile Age*, 248.

49. "Policy for Security and Peace," *Foreign Affairs*, XXXII (April 1954).

50. Brodie, *Strategy in the Missile Age*, 250.

51.See Rajesh Rajagopalan, *Second Strike: Arguments about Nuclear War in South Asia* (New Delhi: Penguin-Viking, 2005), 78.

52. The message was in fact expanded several years later when the doctrine was modified to state that any attack on Indian forces anywhere, not just within Indian territory, would be met with nuclear weap-

ons. Text is in Manpreet Sethi, *Nuclear Strategy: India's March Toward Nuclear Credibility* (New Delhi: Knowledge World, 2009), 341-348.

53. Quoted in Sandeep Unnithan, "Hind Shakti to Fine Tune Proactive Strategy: Army Chief," *India Today*, May 26, 2009. Available at http://indiatoday.intoday.in/story/Hind%20Shakti%20to%20fine%20tune%20proactive%20strategy:%20Army%20chief/1/40638.html; also referenced in Asif Ezdi, "A nuclear warning from India," May 18, 2013. Available at http://www.defence.pk/forums/seniors-cafe/252922-son-cold-start.html.

54. Sunil Dasgupta and Stephen P. Cohen, "Is India Ending Its Strategic Restraint Doctrine?" *The Washington Quarterly* Vol. 34, Issue 2 (Spring 2011): 172.

55. Sunil Khilnani, et al. *Nonalignment 2.0: A Foreign and Strategic Policy for India in the Twenty First Century* (2012), 39.

56. Ibid., 40

57. In *India-Pakistan Military Standoff*, ed. Davis, 78, Gurmeet Kanwal dismissed such an approach, arguing that specifically targeted strikes across the LoC would be of little military benefit and would "result in a vigorous Pakistani retaliation at places where the Pakistanis hold the dominating heights on the LoC…"

58. See Basrur, *Minimum Deterrence and India's Nuclear Security*, 84.

59. "Pakistan Army to preempt India's 'Cold Start Doctrine'," *The Express Tribune*, June 16, 2013, 1.

60. Rodney Jones, "Nuclear Escalation Ladders in South Asia," DTRA/ASCO, Report No. ASCO 2011 007 (April 2011), 17.

61. "Pakistan test fires nuclear-capable missile," *Dawn.com*, Feb. 11, 2013; "Pakistan's Nuclear-Capable Missile," *The Diplomat*, Aug. 24, 2011.

62. "Military Exercise 'Azm-e-Nau 3'," no date given. Available at http://www.pakistanarmy.gov.pk/awpreview/pDetails.aspx?pType=PressRelease&pID=63.

63. Thomas Schelling, *The Strategy of Conflict* (Oxford: Oxford University Press, 1960), ch. 8.

64. Rajagopalan, *Second Strike*, 23.

65. *Limited Strategic War*, ed. Knorr, 11-12

66. Ibid., 12-13.

67. Based on unclassified reports, India is estimated to have up to 100 warheads while Pakistan is estimated to have between 90 and 110. Available at http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat.

68. Pakistan fears that India aspires to a capability that would render Pakistan's nuclear forces vulnerable to preventive attack, but does not appear to believe that India is yet at that point. To ensure it never arrives, Pakistan continues to expand its nuclear and delivery options.

69. *Limited Strategic War*, ed. Knorr, 11.

70. Rajagopalan, *Second Strike*, 64.

71. See "India's Nuclear Doctrine: An Alternative Blueprint," Institute of Peace and Conflict Studies, New Delhi, 2012.

72. *Limited Strategic War*, ed. Knorr, 9.

73. See Sethi, *Nuclear Strategy*, 347.

74. Stephen P. Cohen, *Shooting for a Century: The India-Pakistan Conundrum* (Washington: Brookings Institution, 2013), 71-72; Rajesh Rajagopalan, *Second Strike*, 71, called this New Delhi's "ambiguous relation with nuclear weapons, despite the decision to proclaim itself a nuclear power."

75. See "Is India's Nuclear Deterrent Credible?" text of speech at India Habitat Centre, New Delhi, April 24, 2013, 5. Available at http://krepon.armscontrolwonk.com/files/2013/05/Final-Is-Indias-Nuclear-Deterrent-Credible-rev1-2-1-3.pdf.

76. Ibid., 14.

77. Ibid.

78. *Limited Strategic War*, ed. Knorr, 30.

79. Ibid.

Missile Proliferation and Deterrence Stability in South Asia

Dinshaw Mistry

This essay examines the impact of missile forces on deterrence stability in South Asia. Missile delivery systems have been central to the nuclear deterrents of major nuclear powers, providing these states with survivable second-strike forces, thereby increasing the credibility of their deterrents. Pakistan and India have the same intentions and aspirations for their nuclear-capable missiles, but their missile forces have yet to provide for deterrence stability in the subcontinent.

Pakistan and India possessed only rudimentary nuclear and missile arsenals in the 1990s. During this timeframe, their short-range ballistic missiles had several drawbacks. They could not be quickly launched and were therefore vulnerable to a first strike; their range limitations did not allow target coverage of the other side's major cities from less vulnerable locations away from border areas; and they raised the nuclear ambiguity problem of distinguishing between conventional and nuclear-armed systems. The development of medium-range missiles enabled India and Pakistan to overcome some range limitations, but medium-range missiles were not reliable and were available only in very small numbers in the 1990s. Moreover, both short- and medium-range systems had poorly developed command and control mechanisms.

In the 2000s and early 2010s, Pakistan and India developed more substantial nuclear arsenals, better command and control systems, and new types of missiles. As a result, they were able to address some of the earlier drawbacks in their missile forces. Increased testing meant greater reliability, and missiles were inducted in increased numbers. India still moved slowly in fielding the Agni-5, which could reach large metropolitan areas within China. Additional types of missiles did little to enhance, and in some ways worsened, deterrence stability. For example, surface ship-launched, short-range ballistic missiles could be highly vulnerable and could raise significant command and control concerns. Pakistan's embrace of very short-range, tactical battlefield systems could make nuclear use more likely and has raised concerns about nuclear ambiguity and crisis escalation. If India follows in Pakistan's footsteps, these concerns will be further magnified. The advent cruise missiles also heightened concerns about command and control, nuclear ambiguity and crisis escalation. In these ways, the proliferation of missile types on the subcontinent has reduced, rather than enhanced, deterrence stability.

The following discussion reviews India's and Pakistan's missile programs and then examines the effects of missiles on deterrence stability in greater detail.

India's Missile Program

India's missile program developed in four phases. First, in the 1970s, India's Defense Research and Development Organization (DRDO) worked on a short-range liquid fuel missile project — the "Devil" project — that borrowed technology from the

Soviet SA-2 surface-to-air missile. Second, in the 1970s and 1980s, the Indian Space Research Organization (ISRO) developed a medium-range space launcher, the SLV-3, with a 9-ton solid-fuel first stage. Third, in the 1980s and 1990s, DRDO worked on an Integrated Guided Missile Development Program (IGMDP). It then developed the short-range Prithvi, drawn from the Devil project, and the medium-range Agni prototype, built from the SLV-3's first stage and a Prithvi-derived second stage.[1] Fourth, in the 2000s and early 2010s, DRDO developed improved versions of the Prithvi; it improved the Agni prototype to build the single-stage Agni-1, the two-stage Agni-2, and an enhanced Agni-2 that was renamed Agni-4; and it built a much heavier missile, the two-stage Agni-3, and its three-stage version, the Agni-5. The DRDO also developed cruise missiles.

Overall, India developed a series of missiles shown in Table 1: the 150 to 350 km range Prithvi (first flight tested in 1988); the 290 km range BrahMos cruise missile (first flight tested in 2001); the 700 km range Agni-1 (first flight tested in 2002); the 2,000 km range Agni-2 (first flight tested in 1999); the 3,000 km range Agni-3 (first flight tested in 2006); a similar range Agni-4 (first flight tested in 2010); the 5,000 km range Agni-5 (first flight tested in 2012); the 700 km range submarine-launched K-15 (first flight tested in 2008); the150 km range Prahaar tactical ballistic missile (first flight tested in 2011); and the estimated 700 km range Nirbhay cruise missile (first flight tested in 2013).

Table 1. India's missiles

MISSILE	RANGE (KM)	WEIGHT (TONS)	FIRST TEST, NO. OF TESTS UNTIL MARCH 2013	NOTES
Prithvi	150-350	4.5	1988, ~40 tests	Liquid-fuel; conventional and nuclear versions; land-based and ship-launched versions
Agni-1	700	12	2002, 9 tests	
Agni-2	2,000	16	1999, 9 tests	
Agni-2+/ Agni-4	3,000+	17	2010, 3 tests	
Agni-3	3,000	48-50	2006, 5 tests	
Agni-5	5,000	50-54	2012, 2 tests	Submarine-launched missile
K-15	700	6.5	2008, 13 tests	13 tests include 4 tests of an underwater-launched missile in its full configuration, and additional tests of one or two missile stages or from land
BrahMos cruise missile	290	3	2001, ~35 tests	Conventional payload; land, sea & air-launched versions
Nirbhay cruise missile	700	1-2	2013, 1 test	
Prahaar	150	1-2	2011, 1 test	

India has very extensively tested its short-range missiles. The BrahMos cruise missile has been tested 35 times, while the Prithvi has been tested more than 40 times (including tests of the original 150 km range land-based Prithvi; the 250 km range version for the air force; the naval Prithvi fired from ships; and an extended 350 km range land-based version). The Agni missiles have been flight-tested less frequently. Typically, each Agni goes through three to five developmental tests conducted by DRDO, followed by user trial tests once every year or two, where the missile is fired by Indian military personnel with DRDO scientists observing the tests.

Pakistan's Missile Program

Pakistan acquired missile technology and developed its missiles in four phases. First, in the 1960s and 1970s, Pakistan's Space and Upper Atmosphere Research Commission (SUPARCO) acquired French and US sounding rockets and developed a plant for solid fuel stage construction.[2] Second, in the late 1980s and 1990s, Pakistan fielded short-range systems — the Hatf-1 and Hatf-2, which were based on its sounding rockets — to counter India's missile programs. To supplement these systems, which could not carry relatively heavy first-generation nuclear warheads, Islamabad imported an estimated 34 short-range M-11 missiles from China in 1991-1992. Subsequently, it imported 12 to 20 medium-range Nodong missiles from North Korea.[3]

Third, in the mid- and late-1990s, partly overlapping with the second phase, Pakistan began indigenously assembling and developing indigenous versions of the M-11 (the Hatf-3), the Nodong (the Hatf-5 or Ghauri), and the Hatf-4 (the Shaheen, drawn from China's M-9).

Fourth, in the 2000s and early 2010s, Pakistan developed new short-range and medium-range missiles. It has typically tested new missile types once each year initially and then once every two years, or after a gap of a few years. In addition, some missile tests occurred just days after Indian missile tests, during military crises with India (especially in 2002), or in the context of other regional and domestic political events.[4] Thus, Pakistan conducted missile tests not just for developing, training and checking inventory, but also for signaling its deterrent against India.

Overall, Pakistan developed several ballistic missiles shown in Table 2: the 80-100 km range Hatf-1 and the 180 km range Abdali or Hatf-2 (these replaced the original Hatf-1 and Hatf-2); 300 km range Ghaznavi or Hatf-3; 700 km range Shaheen-1 or Hatf-4; 1,000-1,500 km range Ghauri or Hatf-5; and the two-stage 2,500 km range Shaheen-2 or Hatf-6, which was based on the Shaheen-1. It also developed two cruise missiles. One was the 500-700 km range land-based Babur CM or Hatf-7. This nuclear-capable missile may be derived from China's DH-10, which in turn resembles the Tomahawk.[5] A second was the 350 km range air-launched Raad CM or Hatf-8; it is unclear as to whether this is nuclear-armed. Finally, Pakistan developed a very-short-range nuclear delivery missile — the 60 km range Nasr/Hatf-9 — that was first flight-tested in April 2011.

Table 2. Pakistan's missiles

MISSILE	RANGE (KM)	WEIGHT (TONS)	FIRST TEST, NO. OF TESTS UNTIL MARCH 2013	NOTES
Hatf-2/Abdali	180	2	2002, 8 tests	Hatf-2 tested in 2002 is different from the original Hatf-2
Hatf-3/Ghaznavi	290	4.5	2002, 7 tests	Derived from Chinese M-11
Hatf-4/Shaheen	700	9.5	1999, 11 tests	Derived from Chinese M-9
Hatf-5/Ghauri	1,300	16	1998, 9 tests	Derived from North Korean Nodong; liquid fuel
Hatf-6/Shaheen-2	2,500	24	2004, 5 tests	
Hatf-7/Babur CM	700	1.5	2005, 11 tests	Land-based and ship-launched
Hatf-8/Raad CM	350	~1.1	2007, 4 tests	Air-launched
Hatf-9/Nasr	60	Unknown	2011, 3 tests	

Impacts on Deterrence Stability

What impact do Pakistan's and India's missiles have on deterrence stability in South Asia? Did the initial introduction of missiles in the 1990s provide for stable deterrents in the subcontinent, and did the development of new missiles in the 2000s enhance deterrence stability? Deterrence stability, for the purposes of this essay, may be defined as comprising crisis stability and arms race stability.[6] Crisis stability is enhanced by survivable second-strike forces and by the avoidance and control of escalation, which, in turn, assumes the proper command and control of nuclear capabilities.[7] Arms race stability is enhanced when existing nuclear capabilities are deemed to be sufficient for national security. Arms race instability occurs when new missile types engender a competition in even newer missile types. Before analyzing the principal features of each class of missiles, I shall review what is publicly available and may be reasonably inferred about Pakistan's and India's command and control mechanisms and fissile material stocks.

Command and Control

Both Pakistan and India have declared that they keep their nuclear warheads separate from their missiles during times of peace. During a military crisis or war, however, these systems would likely be combined and made more readily available for use. Proper command and control of these assets then becomes vital for crisis stability. Pakistan and India have improved their command and control mechanisms over the years.

India formally announced its nuclear command structure, based on a Nuclear Command Authority, in 2003. This comprised a Political Council and an Executive

Council. The Political Council authorizes the use of nuclear weapons. It is chaired by the prime minister and includes government ministers who are members of the Cabinet Committee on Security. The Executive Council, chaired by the national security advisor, includes the army, navy and air force chiefs and the commander of the Strategic Forces Command (SFC), who is a senior three-star military officer. The SFC, drawn from all three branches of India's armed forces, is the operational arm of the Nuclear Command Authority.[8] By the mid-2000s, some of India's missile groups, combat aircraft and naval vessels were designated to the SFC, although each branch of India's armed forces retains responsibility for servicing its particular missile, aircraft and naval assets. By the 2010s, observers noted that India had "put in place [improved] command and control systems at Strategic and Operational levels."[9] In 2013, the chairman of India's National Security Advisory Board offered additional details about India's command and control systems.[10]

Pakistan established a National Command Authority (NCA) to control its nuclear assets in March 1999, which it announced in February 2000.[11] This Authority comprises an Employment Control Committee (dealing with policies to employ nuclear weapons); a Development Control Committee (concerned with developing Pakistan's nuclear arsenal and implementing the decisions of the Employment Committee); and a Strategic Plans Division (SPD), which acts as a Secretariat for both committees and which was under the military's Joint Chiefs of Staff Committee. In addition, the Services Strategic Forces Command, drawn from the army, air force and navy, is responsible for the daily control of nuclear weapon delivery systems. By the late 2000s, SPD had assumed responsibility for all aspects of Pakistan's nuclear and missile programs, including the development and production of these systems and strategies and doctrines for their use.

To summarize, Pakistan and India strengthened their command and control mechanisms by the late 2000s and early 2010s. Nonetheless, command and control is inherently strained during a crisis or war, as measures to make strategic arsenals less vulnerable and more usable at the same time — dispersing forces, placing them on high alert, and delegating their use to field commanders — loosen control over them.

Fissile Material

Pakistan and India reportedly had weapons-grade fissile material for less than 20 nuclear weapons in the early-1990s; by the late-1990s, this figure may have risen to 30 to 50.[12] Many of these nuclear devices appeared to be aircraft-delivered gravity bombs. Each state may have had fewer than 20 missile-deliverable nuclear warheads in the mid- and late-1990s.[13]

In the 2000s, Pakistan and India steadily increased their nuclear inventories. By 2010, Pakistan was estimated to have highly enriched uranium sufficient for about 80 nuclear weapons and plutonium from the Khushab reactor for about 20 weapons; its enrichment plants and the Khushab reactor could then produce fissile material sufficient for between seven and 14 nuclear weapons per year. Pakistan had also built or was building three new Khushab reactors that could, by around 2015, produce plutonium sufficient for an additional 12 to 15 nuclear weapons per year.[14] By 2010, India was estimated to have a stockpile of weapons-grade plutonium sufficient for about 100 nuclear weapons; its Dhruva reactor was producing plutonium sufficient for five nuclear weapons per year.[15] It was also building a breeder reactor that, if successfully operational, could supply additional plutonium sufficient for some 25 weapons

per year. Thus, by 2020, depending upon their rate of fissile material production and their reprocessing capabilities, Pakistan and India could each have weapons-grade fissile material to support stockpiles of 200 to 250 nuclear weapons. Assuming that one-fourth of this inventory would be delivered by aircraft, both sides could then have about 150 to 175 missile-deliverable warheads.

Short-Range and Medium-Range Missiles in the 1990s

During the mid- and late-1990s, Pakistan and India possessed a few dozen short-range missiles and only a handful of medium-range systems. These capabilities were deemed by security managers in Pakistan and India to be insufficient for deterrence stability, even if they were dispersed across multiple locations to lessen their vulnerability to a first strike.

The extent of Indian and Pakistani efforts to improve missile capabilities across a broad spectrum leads to the inference that the credibility of deterrence and deterrence stability was presumed to be weak. There are several reasons for this inference. First, missile survivability depended upon their location remaining unknown. This was far from assured. Sagan reasons that Indian intelligence had identified the locations of Pakistani M-11s by observing related defense communication terminals and that India could also intercept communications messages revealing the location of these forces.[16] Second, India's Prithvi missiles had a cumbersome logistics train and took hours to fuel, and were therefore vulnerable to military strikes. Third, the Prithvi could only reach Pakistan's major cities from relatively less secure locations within 100 km from the border. Fourth, Pakistan's 300 km range M-11 missiles also had operational limitations, as they could not strike India's major cities, New Delhi and Mumbai, situated 350 km and 600 km away from the international border. Fifth, as noted above, Pakistan and India did not have enough fissile material to arm more than perhaps 10 missiles with nuclear warheads in the mid-1990s. Sixth, dual-capable short-range missiles gave rise to problems of nuclear ambiguity and inadvertent escalation. During a conflict, one side could strike missiles, believing them to be conventionally armed, resulting in a nuclear yield event and a nuclear response. More ominously, if one side detected missile launch preparations by the other side, it might assume that its rival was preparing for a nuclear strike and could respond with a nuclear strike of its own. Further, if one side detected an incoming missile heading toward its own nuclear-armed missiles, it could well assume a nuclear attack, resulting in the launch of nuclear-armed missiles to prevent their loss.

Medium-range missiles — the Ghauri and the Agni prototype — enabled security managers in Pakistan and India to overcome range limitations. Medium-range missiles could reach the other side's major cities from locations hundreds of kilometers from the border, and they thereby provided for a less vulnerable second strike capability.

Still, drawbacks remained. First, missile reliability was uncertain in the 1990s. Medium-range missiles were in the initial stages of testing, and even though they were readied for use during the 1999 Kargil crisis, operators had reason to lack confidence in their reliability. Illustrating this, the Ghauri's guidance system had not been proven. In its April 1998 and April 1999 tests, the Ghauri deviated considerably from its intended impact points.[17] As for the Agni prototype, its awkward solid and liquid fuel combined stages were not well suited for operations in the field and readiness for quick launch. Second, medium-range missiles were only available in very small numbers and were therefore more vulnerable to preemptive strikes.[18] Moreover, nuclear command and control systems in Pakistan and India were in

their incipient stages in the 1990s. As such, Indian and Pakistani security managers would likely have encountered difficulties in ensuring command and control over their short- and medium-range missile systems.

For these and other reasons, missile forces on the subcontinent manifestly did not provide the basis for stable deterrence in the 1990s. Pakistani and Indian security managers methodically worked to address shortfalls in the 2000s, improving command and control systems, expanding fissile material stocks, and acquiring additional types of missiles. Even so, deterrence stability remained elusive.

Medium-Range Missiles in the 2000s and 2010s

Pakistan and India improved their medium-range missile capabilities in the 2000s. Each flight test improved confidence in performance. By the mid-2000s, after the third and fourth successful tests of some new missile types, these systems were inducted into Pakistan's and India's armed forces for additional user tests. Because missiles were tested more frequently, they were more reliable. Because production lines presumably produced more missiles, they could be more survivable (since the larger number of missiles could be dispersed over several locations). Because both states developed improved command and control systems, the possibility of unauthorized launch was presumably lower. Presumed improvements in warhead safety and security would also enhance confidence in effective deterrence.

These calculations applied to the nuclear standoff between India and Pakistan, but not between India and China. The reliability and small-numbers problems continued to affect New Delhi's deterrent versus Beijing in the 2000s. India likely did not have a reliable missile deterrent against China because the Agni-3 and Agni-4 were not fully tested at the time. Even after they were better tested in the early 2010s, they were only inducted in very small numbers (perhaps fewer than five of each type of missile) and could therefore have been vulnerable to a first strike. In the mid-2000s, India had not fully tested 3,000 km range missiles that could reach China's major cities from more secure locations in central India. Thus, India only began testing the Agni-3 in 2006, with additional tests in 2007 and 2008, and the missile may not have been inducted until its fourth and fifth tests in 2010 and 2012. And India first tested the Agni-4 in 2010 (with additional tests in 2011 and 2012) and the Agni-5 in 2012 (with an additional test in 2013) — both these missiles would require three to four successful tests before they were inducted.

Short-Range and Very Short-Range Ballistic Missiles in the 2000s and 2010s

Pakistan and India inducted their short-range ballistic missiles (the Hatf-2, Hatf-3 and Prithvi) in increased numbers in the 2000s; Pakistan also developed a new missile, the very short-range Hatf-9, or Nasr, in the early 2010s. The increased numbers of short-range missiles could enhance their survivability, assuming that their locations could be kept secret. At the same time, command and control mechanisms would be particularly tested for short- and very short-range missiles, the deterrent value of which would presumably require forward deployment close to fighting corridors. In addition, another key drawback from the 1990s persisted: short- and very short-range missiles could be dual capable, giving rise to the nuclear ambiguity problem.

Pakistan and India also began testing very short-range ballistic missiles in the 2010s. In April 2011, Pakistan first flight-tested the Hatf-9/Nasr, noting that "the missile has been developed to add deterrence value to Pakistan's Strategic Weapons Development

program at shorter ranges. Nasr, with a range of 60 km, carries nuclear warheads of appropriate yield with high accuracy, shoot and scoot attributes. This quick response system addresses the need to deter evolving threats."[19] Pakistan again tested this missile in 2012 and 2013 and could thereafter presumably field it with its armed forces. In July 2011, India conducted the first flight test of its 150 km range Prahaar. Indian officials noted that this was "a unique missile because it has high maneuverability, very high acceleration and excellent impact accuracy. It will bridge the gap between the multi-barrel rocket system, Pinaka and the Prithvi missiles."[20] After a few additional tests, India could field this system, though it remains unclear as to whether it will be nuclear-armed.

The Hatf-9/Nasr and any of the Prahaar, if they are fielded, would do little to enhance, and much to reduce, deterrence stability. First, they would exacerbate command and control problems. Here, Krepon notes that because of the small size of tactical warheads and their delivery systems, they are more susceptible to loss of central control, and "the less control leaders have over nuclear weapons, the more likely they are to be used."[21] Also, the use of these systems "depends on extreme forward deployments, where they would be most subject to attack, where early use would be most likely, and where command and control is most susceptible to breakdowns."[22] Further, as Smith notes, any Permissive Action Link (PAL) technology to safeguard tactical nuclear weapons against unauthorized use is a double-edged sword: if PALs are employed, they make these weapons harder to use at the most critical point in a battle, and if they are not employed, they heighten security concerns in the event they are captured by extremist groups.[23] Smith adds that they are difficult to secure when deployed. Nuclear launch units must be withdrawn from battle to ensure their survivability, but this is precisely the time they may need to be used.

Second, the rationale behind the systems makes the use of nuclear weapons more likely. Here, as Davis notes, the perceived utility of the Hatf-9/Nasr rests on dissuasion against advancing Indian forces. Failing that, its utility rests on their use to force decisions to stop further advances. Very short-range missiles thereby increase the probability of the intentional, unauthorized and escalatory use of nuclear weapons.[24] Third, Davis adds that the introduction of very short-range, nuclear-capable systems could prompt Indian security managers to adopt countervailing strategies, including plans for conventional strikes over the top of short-range systems, which might further destabilize deterrence equations. Fourth, as Smith notes, short-range, dual-capable missiles invite preemption.[25] Fifth, they give rise to the same nuclear ambiguity problems that occur with the Prithvi, Hatf-2 and Hatf-3.[26]

For all the above reasons, short-range ballistic missiles detract from, rather than add to, deterrence stability in the subcontinent.

Naval Missiles in the 2000s and 2010s

India and Pakistan acquired rudimentary sea-based deterrent capabilities in the early 2010s that are expected to increase by the late 2010s. Rudimentary sea-based nuclear weapon-delivery capabilities have not enhanced deterrence stability. They are likely to worsen deterrence stability as they are inducted.

India developed the capability to deploy the Prithvi on naval vessels in the mid-2000s. Its Strategic Forces Command conducted several ship-based tests of the system in the late 2000s and early 2010s. At this time, India also possessed two additional naval missiles, but these were not fielded with its strategic forces. The BrahMos cruise

missile, although deployed on Indian naval vessels, was not advertised as being nuclear-armed. The K-15, tested 13 times between 2008 and 2013, had not been inducted because its launch vehicle, the INS Arihant, was still undergoing sea trials.

Pakistan did not have naval nuclear-armed missiles in the 2000s, but, in the early 2010s, it sought to make the Hatf-7 cruise missile compatible with naval platforms. Thus, in December 2012, seven months after establishing the naval leg of the Strategic Forces Command, Pakistan conducted the "the maiden [naval] land attack missile" flight test.[27] According to a press release, this test "demonstrated lethality, precision and efficacy" of the naval missile to "reaffirm credibility of deterrence at sea."[28] The press release also stated that the Hatf-7 capability "will help diversify the options available to counter India's growing second strike capabilities at sea." Pakistan would presumably require additional flight tests before fielding this system.

At this stage of their naval nuclear weapon delivery capabilities, Pakistan's and India's sea-based deterrents have significant shortcomings in terms of survivability and command and control. First, the surface-ship-launched Prithvi and Hatf-7 are vulnerable to preemptive strikes from trailing vessels or other means. These systems would likely be deployed on a few vessels. For example, the Prithvi could be deployed on two Indian naval ships, the INS Subhadra and INS Suvarna, from which it has been tested. These ships would be vulnerable in port and could be trailed at sea. Furthermore, the naval Prithvi and Hatf-7 — as well as other future naval nuclear weapon capabilities that India and Pakistan may induct — raise serious command and control concerns if, as Krepon notes, sea-based nuclear weapons do not permit warheads to be maintained separately from launchers, a separation that favorably distinguished Pakistan and India from other major nuclear weapon states.[29] The separation of warheads from launchers mandated a longer timeline for launch readiness, thereby providing both sides with space for signaling, monitoring and crisis management. The separation of warheads from launchers also provides additional insurance against unauthorized launch. These benefits would be lost if Pakistan and India deployed nuclear weapon capabilities on their surface navies and on submarines.

By the late 2010s, if not sooner, India could complete sea trials of its INS Arihant nuclear-powered submarine and could also conduct operational patrols of the vessel that include flight tests of the K-15. Even then, a single submarine with 700 km range missiles may not be invulnerable. To lessen vulnerability, India would have to develop submarine-launched missiles with greater ranges, such as the 3,500 km range K-4. It would also have to acquire a fleet of three to four nuclear-powered submarines, so that at least one is always on patrol during military contingencies. This will take perhaps 15 to 20 years. Once India fields submarine-based ballistic missiles, it would reduce the vulnerability of its naval nuclear systems without necessarily addressing concerns over command and control. This would also be the case if Pakistan fields the Hatf-7 on its submarines.

Land-Based and Air-Launched Cruise Missiles

Pakistan and India developed cruise missiles in the 2000s and early 2010s. If cruise missiles are mated with nuclear weapons, they could slightly strengthen deterrent capabilities, while complicating deterrence stability.[30]

India extensively tested its BrahMos cruise missile in the 2000s, but these were not intended to be nuclear weapon delivery systems and were not integrated with India's

Strategic Forces Command.[31] Like the Prithvi, it would have to be deployed within 100 to 200 km from the border and would therefore be more vulnerable to preemption. The 700 km range Nirbhay, once it is fielded, would presumably address range and vulnerability limitations, but it remains unclear as to whether this system will be nuclear-armed.

Pakistan has been more active in integrating cruise missiles with its strategic forces. In particular, the 500 to 700 km range Hatf-7 was tested almost annually, beginning in August 2005, and the Hatf-8 was also tested several times (although it is unclear as to whether this is nuclear-armed). Pakistan's land-based cruise missiles, if nuclear-armed, would somewhat enhance the credibility of Pakistan's deterrent by providing yet another delivery option and further reducing the overall vulnerability of its deterrent. Cruise missile delivery vehicles also provide insurance against prospective Indian missile defenses.

At the same time, Indian and Pakistani cruise missiles negatively impact crisis stability in a number of ways. First, conventionally armed cruise missiles could place at risk a wide set of targets to precision strikes, thereby lowering the nuclear threshold in the event of warfare. Second, targeting options by means of dual-use systems pose nuclear ambiguity problems that are likely to make escalation control harder. Third, delegating the use of these systems to commanders in the field during a crisis would pose command and control issues. Fourth, prospects for arms race stability are weakened with the induction of nuclear-capable cruise missiles. As their accuracy and range increase, Pakistan and India could consider counterforce targeting options, thereby providing increased incentive to enlarge further their nuclear stockpiles.[32]

Conclusion

Pakistani and Indian missile programs matured considerably in the 2000s and early 2010s. The advent of land-based medium-range missiles provided the basis for survivable and stable mutual deterrence on the subcontinent. The pursuit of other nuclear-capable delivery vehicles has, however, weakened deterrence stability by being more vulnerable to attack, by weakening command and control arrangements, by raising nuclear ambiguity issues, and by making escalation control more difficult.

Ongoing nuclear modernization programs and the continued diversification of delivery vehicles, particularly cruise missiles and sea-based systems, are likely to worsen arms race and crisis stability on the subcontinent. The acquisition of survivable second-strike forces during the Cold War did not lead to arms race stability. Instead, increased nuclear capabilities generated increased anxieties and resolve to compete. The Cold War nuclear competition was eventually dampened by tacit and negotiated arms control and reduction agreements. Bilateral nuclear arms control and reduction agreements between Pakistan and India are unlikely if China is excluded and are hard to conceive if China is included.

If Pakistan and India had based their nuclear deterrents on mobile, land-based missiles, arms race and deterrence stability could have been more readily established. Instead, they are developing and acquiring new short-range delivery vehicles, cruise missiles, sea-based systems and new doctrines for their use.[33] This competition is interactive. Rawalpindi's extensive pursuit of nuclear options is also a response to the growing imbalance in India's favor of conventional capabilities, to the possibility of Indian deployment of missile defenses, and to the US-India civilian nuclear agreement and what it might portend. Bilateral nuclear stabilization is further complicated by New Delhi's requirements to deter Beijing.

Deterrence stability obviously has different features on the subcontinent than during the Cold War. There are, however, some common features. In particular, there is no evidence that the testing of nuclear devices in 1998 and the subsequent acquisition of nuclear capabilities have led to more security in India and Pakistan. To the contrary, a competitive dynamic has subsequently been underway that decreases arms race stability, crisis stability and deterrence stability. New Delhi and Islamabad have not adopted "minimal," highly survivable nuclear force postures. Instead, they are developing and inducting new types of missiles and new military doctrines, prompting additional sources of insecurity in South Asia.

Notes

1. For the development of India's missiles along with its nuclear program, see, for example, Raj Chengappa, *Weapons of Peace* (New Delhi: Harper Collins, 2000); Bharat Karnad, *India's Nuclear Policy* (Westport, CT: Praeger, 2008).

2. Tariq Mustafa, "SUPARCO-the formative years, 1961-67," *Friday Times*, March 30, 2012.

3. Feroz Hassan Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, CA: Stanford University Press, 2012), 244.

4. Vipin Narang, "Pride and Prejudice and Prithvis: Strategic Weapons Behavior in South Asia," in *Inside Nuclear South Asia,* ed. Scott Sagan (Stanford, CA: Stanford University Press, 2009), 137-183.

5. Robert Hewson, "Chinese Air-launched Cruise Missile Emerges from Shadows," *Jane's Defence Weekly*, Jan. 31, 2007.

6. In general, crisis stability is increased if neither side has an incentive to strike first. Thus, the mutual survivability of offensive forces increases crisis stability, because the expected benefits to one side from striking first are reduced if the other side has second-strike forces that can survive a first-strike and inflict massive retaliatory damage on their opponent.

7. These issues are both distinct and related. For example, avoiding the escalation from conventional to nuclear use, and limiting nuclear escalation after any initial nuclear detonation, are both affected by a state's command and control systems, as well as by its doctrines and by its missile capabilities. For command and control, see Paul Bracken, *The Command and Control of Nuclear Forces* (New Haven, CT: Yale University Press, 1981); for escalation, see Desmond Ball, "Can Nuclear War be Controlled?" *Adelhi Paper,* vol.21, Issue 169 (London: IISS, 1981); for other studies on these issues, see Bruce Blair, *The Logic of Accidental Nuclear War* (Washington: Brookings Institution, 1993); Barry Posen, *Inadvertent War and Conventional Escalation* (Ithaca, NY: Cornell University Press, 1991).

8. It is also worth clarifying that there are several stakeholders in India's nuclear and missile program — the Department of Atomic Energy (DAE) produces weapons-grade plutonium and nuclear warheads; DRDO builds and tests India's missiles; after their developmental tests, the missiles (without nuclear warheads) are fielded with India's armed forces; and India's political leadership authorizes the use of nuclear weapons. Gaurav Kampani, "Stakeholders Analysis in the Indian Strategic Missile Program," *Nonproliferation Review* (Fall / Winter 2003); Verghese Koithara, *Managing India's Nuclear Forces* (Washington: Brookings, 2012).

9. "Raghavan on Reducing Nuclear Risks in South Asia," Stimson Center, Oct. 23, 2012. http://www.stimson.org/summaries/raghavan-on-reducing-nuclear-risks-in-south-asia-/.

10. He noted that India had an alternate NCA to assume command if its existing command structure became inoperable; that a strategy program staff in the National Security Council Secretariat conducted staff work such as examining the reliability of India's nuclear arsenal and working on 10-year plans for India's nuclear deterrent; and that SFC had conducted drills to examine escalatory scenarios, surprise attack scenarios, and no-first-use responses. Shyam Saran, "Weapon that has more than symbolic value," *The Hindu*, May 4, 2013. Observers still noted that India's command and control system had weaknesses. For example, the three services chiefs were members of the NCA's Executive Council headed by the National Security Advisor, and not on the Political Council headed by the Prime Minister. Therefore military inputs in any crisis would only indirectly, through the National Security Advisor, reach the political leadership and the Prime Minister.

11. Kenneth Luongo and Naeem Salik, "Building Confidence in Pakistan's Nuclear Security," *Arms Control Today* (December 2007), 11-17.

12. See Stockholm International Peace Research Institute, *SIPRI Yearbook 2001: Armaments, Disarmament, and International Security* (London: Oxford University Press, 2001), 478, 481.

13. Some authors surmise that DAE built fewer than 10 prototype warheads in the mid-1990s because it was uncertain about the reliability of untested devices. DAE scientists "would have considered it foolish to make [a larger number such as] 30 warheads, not knowing if it would work or not." Jacques Hymans, *The Psychology of Nuclear Proliferation* (New York: Cambridge University Press, 2006), 191.

14. David Albright and Paul Brannan, *Pakistan Doubling Rate of Making Nuclear Weapons: Time for Pakistan to Reverse Course* (Washington: Institute for Science and International Security, May 16, 2011).

15. International Panel on Fissile Materials, *Global Fissile Material Report 2011: Nuclear Weapon and Fissile Material Stockpiles and Production* (January 2012). Available at http://fissilematerials.org/library/gfmr11.pdf.

16. Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W.W. Norton, 2003), 101.

17. See "North's missiles tied to Musharraf blunder," *Japan Times,* Jan. 28, 2013.

18. This reasoning assumes that it is harder to locate and destroy a large number of missiles that may be dispersed over several locations, and that it is easier to locate and destroy a small number of missiles that may be dispersed across just a few locations.

19. Inter-Services Public Relations, Press Release No. PR94/2011-ISPR, April 19, 2011. http://www.ispr.gov.pk/front/t-press_release.asp?id=1721&print=1.

20. See T. S. Subramanium, "Prahaar Missile Successfully Test Fired," *The Hindu*, July 21, 2011.

21. Michael Krepon, "Pakistan's tactical nuclear weapons," Stimson Center, April 24, 2012, http://krepon.armscontrolwonk.com/archive/3419/tac-nukes-in-south-asia.

22. Ibid.

23. David O. Smith, "The US Experience with Tactical Nuclear Weapons: Lessons for South Asia," in *Deterrence Stability and Escalation Control in South Asia*, (Washington: Stimson Center, December 2013).

24. Zachary Davis, "The Yin and Yang of Strategic Transparency: Tools to Improve Nuclear Stability and Deterrence in South Asia," in *Deterrence Stability and Escalation Control in South Asia*, (Washington: Stimson Center, December 2013).

25. Smith, "The US Experience with Tactical Nuclear Weapons: Lessons for South Asia."

26. This point is also noted by Vipin Narang and Christopher Clary, "Strategic Schizophrenia: Doctrine, Capabilities, And (In)Stability In South Asia," in *Deterrence Stability and Escalation Control in South Asia*, (Washington: Stimson Center, December 2013).

27. Usman Ansari, "Pakistan Navy Test-Fires Land-Attack Missiles," *Defense News*, Dec. 21, 2012.

28. Ibid.

29. Michael Krepon, "Pakistan's Nuclear Strategy and Deterrence Stability," in *Deterrence Stability and Escalation Control in South Asia*, (Washington: Stimson Center, December 2013).

30. For Pakistan's and India's cruise missiles, see Dennis Gormley, *Missile Contagion: Cruise Missile Proliferation and the Threat to International Security* (Annapolis: Naval Institute Press, 2008), 69-73.

31. However, some authors note that India has designed a nuclear warhead for the Brahmos — see Bharat Karnad, *India's Nuclear Policy*, 82.

32. See Vipin Narang and Chris Clary, "Doctrine, Capabilities and (In)Stability In South Asia." Neil Joeck makes a similar point: Although both Pakistan and India may have a sufficient number of missiles and aircraft to be invulnerable to a first strike, Pakistan fears that India aspires to a first-strike capability, and to ensure that this never arrives, Pakistan continues to expand its nuclear stockpile and delivery systems. Neil Joeck, "Prospects for Limited War and Nuclear Use in South Asia," *Deterrence Stability and Escalation Control in South Asia,* (Washington: Stimson Center, December 2013).

33. Andrew Bast, "Pakistan's Nuclear Calculus," *The Washington Quarterly*, vol. 34, no. 4 (2011): 73-86.

Deterrence Stability and the Conventional Balance of Forces in South Asia

Christopher Clary

After the 1999 Kargil conflict, in which Indian soldiers had to beat back the surprise intrusion of Pakistani forces at elevations up to 17,000 feet, then Indian Defense Minister George Fernandes boasted, "If India can beat a professional military force equipped with modern firepower at the ground, and at a time of Pakistan's choice, with the initiative also in their hands, India can beat Pakistan anytime, anywhere."[1] Pakistan's past failures in conventional conflict are commonly cited as motivations for its nuclear weapons program. As Bruce Riedel, a former US intelligence official who has advised the Obama administration on South Asia policy, wrote, "Having lost four wars to India since 1947, the Pakistani military sees the bomb as an equalizer and deterrent against its bigger neighbor."[2]

The fear of conventional defeat may drive Pakistan's military leaders to threaten or actually employ nuclear weapons in the event of a breakdown in deterrence with India. If Pakistan's conventional forces cannot stop India's, then either nuclear threats or Indian restraint would be necessary to avoid a possible nuclear exchange. Even in short, limited conflicts, India's advantage might quickly lead to unintended escalation. Walter Ladwig worried in a late 2007 analysis that, "As the Indian Army enhances its ability to achieve a quick decision against Pakistan, political leaders in New Delhi may be more inclined to employ force in a future conflict—with potentially catastrophic results."[3]

This essay seeks to question the often implicit assumptions that undergird these analyses of the conventional military balance in South Asia. I begin with a short revisionist narrative challenging the conventional wisdom of the military balance in South Asia. Second, I then lay out several scenarios whereby some triggers lead to unintended escalation and, from there, how unintended escalation could lead to nuclear weapons use. The narrative proceeds by examining how developments in the force balance across all three services — Army, Navy and Air Force — affect the likelihood that a conventional conflict might proceed down a risky path. The analysis presented here focuses on the near term (less than five years) because the situation in Pakistan is far too fluid for fine-grained assessments more than a few years into the future. This essay will conclude with policy suggestions for all involved governments to consider in the next several years.

To preview the conclusions, this essay argues that while Pakistan faces a conventional imbalance against India, the degree of that imbalance has been overstated — or at least confident assessments of imbalance require adjustment to incorporate a much greater degree of uncertainty. At one level, this constitutes a bow to empirical modesty that is inherent to the study of war, an uncertain endeavor even under the best of circumstances. Clausewitz again and again stressed to readers to avoid "absolute, so-called mathematical, factors" in thinking of war and instead emphasized "an interplay of possibilities, probabilities, good luck and bad" that were critical to military outcomes in his estimation.[4] This call for modesty is reinforced by the lack of

information on the full-scale combat capabilities of either India or Pakistan, neither of which has engaged in a conventional war in over four decades. The intervening years have witnessed major shifts in the nature of military technology. The extent that either or both militaries have internalized these shifts through successful modernization efforts is only hinted at by their recent performance in military exercises, crisis and and limited conflict. The fact that both the Indian and Pakistani armies have been engaged in counterinsurgency missions for the last 10 to 20 years further suggests that modernization may be uneven.

Past precedent and current force balances, while favoring India, do not suggest that India will necessarily prevail easily over Pakistan in the context of a large-scale conventional conflict. In the last decade, Indian officials have been relatively relaxed about conventional arms acquisitions, while the Pakistan military has been acutely focused on them. This has meant that India has consistently "punched below its weight" in the conventional force balance, underperforming compared to its impressive military spending advantage over Pakistan. Consequently, the current balance does not suggest that India could easily defeat the Pakistan military at any time or place.

This conclusion is not an endorsement of complacency: Pakistan's ability to deny India a conventional "victory on the cheap" is unlikely to prove durable. In the medium-to-long run, India will "win" the conventional race. As long as India continues to grow faster than Pakistan and continues to spend at rates comparable to historical averages (2 to 3 percent of Gross Domestic Product), there is no doubt that Pakistan will be unable to maintain even a patina of conventional parity over time. The challenge for both governments — and those that seek to promote deterrence stability on the subcontinent — is how to manage this transition from a regime where conventional *and* nuclear deterrence operate, to one in which Pakistan is *primarily* reliant on its nuclear arsenal.

History as Guide for India-Pakistan Conflict

India's considerable military edge over Pakistan is normally taken as a given, from which analysts typically focus on how Indian political and military leaders might employ military force and whether they would accidentally cross a Pakistani "red line." Within Pakistan, analysts scrutinize whether and how its leadership would choose to employ nuclear weapons (or threats of their use) in the face of impending Indian conventional military victory. Often this assumption –jumping to the end of the story — is justified by pointing to precedent. After all, India has not lost any of its four wars with Pakistan. Even some within Pakistan occasionally jest that "the Pakistan Army is the best army to have never won a war." At a certain level of abstraction, these historical references are certainly true, but past conflicts tell us very little about the contours of a future fight.

First, the track record is more muddled than a binary win-loss tally would indicate. In the 1947-48 war, Pakistan seized a sizable portion of the old princely state of Jammu and Kashmir, even if it failed to take Srinagar and the Vale, as intended. In 1965, Pakistan's military leaders certainly made a disastrously bad decision when they decided to launch Operation Grand Slam. But the result of the three-plus weeks of fighting in 1965 was largely a stalemate. Analysts remember that Indian infantry advanced as far as the outskirts of Lahore in 1965, but not enough emphasis is given to the fact that they were stopped. Perhaps, as some Indian histories suggest, Indian troops never actually sought to cross the canal east of Lahore but only sought to

advance up to it. Neither of these conflicts offers much insight about a future India-Pakistan war. In 1947 to 1948, fighting by very different, much smaller armed forces was confined solely to the Kashmir theater. In 1965, major battles of the war were fought along a relatively small portion of the nearly 2,000-kilometer boundary between the two states. The two armored forces were dramatically smaller than today's forces. About 750 Pakistani tanks and 650 Indian tanks confronted each other in 1965, compared with perhaps three times that number for both militaries today.[5]

Second, while the 1971 war was a disaster for Pakistan on multiple levels, its history contains little information about how a contemporary, full-scale India-Pakistan fight might unfold. East Pakistan was surrounded by India on all sides, resulting in a more than 4,000-kilometer border between present-day Bangladesh and India. In such circumstances, shorter interior lines of communication can sometimes compensate for inferior numbers. In this case, the quantitative overmatch by Indian forces was overwhelming. Indian forces in the eastern theater included six full divisions, portions of an additional mountain division and several brigades, and the equivalent of three armored regiments. Pakistan faced this force with three infantry divisions (two of which were without their normal accompaniment of artillery and vehicles), two additional "divisions" formed on an *ad hoc* basis out of spare brigades and division headquarters staffs, and one regiment of light tanks. (The terrain of East Pakistan substantially discounted the utility of tanks.) At the theater level, it is easy to argue India enjoyed 2-to-1 superiority — even without assuming any combat power for the 50,000 to 100,000 Bangladeshi guerrilla forces operating in Pakistan's eastern wing or on its periphery, a small portion of which had been organized into formal units by Indian trainers. Because Pakistani officials were wary that New Delhi would seize a portion of East Pakistan, from which they would announce a free Bangladesh state, the inferior Pakistan military force was arrayed along the perimeter of the eastern wing, rather than concentrating their forces in a smaller inner ring.[6] The results were understandably catastrophic.

The picture on the western front in 1971 was substantially different, partially because of the short two-week nature of the conflict, which constrained the degree of escalation and attrition. This was due to India's limited, mostly defensive objectives along its border with West Pakistan, but it was also a product of the professionalism of the Pakistan Army, which demonstrated competence when there were not decisive odds stacked against it. Indian forces advanced very slowly in the face of concentrated Pakistani opposition in the north, near the city of Sialkot. After 14 days of fighting, Indian forces were still only on the eastern outskirts of the town of Shakargarh, meaning they had gained territory only at a pace of about 1 kilometer a day. The Indian Army did take large areas in the deserts along the southern border, capturing 7,500-plus square kilometers of Pakistani territory. Even so, the Indian Army penetrated approximately 50 kilometers during the two-week conflict, or a rate of 4 kilometers per day. Most of the territory was gained against essentially no Pakistani opposition, and the strength of the Indian attack had dissipated considerably by the end of the war when it finally did face Pakistani forces. It is doubtful that future gains would have been at a similar rate. Even in the south, the Indian offensive was stopped well before it reached the valuable irrigated "green belt" areas to the east of the Pakistani city of Hyderabad.

Finally, warfare has changed since the last full-scale war four decades ago. It is unclear how two major developments in combined arms warfare affect the military balance. The first is the advent of anti-tank guided missiles (ATGMs), which both nations have in abundance.[7] The first anti-tank missile capabilities appeared on the battlefield

between near-peer opponents in the 1973 Arab-Israeli war. These munitions are widely seen to heavily favor the defender, although their defensive strength can be mitigated through offensive artillery coordinated with armor and infantry advance. The combined use of intense combat power (and concomitant greater supplies of ammunition to the forward edge of battle) could, at a minimum, slow the rate of advance even if the offensive force were able to neutralize the ATGM threat.[8]

The second development is the role that airpower will play in any future India-Pakistan conflict, both in its close air support mission and against other targets further away from the forward edge of battle. During the 1999 Kargil conflict, the Indian Air Force was just transitioning to precision-guided munitions and had to arrange for urgent imports of laser-guided bombs because it exhausted its supplies in relatively limited operations against the Pakistani intrusion.[9] Terrain limited the effectiveness of airpower, even with precision-guided munitions, although there is some disagreement between the Indian Army and Indian Air Force about the impact the air arm had on the high-altitude conflict.[10] Airpower's application in air-land operations is appropriately viewed as a "game-changing" capability, while the advent of ATGMs is viewed as a less important technological shift. Nonetheless, as this essay will argue, airpower's implications for ground operations might be less dramatic if air dominance is still contested. In other words, as long as air forces must remain primarily concerned with adversary air assets and air defenses, they will have a lesser effect on the land fight.

Pathways to War

What might serve as a trigger for unintended escalation, a process that could terminate at full-scale war and perhaps the use of nuclear weapons? How might unintended escalation unfold? One possibility — present in the 1965 Rann of Kutch affair, the 1984 Siachen Glacier seizure, and the 1999 Kargil conflict — is that a border skirmish or limited land grab by one side leads to a localized conflict. This seems less likely now than before, in part because after 60 years of hostility there are very few pieces of territory that are vulnerable to surprise seizure by the adversary. Both countries have thought extensively about their areas of weakness, particularly after Kargil.

The second possibility is an "accidental" war growing out of a major military exercise or a false alarm. This model is evident from crises in 1984, 1987 and 1990. This pathway to uncontrolled escalation also seems less likely now. Two of those crises (1984 and 1987) were driven by fear of an Indian preemptive strike against Pakistani nuclear facilities — a concern that also played into the more complicated 1990 crisis. Both countries now have larger, more dispersed nuclear arsenals that should be quite resistant to preemptive attacks, whether by nuclear or conventional means. Additionally, bilateral confidence-building measures put in place to prohibit attacks on nuclear facilities, to provide advance notice of major exercises, and to prevent airspace violations should also reveal indications and warnings of the possibility of impending attacks masked by major military exercises.[11]

The standard template, then, for most analysts concerned about uncontrolled escalation in South Asia, is that a future India-Pakistan conflict will begin with a major terrorist attack in India that can be traced back to Pakistan. The Dec. 13, 2001, attack on the Indian parliament and the Nov. 26, 2008, attacks in Mumbai are archetypical examples of possible triggers of conflict. A third attack, the coordinated bombing of the Mumbai commuter rail system July 11, 2006, also merits inclusion as an example

of a possible initiator of unintended conflict, since these attacks were stunningly effective, killing 209 and injuring 900 more.[12] Notably, none of these despicable attacks triggered an actual war or even limited hostilities between the two militaries. One could nonetheless imagine, under plausible scenarios, that certain mass casualty acts against iconic targets might lead to a decision by a future Indian Cabinet Committee on Security to initiate hostilities against Pakistan.

Two such scenarios seem most compelling. The first is that multiple major attacks occur during a compressed timeframe. Such sequential events were pivotal during the 2001-2002 military standoff, with the Dec. 13, 2001, attack on the Indian parliament preceded by an Oct. 1, 2001, attack on the Jammu and Kashmir legislative assembly in Srinagar. When a third terrorist attack occurred May 14, 2002, this time involving the families of Indian Army personnel mobilized in Jammu and Kashmir, concern over military conflict peaked again. Another, not mutually exclusive scenario, is that the central government in New Delhi is either particularly hawkish or particularly weak. Under this scenario, the governments of A.B. Vajpayee and Manmohan Singh are viewed as aberrations in being able to resist calls for military actions. A future central government in New Delhi might not feel so constrained and might feel compelled to act militarily.

If a terrorist attack does precipitate hostilities — whether or not Pakistan's military leaders were complicit in the planning and execution of the attack — Rawalpindi will have strategic warning of possible hostilities. During the 2001-2002 military standoff, it took approximately 24 hours before the New Delhi police publicly linked Pakistan to the attack and five days before Prime Minister Vajpayee ordered military mobilization.[13] Even a less deliberative leader would likely take 24 or 48 hours following a terrorist strike to order a punitive attack. The planning for such an attack would likely take additional time still.

Once a conflict begins, it is fairly easy to imagine how it might escalate vertically (in terms of severity) or horizontally (in terms of geographic scope). A few possibilities for limited conflict are often mentioned. The first would be a limited airstrike against terrorist-related targets across the Line of Control dividing Kashmir. It is unclear whether such a strike would achieve much purpose. Terrorists could employ mobility to avoid targeting. Also, Indian airstrikes would likely occur after Pakistan had heightened its air defenses. Additionally, there is no reason to suspect airstrikes would be "clean." Unless the Indian Air Force relies solely on maneuver and electronic warfare to evade Pakistani air defenses, attacks against camps would require some targeting of Pakistani air defenses and might also require air-to-air dogfights between the two air forces. The acquisition by the Indian Air Force of standoff attack capabilities might make this scenario more attractive to New Delhi, both because it might not be necessary for manned aircraft to cross the Kashmir divide and because attacks could focus on terrorist-related facilities with less concern for Pakistan's air defenses.

A similar, but more escalatory, scenario involves airstrikes against targets that lay outside of Kashmir. Historically, the contested nature of Kashmir has meant that violence confined within the borders of the old Princely State is perceived as less escalatory than violence that crosses the established international border. Journalists and analysts commonly mention the Lashkar-e-Taiba/Jamaat-ud-Dawa headquarters at Muridke, a suburb of Lahore, as a possible target.[14] In addition to the heightened political salience of any attack on Pakistan proper, an attack against Muridke would carry with it the possibility of greater collateral damage given its urban surroundings.

Even a limited Indian attack against terrorist camps in Kashmiri territory controlled by Pakistan would generate strong pressures for a vigorous Pakistani response. When discussing possible scenarios, retired Pakistani officers have only identified one possible exit without a Pakistani counterstrike: if the IAF were to fail to deliver punishing blows and lose aircraft to Pakistani air defenses, Pakistan might be able to "declare victory." Public pressures can be unpredictable, however, as the response to the May 2, 2011, US raid on Osama bin Laden's residence in Abbottabad, Pakistan, suggests. Barring IAF incompetence, it seems likely that the Pakistan military would attempt limited reprisal attacks. At the lowest end of the escalatory spectrum, it might seek to increase dramatically the rate of artillery fire and infiltration along the Line of Control. At the middle of the spectrum, it might attempt an airstrike of its own, although this would also face the task of flying into an active and prepared Indian air defense system. At the high end of the spectrum, it might choose to use conventionally armed ballistic or cruise missile systems against Indian targets, for example, a nearby Indian air field that would be hard to miss and would have symbolic value. At each stage in the tit-for-tat cycle, leaders in both countries would confront the choice of whether to continue or escalate hostilities. It certainly seems plausible that even limited airstrikes — the most contained military option available to Indian planners — could quickly escalate irrespective of Indian intent. Past episodes of successful crisis management in South Asia notably involved episodes free of cross-border air operations; crisis diplomacy would be substantially complicated if both countries close their air spaces or attempted to jam the communications systems of the other. Past efforts involved frequent phone calls, shuttle diplomacy and high-profile visits.[15] All might be difficult even in the face of modest air combat.

Escalatory pressures will be even more severe in the context of ground combat. Imagine, for example, if the Indian army attempted to capture Pakistani-held terrain along a narrow area of the border or Line of Control — in effect, a "Kargil in reverse." Would that force be defended by Indian air cover, even on the Pakistani side of the Line of Control or international border? If so, how might the air fight remain limited? If not, India's forces would be exposed to continual Pakistani air force sorties, just as Pakistani Northern Light Infantry suffered in Kargil in 1999. Airstrikes can be manageable in high altitude, rugged terrain where a bomb that misses by 1 meter horizontally may well miss by 20 meters vertically. Mountainous terrain is very difficult to capture in the first place, a feat only accomplished by Pakistan in 1999 and India on the Siachen glacier in 1984 because they used surprise to hold unoccupied terrain. In the most mountainous parts of the India-Pakistan border, precisely because of 1984 and 1999, there is not unoccupied terrain of this sort left.

If a small Indian force establishes a penetration across the Line of Control or International Border, then all nearby Pakistan Army units can concentrate their firepower on dislodging them. A cycle of slow-motion attrition could be started where both adversaries dispatch additional reinforcements into the contested area. Indian forces were able to win this sort of fight above Kargil, in no small part because Pakistani military leaders were unable to reinforce their troops because doing so would expose the fact that Pakistani troops had seized this territory, not *mujahideen* as claimed.[16] New Delhi might somewhat limit Rawalpindi's ability to concentrate superior forces by threatening maneuvers elsewhere along the Line of Control or International Border between the two countries, attempting to signal some sort of escalation dominance and forcing the Pakistan Army to maintain forces in defensive roles rather than freeing them up for counterattack. If an Indian force could maintain

territorial gains, this would generate incentives for Pakistani military leaders to order an attack elsewhere at a place geographically advantageous to Pakistan.

If Indian armed forces were to attempt broad, shallow thrusts along large portions of the Line of Control and the International Border, they would need to mobilize fully. Whether Indian forces do so or not, the Pakistan military has incentives to ready its full combat power against the Indian force, since Rawalpindi may need to do so to repel Indian advances and since Pakistan's military leaders cannot be sure of the scope of Indian ambitions, having difficulty discerning whether Indian mobilization for a limited war is merely a prelude to full-scale conflict. Indian political and military leaders would then face the choice of mobilizing fully — looking very much ready for a full-scale war — or face the more difficult prospect of attempting to defeat the fully mobilized Pakistani force with only a portion of India's total firepower.

In public fora, retired Indian officers have discussed using India's longer-range systems to prevent Pakistan from reinforcing its front-line units. In this view, reliance on some combination of Indian airpower and long-range ground systems, such as the Smerch multiple rocket launch system, could disrupt efforts by Pakistan to move its armored reserves to the battlefield.[17] If successful, these tactics might allow the Indian Army to somewhat diminish opposing military capabilities engaged along the front. Even so, substantial portions of both militaries would be engaged on the ground, Pakistani reserves would face rocket and air bombardment, and presumably both air forces would be engaged in air battle all along the front.

Even this cursory review of India's limited warfare options highlights the difficulties of escalation control in limited warfare. A variety of triggers could move India and Pakistan from a crisis to a period of full-scale war or some junction in between. These pathways do not require great leaps of imagination.

The Conventional Military Balance

This section will review the current and near-term future state of the military balance, reviewing the naval, air and ground balances in sequence. The sections centered on the air forces and to a much lesser extent naval forces will necessarily spill over to include the effect of those services on ground combat.

The Naval Balance

By far the biggest imbalance between forces exists between the Pakistan Navy and its Indian counterpart. As *Jane's* publications note, the Pakistan Navy is both the "most neglected" and the "smallest" of Pakistan's armed services.[18] The Pakistan Navy surface fleet consists primarily of the following:

- Six United Kingdom-origin Type 21 frigates (Amazon- or Tariq-class), four of which are fitted with the relatively short-range RGM-84D variant of the Harpoon anti-ship missile (124 kilometer range) and at least two of which are fitted with the LY-60 surface-to-air missile system, which given the short range of the system (25 kilometer) provides little defense against modern air-launched anti-ship cruise missiles;[19]
- One US-origin Oliver Hazard Perry-class frigate, retrofitted to be able to launch Harpoon anti-ship cruise missiles;[20]

- Three Chinese-origin Type 054 frigates carrying YJ-83 anti-ship cruise missiles (150-200 kilometer range) and HQ-7 surface-to-air missiles (12-15 kilometer range);[21] and
- Six small missile boats of varying classes, carrying either Harpoon anti-ship cruise missiles or CSS-N-8 anti-ship cruise missiles.[22]

The surface vessels are bolstered by a small but capable submarine force:[23]

- Two French-origin Agosta 70 submarines, with the capability to carry Harpoon anti-ship cruise missiles (124 kilometer), torpedoes and Stonefish influence mines;[24]
- Three French-origin Agosta 90B submarines, fitted (or to be fitted) with Mesma air-independent-propulsion systems dramatically increasing the range of the submarine while dived, and carrying Exocet anti-ship cruise missiles (50 kilometer range), torpedoes and Stonefish mines;[25] and
- Three Italian-origin MG110 midget submarines, ostensibly for the insertion of special force teams, but with potential naval roles of mine laying and the capability to launch torpedoes.[26]

The Pakistan Navy additionally operates several air assets capable of detecting and in some cases engaging surface and subsurface combatants. Three Atlantic maritime patrol aircraft are capable of carrying torpedoes, mines and Exocet anti-ship cruise missiles.[27] Pakistan currently has at least four P-3C Orions, a longer-range, more capable maritime patrol craft than the Atlantics, able to carry anti-surface and anti-submarine weapons. The precise number of operational P-3s is in flux since two of Pakistan's Orions were destroyed in a May 23, 2011, terrorist attack on the Mehran Naval Station in Karachi, an additional aircraft may have been damaged, several aircraft are regularly in the United States for repairs or refurbishment, and Pakistan is still receiving deliveries of additional P-3Cs.[28] Six Focker-27-200 maritime patrol aircraft can detect enemy vessels in the event of hostilities, but this modified civilian aircraft does not have any weaponry aboard to allow it to engage targets. They could cue perhaps 25 of Pakistan's Mirage-5 aircraft that possess sea strike capability, armed with the Exocet cruise missiles.[29]

Pakistan's Navy and maritime components of the Pakistan Air Force have considerable ability to complicate any Indian Navy effort to decisively affect a war from the sea alone, but the Indian Navy has impressive capabilities, enjoying quantitative and often qualitative superiority in every category of ship. India has 12 frigates to Pakistan's 10, 11 destroyers where Pakistan has none, 20 corvettes with anti-ship missiles compared to Pakistan's six smaller missile boats, 13 diesel-electric submarines compared to Pakistan's five (excluding Pakistan's midget subs), one nuclear submarine (leased from Russia), and an aging aircraft carrier.[30]

For the purposes of this essay, the relevant question is not which navy would win a maritime war but rather whether the Indian Navy could beat its Pakistani counterpart so decisively and quickly that it might alter the outcome of war on land. After all, a very successful effort by the Indian Navy might be viewed as an effort at the "economic strangulation" of Pakistan, one of the hypothetical Pakistani nuclear red lines identified by Director General Khalid Kidwai of Pakistan's Strategic Plans Division in an interview with Italian researchers in 2002.[31]

It is reasonable to question the speed and success of the Indian Navy in preventing the flow of materiel and other resources to Pakistan during a fight. First, maritime military campaigns even when successful are slow, while wars between India and Pakistan have been resolved quickly. Large-scale fighting lasted one month in 1965, two weeks in 1971, and two months in the 1999 Kargil conflict. As the British strategist Julian Corbett noted in his 1911 masterpiece on maritime strategy, one does not win maritime war on points:

> [I]t scarcely needs saying that it is almost impossible that a war can be decided by naval action alone. Unaided, naval pressure can only work by a process of exhaustion. Its effects must always be slow, and so galling both to our own commercial community and to neutrals, that the tendency is always to accept terms for peace that are far from conclusive.[32]

Second, enforcing a successful blockade is more difficult than evading one.[33] The Pakistan Navy has opened up two additional naval facilities at Ormara and Gwadar to decrease its reliance on Karachi and to dramatically widen the area that the Indian Navy must close off to shipping. Ormara is more than 230 kilometers west of Karachi, and Gwadar is an additional 215 kilometers west of Ormara. Consequently, a successful blockade of Pakistan now requires the successful blockade of a very long Pakistani coastline. To close off this area to neutral shipping could prove particularly difficult since Gwadar and the edge of Pakistani waters are very close to the Gulf of Oman, host to the international shipping lanes for vessels exiting the Persian Gulf. Additionally, China's recurrent interest and involvement in the creation and management of Gwadar port would add geopolitical complications to any Indian actions against the port. Former Indian Navy Chief J. G. Nadkarni noted in 2000 that the opening of Ormara would considerably complicate the Indian Navy's ability to blockade Pakistan. At the time, Nadkarni argued that Ormara's opening had somewhat less strategic significance because of the lack of rail and road links to the Pakistani population centers in the east.[34] Since then, in 2004, Pakistan completed construction of the Makran Coastal Highway, a modern road connecting Gwadar, Ormara and Karachi.[35] Even modest supplies through Gwadar and Ormara could prolong a conflict and diminish the utility of a naval blockade as a coercive lever. If Gwadar and Ormara's imports were supplemented by overland trade with China, this could further decrease the effectiveness of a naval blockade. In 2011, the Chinese and Pakistani governments completed a joint study of constructing a rail link through the Khunjerab pass, which already hosts a paved road link to China.[36]

Third, technological advances over the last 30 years — notably quieter diesel electric submarines and the diffusion of anti-ship cruise missiles that can be launched from air, sea and underwater — have likely made it easier for Pakistan, which desires to deny India control of its sea lines of communications, than for India, which seeks to maintain positive sea control. Modern weaponry has made it easier for air and subsurface vessels to engage surface ships successfully from standoff distances, outside of the reach of many of the surface ships' defensive capabilities. Most dramatically, two Argentine Super Étendards armed with Exocet missiles fired upon the British destroyer HMS Sheffield during the 1982 Falklands Crisis. Even though only one of the two Exocets struck the Sheffield, and even though the warhead on that missile may not have detonated properly, the impact damage and subsequent fires led to 20 dead, the need to abandon the ship, and its eventual sinking.[37] Similarly, cruise missiles can threaten even large capital ships. In another engagement during the Falklands War, two Super Étendards

fired two Exocets, striking and sinking the large roll-on/roll-off container ship Atlantic Conveyer.[38] By comparison, the Atlantic Conveyer was larger than India's amphibious transport ship, the Jalashwa (former USS Trenton) and about the size of India's former aircraft carrier, the Vikrant. Granted, the Atlantic Conveyer was a merchant marine vessel, probably having inferior equipment and crew training for responding to a cruise missile attack than a comparably sized military naval platform. Nonetheless, naval warfare during the Falklands War provides cautionary lessons about the difficulties of sea control against an adversary possessing anti-ship cruise missiles.

When India finally receives delivery of the Vikramaditya (formerly the Admiral Gorshkov), that platform's MiG-29Ks and Ka-31 airborne early warning helicopters should have a reasonable chance of defending the area around the carrier from aerial attack. The delivery of this carrier will provide much wider area coverage by naval air defenses than the Viraat, and its accompanying Sea Harriers, mostly because of the age of both the carrier and its aircraft combined with maintenance and training decisions of the Indian Navy. As a 2010 audit of the Indian Navy's aviation arm by India's Comptroller and Auditor General (similar to the US Government Accountability Office) concluded,

> [The] Indian Navy's Air Combat capability has weakened drastically as the available aircraft carrier is almost half a century old and is running on borrowed time since it was to be decommissioned in 200708. … Attack capability of the already depleted fighter aircraft fleet onboard the carrier is significantly eroded as they have not been kept in full combat readiness in the absence of a fully functional fitted radar and limited firing of practice missiles.[39]

As this report noted, the Sea Harriers had not practiced employing their Magic 2 air-to-air missiles since 2003, making it questionable that pilots have maintained proficiency with the weapon.[40] The Indian Air Force aircraft can be assigned a maritime air defense role in the event of full-scale hostilities, but without an organic capability and without a strong system of joint operations, the Indian Navy will be reliant on the Indian Air Force. It will also be forced either to deploy close enough to India that naval forces do not outreach the "legs" of the land-based aircraft, or to deploy at sea without adequate air cover. In either event, the efficacy of Indian sea control efforts is called into serious doubt.

Even with adequate air cover, the threat of torpedoes from relatively quiet modern diesel-electric submarines would remain.[41] To make one final comparison with an analogy from the Falklands War, the British nuclear submarine Conquerer was able to sink the Argentine light cruiser Belgrano, a ship approximately the size of the Jalashwa, using relatively unadvanced torpedoes (the design first entered British service in 1932). The sinking of the Belgrano cost Argentina its flagship vessel and the lives of 321 sailors, while the Conquerer was able successfully to evade efforts to detect and destroy it.[42]

These technological trends make it easier for India to sink Pakistani vessels, but this is not as damaging to Pakistani interests for two reasons. First, Pakistan has more modest goals at sea — to be able to maintain some small amount of shipping of necessary supplies — whereas Indian goals are more maximalist, that is, to cut off almost all of Pakistan's vital supplies. Second, India's ability to successfully interdict vessels should weaken further west, because of the decrease in air cover and because of the

dangers of hitting neutral shipping coming out of the Gulf of Oman. This declining success gradient is also incompatible with India's more maximalist goals.

There is no doubt, however, that even the *prospect* of an Indian blockade will likely dissuade many neutral ships from traveling to Pakistani ports. Even so, there is no reason to suspect that the pain will be so acute as to quickly affect events on land. Pakistan imports only some of its most pressing needs. It is a consistent net exporter of rice and many other food products (though it imports large quantities of edible oils). It is admittedly reliant on imports for its energy needs, since it only produces 15.5 percent of its normal daily consumption.[43] Aware of its vulnerability to market-driven supply shocks, let alone war-generated ones, the Pakistan government announced plans to stockpile 20 days' worth of petroleum products as a result of fuel shortages experienced in 2010.[44] To the extent shortages emerge, illicit and licit overland trade from Iran is also likely to grow rapidly and, depending on the time of year, the small overland route to China (via the Karakoram Highway) might also support modest trade flows in key goods.

Thus, it seems unlikely that a threatened or administered blockade would trigger such a rapid cessation in the flow of goods to Pakistan as to quickly alter the contours of a major conflict. India-Pakistan wars have largely been fought with the equipment on hand at the time hostilities commenced, as there is little time to arrange for emergency shipments of parts and spares even with unobstructed shipping before the cessation of combat. Time and space combine to make decisive naval combat unlikely. The timescale would likely be so long as to be impractical. Moreover, Pakistan would have to become an international pariah — likely requiring Chinese acquiescence, given its UN Security Council veto — for India to receive diplomatic support for a prolonged blockade.

More importantly, escalation control would be difficult at sea as well as on land. Indian Navy and Indian Air Force aircraft would have to prevent Pakistani maritime patrol aircraft and sea-strike fighters from threatening Indian capital ships, resulting in likely engagements with Pakistan's Air Force. Indian air power would also have strong incentives to bomb the facilities from which Pakistan maritime aviation assets take off. Since runways are relatively easy to repair given competent personnel, airstrikes against ground facilities would likely have to be recurrent to keep runways out of operation and to destroy Pakistani aircraft. In other words, naval battles can quickly lead to fighting that affects Pakistani territory and airspace.

To sum up this section, while the trend lines at sea favor India, they are unlikely to be so decisive as to determine the war's outcome. Maritime developments neither open space to India to engage successfully in limited war, nor do they appear to allow India easily and decisively to use maritime power to affect developments on land. While India's naval power might contribute to a Pakistani military defeat, developments at sea are likely to be largely confined to that medium. The air balance permeates all aspects of the battlefield to a much greater extent.

The Air Balance

Two important developments in the air balance are worth highlighting. The first is that while India continues to improve its advantages in the air, faster Pakistani procurement efforts relative to India have led to a temporary narrowing in the capabilities gap over the last decade, as will be explained below. The Indian Air Force's acquisitions have suffered from procedural bottlenecks rather than inadequate funding. If these bottlenecks were to be removed, or if large pending procurements were delivered

promptly, the gap would widen, conceivably quite rapidly. In the near term, however, India almost certainly can win air supremacy in a protracted conflict, but for much of the fight it will have to be satisfied with air superiority, and, in the early stages, it may encounter a period of air parity in portions of Pakistani airspace.[45] Air dominance will have to be won by hard fighting, which in part means that the Indian Air Force may be unable to turn fully to the task of altering dynamics on the land until after several days or perhaps weeks of fighting. As Walter Ladwig notes in his analysis of Indian limited war options, "The [Indian] strike corps would operate under the protection of the Indian Air Force, which would be expected to *first* gain air superiority over Pakistan and *then* provide close air support to ground operations."[46]

The second notable development involves the procurement of certain weapons systems that may have reopened some space for limited Indian attacks on Pakistani soil with slightly less escalatory potential than before. Such precision strikes do not eliminate the risks of escalation, but the risks vary from those that accompany traditional land, sea or air combat.

Why, then, might it be more difficult for India to gain air dominance than is typically assumed? First, the Pakistan Air Force has undergone substantial modernization since 2001, when it exited from a decade of US-imposed sanctions in exchange for Pakistani support in the George W. Bush administration's "global war on terrorism." In 2001, the best fighters Pakistan had in its inventory were 32 F-16A/Bs.[47] The planes, whose delivery to Pakistan began in 1983, had been kept operating through creativity and by cannibalizing other planes for spares after the United States imposed nuclear-related sanctions in 1990. None of Pakistan's aircraft in 2001 had the ability to engage enemy fighters beyond visual range (BVR).[48] Today, after a decade without US sanctions and with substantial US subsidies and aid for the Pakistan military, Pakistan has 45 F-16A/Bs, all of which have undergone or are undergoing midlife updates to improve the avionics and electronics of the planes and allow them to support BVR air-to-air missiles.[49] In addition, Pakistan has 18 F-16C/Ds (also with BVR capability) and perhaps 30 JF-17 Chinese-origin fighters with an additional 150 to 210 of these planes on order.[50] While the JF-17 has not been widely fielded by air forces globally, these aircraft reportedly have armaments and electronics to support BVR capability.[51] In the 2000s, Pakistan and India both acquired airborne early warning and control platforms (AEW&C). Pakistan acquired four Swedish Erieye systems a few years after India acquired the Israeli PHALCON system (two delivered and one more on order).[52] More recently, Pakistan has also begun to acquire the ZDK-03 AEW&C aircraft from China, with the first delivery of perhaps up to four aircraft reported in January 2011.[53] Consequently, while Pakistani analysts were concerned about glaring deficiencies in their Air Force with regard to BVR and AEW&C capabilities,[54] today that qualitative gap has narrowed substantially.

This order of battle does not diminish the extremely capable Indian Air Force, which has demonstrated near-peer status with even the US Air Force in air-to-air exercise settings.[55] Instead, it suggests that the task of establishing air supremacy over Pakistan, often viewed as a prerequisite for extensive air-to-ground operations, will be quite challenging. India is unlikely to be able to counter Pakistani air assets through clever planning. As noted earlier, it seems very probable that there will be some period of strategic warning prior to any Indian attack. The triggering event not only might provoke an Indian response, it would also warn Pakistan that such a response could be coming. This makes the air-to-air fight and the suppression of enemy air defense

missions difficult to execute by preemptive strikes, as Israel was able to execute against Egypt during the 1967 Arab-Israeli war.

The Indian Air Force will either have to spend considerable effort suppressing Pakistani air defenses, or it will have to rely solely on precision-guided munitions that can be launched from higher altitudes. The offense-defense competition between aircraft and ground-based defenses has shifted considerably. Like many countries, Pakistani air defenses are quite formidable below 15,000 feet (or approximately 4,000 meters) altitude. French-made Crotale, European-produced Mistral and Swedish-made RBS-70 surface-to-air missiles all can engage targets up to 4,000 meters. All three systems are mobile — either towed or man-portable. At lower altitudes (up to approximately 2,500 meters), the man-portable SA-16s and an indigenously produced system, the Anza, threaten aircraft. Pakistani ground-based air defenses present little threat at higher altitudes, where only a handful of Chinese-origin CSA-1s (a SA-2 variant) threaten high-flying targets.[56] The Indian Air Force Su-30MKI, Mirage-2000s and Jaguars likely have the capability to drop laser-guided bombs, which could engage ground targets at altitudes above the reach of all but the few CSA-1s. Whether India has sufficient numbers of kits to use laser-guided munitions in a close-support role, directly affecting the course of the armor battle, is less clear. In the 1999 Kargil conflict, India had to arrange for urgent imports of bomb kits from Israel after exhausting its stores but has likely expanded its inventory considerably in the intervening years.[57]

India is transitioning to much greater reliance on precision-strike weapons, but it is difficult to assess based on open sources the pace and extent of this transition. It will certainly occur but perhaps not in the short term. The United States made this transition over two decades, going from about 8 percent guided munitions during the first Gulf War in 1991, to about 29 percent during Operational Allied Freedom in Kosovo in 1999, to approximately 64 percent guided munitions during the opening air campaign of Operation Iraqi Freedom in 2003.[58]

If and when India does establish air superiority, the Indian Air Force may still have difficulty significantly affecting the conduct of the ground war. Historically, air forces played at best a modest supporting role in each of the four major conflicts between India and Pakistan. In previous wars, air forces played a significant role in shaping the fight in only one battle — in the desert outside of the Indian town of Longewala in 1971. Even here, it appears the Indian Air Force largely harassed a Pakistan force that had already been repulsed by Indian ground forces, resulting in more casualties but not altering the outcome of the ground fight.[59]

Despite attempts to synchronize Indian Army and Indian Air Force efforts in war games, integration of action across services still appears problematic and incomplete.[60] Even when an air force has total air dominance and considerable expertise at integrated air-ground combat, there are reasons to suspect that the effects of airpower on armored units are far less than some airpower advocates suggest. Daryl Press, for instance, has argued that airpower's utility against defensive armored units — exactly the relevant interaction for a warfare scenario in South Asia — has been overstated substantially.[61] Moreover, the Indian Air Force has shown a strong aversion to close air support missions, much preferring deep strikes against strategic targets. In 2009, Air Vice Marshal (ret.) Kapil Kak, deputy director of the IAF-funded Centre for Air Power Studies, stated, "There is no question of the air force fitting itself into a doctrine propounded by the army. That is a concept dead at inception."[62] Even if the Indian Air

Force secured air dominance, this would push Pakistan to rely on its missile forces, a development that might have more strategic costs than military benefits.

Another significant technological factor is the development and induction into the Indian military of the Indian-Russian BrahMos supersonic cruise missile in land attack modes and the potential acquisition of the US-produced Joint Standoff Weapon (JSOW). Stand-off capabilities may alter the strategic environment in South Asia by potentially opening up a small window for military options that, while still risky, could have less escalatory potential.

The BrahMos has been inducted into the Indian Army and Navy. The Indian Air Force may field a BrahMos variant, but the weight of the missile requires substantial modifications to the Su-30MKI, and the air-launched variant is unlikely to be fielded before 2015.[63] Even with additional delays, it is likely that the Army and Navy variants of the BrahMos will be ready for operational use in the next five years, and perhaps the Air Force variant as well. The BrahMos has an advertised range of 290 kilometers, just below the 300-kilometer Missile Technology Control Regime threshold. Even so, it could easily reach targets across the Kashmir divide. For example, the major city of Muzaffarabad is a mere 25 kilometers from the Line of Control.

The JSOW is a precision-guided munition that has an advertised maximum range of 130 kilometers and can carry cluster submunitions for dispersed targets (like terrorist camps) or unitary warheads for hardened targets (like concrete bunkers). Since Raytheon was able to carry out a test involving Indian Air Force personnel of the JSOW-C (unitary warhead design) in July 2009, it almost certainly means that the US government has approved the JSOW for export to India.[64]

Both weapons systems would allow India to threaten a variety of targets in Pakistan — and especially across the Kashmir divide — without violating Pakistani airspace with manned platforms. In the foreseeable future, India would then have the means to emulate US utilization of cruise missiles and drone aircraft strikes. The violation of Pakistani airspace by Indian cruise missiles or drones would be a greater affront than US trespasses, particularly since many of the unmanned US drone strikes appear to have had the approval of Pakistani leaders.[65] The utilization of cruise missiles and drones rather than manned aircraft would obviate the Indian need to destroy Pakistani fighters and ground-based air defenses to allow for the success of the raid, offering the prospect of less risky — if not "clean" — strikes. The basic dynamics of tit-for-tat escalation would remain, however, with Pakistani leaders still having strong domestic political and reputational incentives to respond to Indian cruise missile or drone strikes. In the view of Pakistan's security managers, allowing India to attack without cost would make future Indian attacks more likely. If, however, Indian decision makers perceive the introduction of cruise missiles and drones to provide mildly less escalatory risk than other military options, it could make Indian military action in response to severe provocations more likely.

The Ground Balance

After the "Twin Peaks" crisis of 2001-2002, the Indian military — particularly the Indian Army — began a series of changes in doctrine often referred to as the Indian Army's "Cold Start" strategy.[66] The Indian Army has tended to prefer the title of "a pro-active strategy,"[67] or less commonly, "active defense."[68] Current Indian Army operational and contingency planning is still obscured in the public domain, despite speculation about the post-2002 doctrinal shifts and accompanying changes in force

structure.[69] It is clear, however, that the post-2002 reforms have sought to be able to launch punitive strikes against Pakistan quickly, without requiring full mobilization. This implies multiple, shallower thrusts rather than a more concentrated, deeply aimed offensive strike.

It seems likely that the Army has created contingency plans for one scenario that involve attacks solely across the Kashmir divide, as it reportedly considered in the early stages of the 2001-2002 standoff. The Line of Control in Kashmir is a particularly difficult locale to conduct offensive operations. The mountainous terrain in some sectors heavily favors the defense. Moreover, because of the active nature of the border dispute, this terrain is heavily defended. Because offensive attacks are unlikely to seize large swaths of terrain or threaten Pakistan's existence, they might be considered politically plausible. In addition to punitive goals, limited offensives across the Kashmir divide might capture terrain and complicate future infiltration of militants from the Pakistan side.[70] If undertaken, however, Indian forces would likely have to expend considerable resources to achieve only minor gains.

In light of the challenges of cross-LoC operations, it seems quite likely that the Army has also generated contingency plans for shallow strikes along the International Border. Much of the public commentary of changes in Indian Army force structure and peacetime deployment — the creation of new brigade-size Integrated Battle Groups deployed more closely to the border, for instance — remains speculative. Recent fieldwork suggests that while the old "holding corps" have been converted into "pivot corps" with enhanced offensive power, the Indian Army has largely abandoned other force structure changes commonly associated with Cold Start.[71] What is clear is that the Indian Army has thought considerably about how to attack without fully mobilizing first and how to signal that such an attack does not threaten Pakistan's existence to reduce the risks of severe, uncontrolled escalation.

The biggest challenge for Indian military planning is geography. Simply put, Pakistan's military and population centers are close to the border with India, which denies Pakistan strategic depth to be able to absorb an Indian blow, but also gives the Pakistan Army an important mobilization advantage in the event of a short-notice conflict. Basic geography is very difficult to surmount through planning alone. As Pakistan Army Brig. (ret.) Shaukat Qadir recalls,

> [E]ven if one can assume that the Indian troop movements will not be sabotaged by internal fissiparous elements, nor by Pakistani agents, natural delays in the movement of large forces can make time relationships tenuous and dangerous. I have known an overturned truck to delay a convoy by almost sixteen hours and a delay of only eight hours can seriously imbalance the entire system of forces—not just the force it was supposed to reinforce but all other offensives as there is a strategic relationship of time between all of them.[72]

India's ability to quickly prosecute limited ground offenses is predicated on being able to launch an attack quickly by mobilizing units close to the border and then to mobilize additional units further in the rear into the fight. Pakistan has more units close to the border and, given its smaller size, has inherent advantages in mobilizing reserves. As Qadir notes, "When I was serving, it used to take Pakistan seven days to assemble its forces while India took 21. Though both sides may have reduced their mobilisation period since then, the ratio of time would be about the same."[73] The ability

of a "proactive" Indian strategy to overcome this mobilization asymmetry is mitigated considerably because such attacks are not likely to come as a surprise. Instead, they will be observable to Pakistani decision makers.

The issue for the Pakistan army in the near term is whether it will have difficulty re-mobilizing forces seconded west for counterinsurgency operations back to the fighting corridors with India, and whether this difficulty would be severe enough to destabilize the ground force balance. Public source estimates for the number of Pakistani troops on the western border are rare, but it seems unlikely that number today or in the near future is greater than 147,000 personnel, a number provided in a 2011 White House report on Afghanistan and Pakistan. Pakistan's paramilitary Frontier Corps likely constituted a substantial portion of that 147,000, with the number of Pakistan Army personnel perhaps 100,000, of which perhaps 50,000 to 70,000 were redeployed from their typical duties on the Indo-Pakistani border.[74]

If this analysis is correct, the total number of troops that might be subject to redeployment is around 10 percent of the total active-duty Pakistan army — a significant, but not overwhelming, movement of troops from the eastern border. These troops would have deployed with some, but by no means all, of their equipment. It seems reasonable to assume that most of Pakistan's tanks, armored vehicles and artillery; many of Pakistan's larger mortars; and the vast majority of its antitank missiles would stay prepositioned along the border with India, accompanied by thinned-out infantry units or whole armor or artillery units. The bulk of these units that stayed in their normal locations along the eastern border would in some ways be more capable of defense on the first day of a short-notice conflict than they had been in the 2001-2002 crisis, since the Pakistan Army kept many units and considerable equipment deployed in forward locations after that mobilization. After warning of imminent Indian hostilities, Pakistan would have to attempt quickly to redeploy from west to east. This redeployment might take slightly longer than in past crises because the Pakistan army is spread out in counterinsurgency operations rather than stationed in garrisons ready to mobilize.

The Twin Peaks crisis in 2001-2002 provides a baseline of mobilization timelines, even though both countries have made logistical and peacetime deployment changes since then. This crisis began with a terrorist attack on the Indian parliament building on Dec. 13, 2001. In an address to the nation the night of the attack, Prime Minister Vajpayee stated, "For the past two decades, we have been fighting terrorism, now the battle has reached its final phase. … The fight has now reached a decisive stage."[75] On Dec. 14, Delhi police identified the Pakistan-backed and –based terrorist groups Lashkar-e-Taiba and Jaish-e-Mohammad as being responsible for the attacks. On Dec. 18, Prime Minister Vajpayee ordered the Indian armed services to prepare for war with Pakistan, triggering the first full-scale mobilization of the Indian Army since the 1971 war.[76] Since October 2001, the Pakistan Army had been focused on deploying two Army corps and most of the paramilitary Frontier Corps force to seal the border between Pakistan and Afghanistan in support of the early stages of Operation Enduring Freedom in Afghanistan. Widespread leave during the Muslim Eid holidays from Dec. 17 to 19, 2001, also slowed the Pakistan Army's awareness and response of the Indian mobilization. It was not until Dec. 21, when the Pakistan Army became aware of the Indian Army moving units from the eastern theater (facing China) toward Pakistan and the cancellation of leave for Indian military personnel, that Pakistan Army senior leadership realized the gravity of the situation.[77] A race to mobilization then began.

India won the mobilization race, but was not quick enough to outpace the political clock. Pakistan faced a three-day delay in starting its countermobilization, redeploying the troops along the Afghan border back to the east. Indian Army chief Gen. S. Padmanabhan announced publicly on Jan. 11 — in an attempt to pressure Indian political leaders — that the Indian mobilization was complete, and only political authorization was needed.[78] Padmanabhan's statement may in fact have been issued several days after the mobilization was complete or only after Indian Army leadership became worried that political authorization might not be forthcoming. Maj. Gen. (ret.) Ashok Mehta reports that mobilization was complete by Jan. 7, and journalist Pravin Sawhney states India's redeployment was complete by the "first week of January."[79]

Pakistani officials skillfully bought time, however. On Jan. 8, President Pervez Musharraf informed visiting US Senators John McCain and Joseph Lieberman that he would speak on the night of Jan. 12 and present a "bold and principled" initiative to respond to Indian concerns about Pakistani sponsorship of terrorism. Senators McCain and Lieberman used media appearances to urge Indian officials to wait and respond to the content of that speech.[80] Musharraf's speech promised that Pakistan would no longer allow groups operating from its territory "to carry out terrorism on the pretext of Kashmir."[81] By the day of the speech, the Pakistan army's redeployment from its western to eastern border was essentially complete.[82] The speech thus deprived India of the initiative and the military advantage it had gained a few days earlier. The total time from a decision to redeploy to full mobilization on the eastern border was almost three weeks for Pakistan. India had managed to be ready for conflict earlier, although it took approximately the same or slightly more time to reach a comparable state of readiness.

Despite considerable doctrinal review and war game preparation in India since 2002, there is reason to suspect that the infrastructure and logistical preparations for Cold Start-type operations remain unfinished. Moving Indian Army units closer to the border requires many new cantonments to be built, new railheads to be established, land to be purchased, and units to be redeployed. These efforts have apparently lagged. Similarly, the Indian army's apparent poor readiness after the 2008 Mumbai attacks also calls into question the ambitions of a speedy proactive strategy. Indian journalist Manoj Joshi, who was appointed to a high-powered Indian government committee looking into defense reforms, reported in 2009 that, "In the wake of the Mumbai attack, the Indian Air Force and the Indian Navy were ready to strike, but the army was not. … [T]he Indian Army told the government that it would take them several weeks before it could prudently commence operations."[83]

A ground war between India and Pakistan might unfold in three phases. In the first phase, the Indian Army would face quantitative disadvantages as its Pakistani counterpart is able to mobilize those troops normally stationed near the border more rapidly than India.[84] During this phase, the Indian Army would be forced to do more with less and rely on qualitative edges to achieve gains. In a second phase, perhaps two weeks into a conflict, the Indian army might achieve a mobilization advantage over Pakistani ground forces as long as Pakistan continues to deploy several divisions along the Afghan border. This advantage might last for perhaps a week (approximately D-Day plus 21 days) until the conflict entered its third phase, and both armies, fully mobilized, would be fighting.

The takeaways from this analysis are that the initial ground fighting might be more difficult for the Indian army than is typically assumed because of basic geographic

disadvantages not amenable to logistical and doctrinal solutions. If Indian political leaders desire to keep a war limited, both to reduce nuclear risks and to deflect international pressures, prompt military action is required. Prompt action will, however, put in motion mobilizations that look very much like a full-scale war, not a limited punitive conflict. Analysts disagreeing with this assessment will either need to demonstrate that the Indian army has substantially improved its mobilization timelines (and that the Pakistan army has not) or argue that Indian equipment and troops are qualitatively superior to such an extent they can gain ground while Pakistani troops are deployed along the Afghan border.

Implications for Deterrence Stability

This essay has sought to demonstrate that India's near-term military options against Pakistan are risky and uncertain. They are risky because India's ability to keep a conflict limited is in doubt and because nuclear risk is present throughout the escalation process. They are uncertain because, while India enjoys conventional military advantages across all three services, these advantages are not as decisive as sometimes assumed. These conclusions leave no room for complacency. The military expenditure asymmetry is simply too large and growing too rapidly for even a determined Pakistani effort to keep up with growing Indian military strength. India has gone from spending nearly four to five times as much as Pakistan in 1988 to nearly seven to eight times as much in 2012.[85] Neither Pakistan's geographic advantages nor India's procurement lethargy can prevent a growing conventional mismatch from occurring. Nor can India's lethargy in military procurement be assumed indefinitely into the future.

India's economy is simply too large for Pakistan to compete. Even if India maintains defense spending at around or under 2 percent of Gross Domestic Product (GDP), over time it will outstrip Pakistan's ability to maintain a credible conventional defense, even though Pakistan spends many times more on defense as a percentage of GDP. As the Indian military expands its qualitative superiority, particularly in the air domain, it will become increasingly difficult for the Pakistani military to deny India victory in limited fights in the medium- to long-term.

Growing conventional asymmetries are likely to decrease the ability of outsiders, most notably the United States, to manage the risk of conflict on the subcontinent. Deterrence stability on the subcontinent depends in large measure on Pakistan's military leadership. In the 1990s, Rawalpindi responded to unfavorable strategic shifts by relying to a greater extent on violent nonstate actors. This strategy forced New Delhi to "pay attention" to Pakistan, while tying down significant numbers of Indian security forces in counterinsurgency operations, most notably in Kashmir. Put another way, support for militancy was considered to be a force multiplier for Pakistan and a force divider for India.

This strategy may have paid short-term dividends in the 1990s but is now punishing Pakistan at least as much, if not more, than India. Pakistan pays reputational costs for increases in cross-LoC violence without improving its leverage to generate a favorable political settlement. Nor has this strategy steered militancy away from Pakistan — indeed, the reverse is true. Continued violence-by-proxy directed against India would not substantially reduce Indian conventional military capabilities arrayed against Pakistan, even if acts of terror are directed at Indian cities away from Jammu and Kashmir — a trend that has been evident since 2002. India's response to mass casualty

acts of terror has been to strengthen law enforcement and paramilitary forces, drawing from abundant manpower, without reducing conventional military capabilities.

If nonstate actors are not the solution to the growing conventional force mismatch, Rawalpindi can either rely increasingly on its nuclear arsenal for deterrence or can seek to normalize its relations with India. These paths are not necessarily incompatible. If there were a diminution of terrorist attacks on India, or demonstrably greater distance between nonstate actors and Pakistan's military and intelligence establishment, Pakistan's conventional capabilities and growing nuclear arsenal could serve as an adequate deterrent.

This analysis suggests that Washington would have limited ability to fundamentally change defense trends that are tilting hard in India's direction. As such, providing weapons systems to Pakistan that are most suitable to a potential war with India would do little to alter basic trends while postponing the choices facing Pakistan's military leadership. Historically, US officials have supported arms sales in an effort to demonstrate an enduring US-Pakistan partnership, to calm Rawalpindi's concerns about the Indian threat, and to reduce Pakistan's reliance on nuclear weapons. In retrospect, the latter two objectives appear highly dubious. While US conventional arms sales might continue to have modest symbolic value, over the medium- to long-term Rawalpindi's concerns about the Indian threat are unlikely to be diminished through this mechanism. Even modest sales of high-end weapons systems to Pakistan could prompt blocking action in the US Congress, unless Pakistan is viewed as an essential and more reliable partner in countering terrorism.

Continuing to subsidize Rawalpindi's anti-India policy is not a wise US policy objective. Nor is it possible for the United States to undertake the task of minimizing a conventional arms imbalance in the subcontinent. Pakistan will turn increasingly to China for this purpose. Neither is it wise for the United States to accentuate an arms imbalance in particularly sensitive areas. Restraints on US arms sales to India might focus on military technologies that are most dangerous to deterrence stability and over which US suppliers presently exercise a monopoly.

The defense relationship between the United States and India will continue to grow, particularly with respect to concerns over Beijing's more assertive military posture around its periphery. But it would be unwise to include weapon systems in transactions to India that increase the likelihood that a crisis with Pakistan leads to war, especially weapon systems that make it more likely that a war leads to nuclear escalation.

Three types of weapon systems appear to meet the potentially destabilizing, potentially controllable and Pakistan-centric standards. First, the JSOW, discussed above, could facilitate precision-strike without requiring manned platforms to cross into Pakistani airspace. This weapon system modestly lowers the risks that Indian political decision makers might perceive from carrying out cross-border strikes. The fact that this weapon's range exposes many Pakistani cities and military installations to potential strikes, but can reach very few targets in China, further suggests the sale of this weapon system to India merits closer study.

Second, the United States has sold India over 500 CBU-105 Sensor Fuzed Weapons.[86] This weapon system is essentially an advanced cluster munition, which releases 10 submunitions, each of which carries four projectiles (for 40 projectiles total per weapon). It is designed as an area weapon capable of defeating combat vehicles, including main battle tanks. During operational testing, four weapons were released over a column of

24 vehicles, resulting in 17 hits against 11 separate vehicles.[87] The CBU-105 has the potential to improve dramatically the efficacy of a single sortie against ground targets, with the potential to quickly disrupt the balance in ground forces. Given the nature of the Himalayan border with China, this weapon would appear to be Pakistan-specific and of limited utility in an India-China contingency.

Third, there are dubious strategic rationales for the US release of missile defense technology to India. Any prospective Indian missile defense will have little utility against Chinese missiles, will incentivize the production of even greater fissile material by Pakistan, will incentivize greater production and use of cruise missiles, and could incentivize Pakistan to use nuclear weapons earlier and in greater numbers in a crisis. None of these developments appear to be salutary to regional stability, crisis and arms race stability, deterrence stability or US national interests.

Today, these weapon systems are primarily or entirely available from the United States. In other words, US restrictions might delay Indian acquisition of the capability rather than merely divert the sale to the benefit of a third party. If this were no longer the case, arms transfer restraints could be reconsidered. Absent a US near-monopoly on a specific type of weapon, attempts to restrain transfers would result in friction between New Delhi and Washington and Indian arms purchases from other defense suppliers. For instance, India's possession of the Kh-59M may reduce the practical effect of restricting JSOW transfers. But US government experts should actively make such calculations and comparisons rather than ignore potentially destabilizing sales.

For its part, New Delhi has self-interested reasons to be cautious about pursuing unconstrained weapon development or procurement in two areas. The first regards missile defenses. Indian civilian and military officials have yet to articulate a strategic vision or the requirements driving Indian missile defense research and development. Certain limited missile defense deployments might be beneficial to regional stability. A "thin" shield designed to absorb a small number of nuclear missiles that were launched inadvertently or accidentally might be modestly stabilizing — as long as it does not fuel additional fissile material and nuclear force requirements by its neighbors. Similarly, a missile defense configured primarily to deal with Chinese conventionally-armed ballistic missiles might have military benefits.

At present, Indian missile defense developments are open ended and likely to encourage Pakistan to undertake a variety of countervailing actions that negate the potential benefits of missile defenses while generating other nuclear risks to India. If Indian political leaders are serious about missile defense and have a clear strategic vision about how defenses factor into a broader strategic equation, then articulating the rationale and requirements for the envisioned ballistic missile defense (BMD) program might dampen negative consequences somewhat. Even so, Rawalpindi is likely to over-react to India's pursuit of BMD. At a minimum, Indian missile defense research and testing give Pakistan's strategic organizations a potent argument for more funding for delivery vehicle and warhead production.

Similarly, Indian political leaders have reason to oversee the development by the Defence Research and Development Organisation (DRDO) of increasingly precise ballistic missiles. While the very small Circular Error Probable figures provided by DRDO scientists are probably exaggerations, they likely prompt Pakistani military planners to wonder whether India is considering counterforce missions for its ballistic missile force.[88] Lt. Gen. (retd.) Khalid Kidwai, head of the Strategic Plans Division at Joint

Staff Headquarters in Pakistan, has cited an "ability to deter a counterstrike against strategic assets" as an objective of Pakistan's nuclear policy.[89] Probable Pakistani responses — more fissile material, more missiles, more warheads and using nuclear weapons earlier in a crisis — are not prospective outcomes beneficial to Indian security.

Conclusion

This essay has questioned the conventional wisdom that the Indian military could prevail quickly or easily in armed conflict with Pakistan. In the near term, the limited military options available to Indian political and military leaders in a deep crisis carry with them significant risk of escalation or are so limited that they are unlikely to achieve the Indian objectives of altering Pakistani support to militants through the punitive use of force. To the extent this assessment is accurate, and perceived as such by decision makers in New Delhi, deterrence stability is likely to be obtained in South Asia — for the near term.

While the conventional balance in South Asia is conducive to deterrence stability over the next few years, ongoing trends will produce Indian conventional military dominance. Over this longer timeframe, New Delhi will gain much greater latitude and have more options to employ conventional force. Pakistan's military establishment may increase the peacetime readiness and wartime role of nuclear weapons to compensate for the growing conventional imbalance, dramatically enhancing nuclear risks in peacetime, crisis and war. The alternative to open-ended competition is to normalize Pakistan's relations with India and to reorient military resources toward internal security threats. Unless and until national security managers actively seek more normal relations, this essay has suggested targeted areas of restraint that could minimize some foreseeable dangers.

For Washington, this essay suggests a substantial decrease in certain conventional military aid to Pakistan and a selective diminution of certain defense technology transfers to India. These measures constitute modest attempts to manage a very difficult transition in the South Asian security environment. Significant changes in the regional conventional balance will occur whether or not decision makers in New Delhi, Islamabad, Rawalpindi, Washington and Beijing are prudent and thoughtful. The steps advocated here could help avert some of the risks inherent in the transformation of South Asia's military environment.[90]

Notes

1. "Fernandes Does Not Rule Out Conventional War with Pak.," *The Hindu* [Chennai], Jan. 6, 2000.

2. Bruce O. Riedel, "South Asia's Looming Arms Race," *Wall Street Journal*, April 7, 2011.

3. Walter Ladwig, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security* vol. 32, no. 3 (Winter 2007/2008): 158-90.

4. Carl von Clausewitz, *On War*, eds. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989), 86.

5. In 1965, Pakistani armor included 352 M47 and M48 Patton tanks, 308 M4 Shermans, and 96 M24 Chaffee light tanks. India by comparison had 186 British-designed Centurions, 332 Shermans, 90 French-built AMX-13 light tanks, and perhaps 50 combat-ready PT-76 light tanks. Harbakhsh Singh, *War Despatches: Indo-Pak Conflict, 1965* (New Delhi: Lancer, 1991), 7. Lachhman Singh Lehl also accounts for 150 light Soviet PT-76 tanks, but does not include PT-76 units in his list of armored regiments except for one regiment that he lists as "under conversion." Lehl, *Missed Opportunities, Indo-Pak War 1965* (Dehra Dun: Natraj Publishers, 1997), 67-8. The PT-76 does not appear until the 1966 issue of the

International Institute for Strategic Studies' *Military Balance*, which states that it is part of mixed reconnaissance regiments along with the AMX-13. *Military Balance* (London: IISS, 1966), 36. John Gill explains that only one regiment of a planned three PT-76 units was ready for combat. Gill, "India-Pakistan: Order of Battle in the 1965 War," unpublished manuscript (Washington: no date given). Current figures will be discussed in greater detail below.

6. This account draws heavily from John H. Gill, "An Atlas of the 1971 India-Pakistan War: The Creation of Bangladesh", Near East-South Asia Center Occasional Paper (Washington: National Defense University, 2003).

7. See International Institute for Strategic Studies, *Military Balance* (London: IISS, 2011 ed.) for figures, along with Defense Security Cooperation Agency, "Pakistan – TOW-2A Anti-Armor Guided Missiles," News Release, Dec. 7, 2006; see SIPRI Arms Transfers Database for different figures on the HJ-8 cruise missile than IISS, accessed May 3, 2011, available at http://www.sipri.org/contents/armstrad/at_data.html; and Vivek Raghuvanshi, "India's BDL to Build Milan 2T Missiles," *Defense News*, Feb. 3, 2009.

8. For an early discussion, see John J. Mearsheimer, *Conventional Deterrence* (Ithaca, N.Y.: Cornell University Press, 1983), 189-198.

9. See Gulshan Luthra, "India Set to Acquire Precision Bomb Technology," *India Strategic* [Delhi], July 2007. Available at http://www.indiastrategic.in/topstories13.htm.

10. The Indian Air Force claims strikes aimed at operational interdiction of supplies and command and control targets of Pakistan's Northern Light Infantry (NLI) led to decisive battlefield effects, whereas the Indian Army focuses more on the role of ground-level fighting and close artillery and air support. While data on Pakistani thinking about the Kargil venture improved in the mid-2000s, there is not enough granular detail on the Pakistani side to adjudicate fully whether Indian air strikes did alter the course of the conflict.

11. Robert Oakley, US Ambassador to Pakistan during the 1990 crisis, assessed that post-crisis confidence-building measures implemented by India and Pakistan reduced the risks of crisis spirals in South Asia. See Michael Krepon and Mishi Faruqee, eds., "Conflict Prevention and Confidence-Building Measures in South Asia: the 1990 Crisis," Occasional Paper, no. 17 (Washington: The Henry L. Stimson Center, April 1994), 9.

12. Ashling O'Connor, "City that Never Stops Falls Silent to Tribute to Dead," *The Times* [London], June 19, 2006; and "India Police: Pakistan Spy Agency Behind Mumbai Bombings," *CNN World*, Sept. 30, 2006.

13. V. K. Sood and Pravin Sawhney, *Operation Parakram: The War Unfinished* (New Delhi: Sage, 2003), 61-2.

14. Steve Coll observed during a 2009 visit that the hospital operated by Jamaat-ud-Dawa had fewer patients than its capacity allowed "because people are afraid India may hit this Muridke complex." Steve Coll, "The Back Channel," *The New Yorker*, March 2, 2009.

15. See Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis*, (Washington: The Henry L. Stimson Center, 2006) and Polly Nayak and Michael Krepon, *The Unfinished Crisis: US Crisis Management after the 2008 Mumbai Attacks* (Washington: Stimson Center, February 2012).

16. For this and other mistakes made by Kargil's planners, see Peter R. Lavoy, Feroz Hassan Khan, and Christopher Clary, "Pakistan's Motivations and Calculations for the Kargil Conflict," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter R. Lavoy (New York: Cambridge University Press, 2009), particularly 86-91.

17. Arun Saghal has discussed similar tactics to neutralize forward deployed Chinese units along the Sino-Indian border. Saghal, "China's Military Modernization: Responses from India," in *Strategic Asia*, 2012-2013, eds. Ashley Tellis and Travis Tanner (Washington: National Bureau of Asian Research, 2012), 295.

18. "Navy, Pakistan," in *Jane's Sentinel Security Assessment - South Asia*, updated Sept. 20, 2010.

19. IISS, *Military Balance* (2011 ed.), "RGM-84/UGM-84 Harpoon (GWS 60)," in *Jane's Naval Weapon Systems*, updated Dec. 3, 2010, and "HQ-11 and HHQ-11 (LY-60/FY-60 and RF-11)," in *Jane's Strategic Weapon Systems*, updated Dec. 3, 2010. Jane's suggests that three Tariq frigates have been fitted with the LY-60, while IISS lists only two frigates with the LY-60.

20. US Defense Security Cooperation Agency, "Former US Naval Ship Sails to its New Homeport in Pakistan," March 25, 2011; IISS, *Military Balance* (2012 ed.), 273, erroneously omits the Harpoon capacity, which is not standard for the US frigates of this class.

21. IISS, *Military Balance* (2011 ed.); "CSS-N-4 'Sardine' (YJ-8/C-801); CSS-N-8 `Saccade' (YJ-2/YJ-82/YJ-12/C-802/Noor or Koor)," in *Jane's Underwater Weapon Systems*, updated March 16, 2011; and "HQ-7/HHQ-7 (RF-7, FM-80/-90 and CSA-4/-5)," in Jane's *Strategic Weapon Systems*, updated Dec. 2, 2010.

22. IISS, *Military Balance* (2011 ed.); and "CSS-N-4 'Sardine' (YJ-8/C-801); CSS-N-8 `Saccade' (YJ-2/YJ-82/YJ-12/C-802/Noor or Koor)," in *Jane's Underwater Weapon Systems*.

23. "Pakistan's submariners are highly regarded by foreign experts." Brian Cloughley, "Pakistan's Small Navy Packs a Punch," *Jane's Navy International* 105, no. 2 (March 2000).

24. "Hasmat (Agosta 70) class," *Jane's Fighting Ships*, updated Feb. 2, 2011.

25. "Khalid (Agosta 90B) class," *Jane's Fighting Ships*, updated March 10, 2011; Jon Rosamond, "Pakistan Commissions AIP-Equipped Agosta 90B," *Jane's Navy International*, Sept. 26, 2008. All three submarines should be fitted with AIP and back in service no later than 2013.

26. "Cosmos Class MG110," *Globalsecurity.org* (accessed June 26, 2011), http://www.globalsecurity.org/military/world/pakistan/mg110.htm.

27. Pakistan Navy, "Naval Air Arm," http://www.paknavy.gov.pk/air_arm.html (accessed June 26, 2011).

28. Given ongoing upgrades of Pakistan's P-3s as well as new deliveries, the number of aircraft listed for Pakistan varies widely from source to source, so these numbers contain some degree of uncertainty. Muhammed Saleh Zaafir, "Pakistan to Ask US for Two More Orion Planes," *The News International* [Pakistan], May 24, 2011; "Amphibious and Special Forces, Pakistan: Maritime Air Support," *Jane's Amphibious and Special Forces*, posted June 6, 2011; "Pakistan's P-3 Orion Maritime Aircraft – and Their Harpoons," *Defense Industry Daily*, http://www.defenseindustrydaily.com/Pakistans-P-3-Orions-05972/ (updated June 20, 2011), also "US to Replace Two P3C Orion Aircraft," *Dawn* [Pakistan], June 17, 2011; and IISS, Military Balance (2012 ed.): 273.

29. The figure of 25 aircraft comes from the following deductive steps. Jane's says, "No. 8 (Mirage) Squadron at Masroor is dedicated to the maritime strike/fleet defence role and would only join the land/air battle in an extreme emergency." It then proceeds to list that No. 8 squadron has both Mirage-5PA2 and –PA3 variants, variants not operated elsewhere in the Pakistan Air Force. Later it lists Pakistan's active inventory as 15 Mirage-PA2s and 10 Mirage-PA3s. However, at one point it says the Mirage-PA2s are ground-attack, not sea-attack platforms. To further confuse the point, IISS's *Military Balance* says at one point that a squadron of Mirage-IIIs are dedicated to sea-attack, but at a later point says that 10 Mirage-PA3s serve that role. "Pakistan – Air Force," *Jane's World Air Forces*, posted January 20, 2011; and IISS, *Military Balance* (2011 ed.), 265.

30. IISS, *Military Balance* (2011 ed.), 239; also "INS Chakra inducted into Navy," *The Hindu*, April 4, 2012.

31. "Nuclear safety, nuclear stability and nuclear strategy in Pakistan" (Como, Italy: Landau Network, Centro Volta, January 2002), http://www.pugwash.org/september11/pakistan-nuclear.htm.

32. Julian Corbett, *Some Principles of Maritime Strategy*, new ed. (New York: Longmans, Green, and Co., 1918), 11-12.

33. On this general point, albeit focused more on great rather than middle powers, see John Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton, 2001), 87-96.

34. Nadkarni, "Pakistan Navy Gets New Port," *Rediff.com*, July 27, 2000, http://www.rediff.com/news/2000/jul/27nad.htm (accessed March 14, 2012).

35. Frontier Works Organization, Government of Pakistan, "Makran Coastal Highway Project," http://www.fwo.com.pk/index.php?option=com_k2&view=item&id=176:makran-coastal-highway-project-mchp (accessed March 14, 2012).

36. All Pakistan Press, "Pre-feasibility for 411 mile rail link between Pakistan's town of Havelian and Khunjerab completed," *Pamir Times*, July 3, 2011, http://pamirtimes.net/2011/07/03/feasibility-for-411-mile-rail-link-between-pakistan%E2%80%99s-town-of-havelian-and-khunjerab-completed/.

37. Office of Commander-in-Chief, Fleet, Royal Navy, "Loss of HMS Sheffield – Board of Inquiry" (Northwood, United Kingdom: Ministry of Defence, May 28, 1982). Available at http://www.clashofarms.com/files/BOI_Rpt_HMS_Sheffield_May82.pdf.

38. Lawrence Freedman, *The Official History of the Falklands Campaign: The Origins of the Falklands War, vol. II* (New York: Routledge, 2005), 481-2.

39. Comptroller and Auditor General, Government of India, "Union Audit Reports: Defence Services: Air Force and Navy, 2008-2009 Performance Audit," report no. 7 of 2010-2011, chapter 2. Available at http://www.cag.gov.in/html/reports/defence/2010-11_7AFN-PA/chap2.pdf.

40. Also see Richard Scott, "Indian Audit Report Slams LUSH Sea Harrier Update," *Jane's Missiles and Rockets* (Aug. 27, 2010).

41. I thank Laurence Silberman of the RAND Corporation and formerly of the Royal Navy for helping me think through these technological trends.

42. Freedman, *The Official History of the Falklands Campaign: The Origins of the Falklands War, vol. II*, 291-3. The Conquerer had advantages that a Pakistani diesel-electric submarine would not, most importantly faster submerged speed.

43. See Ministry of Commerce, Government of Pakistan, "Trade Statistics," http://www.commerce.gov.pk/?page_id=7 (accessed Oct. 6, 2011); and US Central Intelligence Agency, "Pakistan," *World Factbook* (updated Sept. 27, 2011).

44. Khaleeq Kiani, "Plan for 20-day Oil Stocks to Avert Shortage," *Dawn* [Pakistan], Oct. 11, 2010.

45. Air supremacy, air dominance, and air parity are all levels of air dominance. Air parity implies military forces from both sides encounter significant interference from the opposing air force. Air superiority implies that interference is not prohibitive, though it can still be extant. Air supremacy implies that interference is no longer effective. See United States Air Force, Counterair Operations, Air Force Doctrine Document 2-1.1 (Oct. 1, 2008), 3, available at http://www.fas.org/irp/doddir/usaf/afdd3-01.pdf.

46. Emphasis added. Ladwig, "A Cold Start for Hot Wars?," 160.

47. IISS, *Military Balance* (2002 ed.), 134.

48. Tariq Ashraf, "Air Power Imbalance and Strategic Instability in South Asia," paper presented to conference on "Strategic Stability in South Asia," the Naval Postgraduate School, Monterey, Calif., June 29-July 2, 2004.

49. Defense Security Cooperation Agency, "Pakistan F-16A/B Mid-Life Update Modification Kits," News Release, transmittal no. 06-10, June 28, 2006; "AN/APG-68(V)," *Jane's Avionics* (updated April 4, 2011); and "AN/APG-66(V) Fire Control Radar (FCR)," *Jane's Avionics* (updated Oct. 1, 2010).

50. IISS, *Military Balance* (2012 ed.), 274. Military Balance lists 29+ with "150+" on order. Jane's states that the expected JF-17 end strength for Pakistan is 240 total aircraft. Online entry for "CAC FC-1 Xiaolong," *Jane's All the World's Aircraft* (updated Jan. 19, 2011).

51. Online entries for "CAC FC-1 Xiaolong," Jane's All the World's Aircraft and "SD-10, SD-10A (PL-12)," *Jane's Air-Launched Weapons* (updated Jan. 20, 2011).

52. IISS, *Military Balance* (2011 ed.).

53. Greg Waldron, "Pakistan to Receive First ZDK-03 AEW&C Aircraft," *Flight International*, Nov. 24, 2010, http://www.flightglobal.com/news/articles/pakistan-to-receive-first-zdk-03-aewc-aircraft-350025/. Also IISS, *Military Balance* (2012 ed.).

54. Ashraf, "Air Power Imbalance and Strategic Instability in South Asia."

55. See, e.g., Scott Baldauf, "Indian Air Force, in War Games, Gives US a Run," *Christian Science Monitor*, Nov. 28, 2005.

56. IISS, *Military Balance* (2011 ed.) and various entries, *Jane's Land-Based Air Defense* and *Jane's Electro-Optic Systems*.

57. See Gulshan Luthra, "India Set to Acquire Precision Bomb Technology," *India Strategic* [Delhi], July 2007, available at http://www.indiastrategic.in/topstories13.htm.

58. Randy Kaufman, "Precision Guided Munitions: History and Lessons for the Future", master's thesis (Maxwell Air Force Base, AL: School of Advanced Air and Space Studies, Air University, June 2004), 70.

59. Two Pakistani infantry brigades, reinforced by two armored regiments, made a push toward the Indian town of Longewala. There they surprised an Indian division that was nevertheless able to stop the Pakistani advance long enough for the Indian Air Force to launch attacks against the tanks operating in the open desert terrain. Between ground and air operations, the Pakistani brigades retreated with over 20 tanks and 100 other vehicles lost. Gill, An Atlas of the 1971 India-Pakistan War, 56-7.

60. Ladwig, "A Cold Start for Hot Wars?," 182-3.

61. Daryl G. Press, "The Myth of Air Power in the Persian Gulf War," *International Security* vol. 26, no. 2 (2001): 5-44.

62. Pinaki Bhattacharya, "Army and IAF Face Off Over New War Plan," *India Today* [Delhi], Dec. 14, 2009.

63. Sujan Dutta, "Army by Board, Navy by Sea," *The Telegraph* [Calcutta], April 5, 2009, http://www.telegraphindia.com/1090405/jsp/frontpage/story_10776641.jsp; "India Unveils Ambitious BrahMos Missile Expansion Plan," *Aviation Week* and *Space Technology*.

64. Gareth Jennings, "Aero India: Raytheon Reveals JSOW Drops," *Jane's Missile and Rockets* (posted Feb. 24, 2011); Raytheon, "Raytheon Conducts Free-Flight Demonstration of JSOW-C from F-16IN," News Release, Feb. 10, 2011, http://raytheon.mediaroom.com/index.php?s=43&item=1756&pagetemplate=release.

65. See, e.g., Omar Waraichi, "An Inside Look at the US-Pakistan Feud over Drones," *Time*, April 23, 2011.

66. The most cited piece on Cold Start is Ladwig, "A Cold Start for Hot Wars?," 158-90.

67. See, e.g., Pravin Sawhney, "Punching Hard: Learning from Operation Parakram, the Army Sharpens Its Pro-Active Strategy," *Force* (Delhi), January 2008.

68. See comments by current Indian Army chief in Manu Pubby, "No 'Cold Start' Doctrine, India Tells US," *Indian Express*, Sept. 9, 2010.

69. Also see Shashank Joshi, "India's Military Instrument: A Doctrine Stillborn," *Journal of Strategic Studies* vol. 36, no. 4 (2013): 512-540.

70. See discussion in V.K. Sood and Pravin Sawhney, *Operation Parakram: The War Unfinished* (New Delhi: Sage, 2003), 73.

71. See discussion in Christopher Clary and Vipin Narang, "Doctrine, Capabilities, and (In)stability in South Asia," *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

72. Shaukat Qadir, "View: A Cold Start," *Daily Times* [Pakistan], Sept. 3, 2005, http://www.daily-times.com.pk/default.asp?page=story_3-9-2005_pg3_6.

73. Ibid.

74. The White House, "Report on Afghanistan and Pakistan, March 2011," available at http://abcnews.go.com/images/Politics/UNCLASS%20Report%20on%20Afghanistan%20and%20Pakistan.pdf; 70,000 number consistent with "'The Big Interview' – Wall Street Journal," comments by Admiral Mike Mullen, chairman of the Joint Chiefs of Staff, Washington, DC, Wednesday, Oct. 13, 2010. Available at http://www.jcs.mil/speech.aspx?ID=1475 (accessed June 29, 2011).

75. "In Quotes: Indian Parliament Attack," *BBC News*, Dec. 13, 2001, http://news.bbc.co.uk/2/hi/south_asia/1708654.stm.

76. Sood and Sawhney, 61-2.

77. David O. Smith, "The 2001-2002 Standoff: A Real-Time View from Islamabad," in *The India-Pakistan Military Standoff: Crisis and Escalation in South Asia*, ed. Zachary Davis (New York: Palgrave MacMillan, 2011), 193-6.

78. Sood and Sawhney, 59.

79. Mehta, "India Was on the Brink Twice," *Rediff.com*, Jan. 2, 2003; and Sawhney, "Punching Hard: Learning from Operation Parakram, the Army Sharpens Its Pro-Active Strategy," *Force* [Delhi], January 2008.

80. See "Senators Joe Lieberman and John McCain Discuss Their Tour of Afghanistan, India and Pakistan with Seven Other Senators," *The Early Show*, CBS News Transcripts, Jan. 8, 2002 and George Jahn, "US Senators Say Pakistan Ready for Major Gesture to Defuse Crisis with Pakistan," Associated Press, Jan. 8, 2002.

81. "Musharraf Speech Highlights," *BBC News*, Jan.12, 2002, http://news.bbc.co.uk/2/hi/south_asia/1757251.stm.

82. Smith, "The 2001-2002 Standoff," 198.

83. Shashank Joshi, "Was the Indian Army Ready for War?" *Mail Today* [Delhi], Jan. 17, 2009.

84. I assume there are important advantages for defense. If India had 2:1 ratio of combat power at the theater level, it would be able to prevail quite easily, because in many local areas it would be able to generate

3:1 or greater offense-defense ratios. If India has a 1:1 ratio of combat power, I assume it would have considerable difficulties even though it might be able to generate some local encounters with more favorable ratios. Based on very preliminary quantitative analysis not presented here, but available upon request, I believe the number may be closer to 1:1 at the theater level on day one of a conflict than it is to 2:1. For a discussion when 3:1 ratios may still not be sufficient for offensive success, see Joshua M. Epstein, *Conventional Force Reductions: A Dynamic Assessment* (Washington: Brookings Institution, 1990), 69-70.

85. Stockholm International Peace Research Institute (SIPRI), "SIPRI Military Expenditure Database," http://www.sipri.org/research/armaments/milex/milex_database.

86. Textron Systems Corporation, "Textron Defense Systems Receives $257M Order to Supply Sensor Fuzed Weapons to Indian Air Force," News Release, Feb. 9, 2011, http://investor.textron.com/phoenix.zhtml?c=110047&p=irol-newsArticle&ID=1526733; also US Defense Security Cooperation Agency, "India – CBU 105 Sensor Fuzed Weapons," transmittal no. 08-105 (Washington: Defense Security Cooperation Agency, Sep. 30, 2008).

87. "CBU-97/B and CBU-105/B Sensor Fuzed Weapon (SFW), STS," *Jane's Air-Launched Weapons*, posted March 28, 2011.

88. After a 2010 Prithvi II test, Indian officials claimed "the missile had achieved single digit accuracy reaching close to zero circular error probability." *Press Trust of India*, "Two Prithvi-II Missiles Test-Fired Successfully," *NDTV* (Dec. 22, 2010), http://www.ndtv.com/article/india/two-prithvi-ii-missiles-test-fired-successfully-74140.

89. Walker, summary of "Pakistan's Evolution as a Nuclear Weapons State: Lt. Gen. Khalid Kidwai's CCC Address."

90. A short summary of this research appeared in the spring 2012 edition of the MIT Center for International Studies newsletter Précis. I would like to thank Jack Gill, Phil Haun, Barry Posen, Michael Krepon, Vipin Narang, and David O. Smith for comments on earlier drafts, as well as working group participants at the Stimson Center in Washington, and members of the International Relations Work-in-Progress and Strategic Use of Force working groups at MIT.

Strategic Restraint Regime 2.0

Feroz Hassan Khan

Every kind of peaceful cooperation among men is primarily based on mutual trust and only secondarily on institutions such as courts of justice and police. … Peace cannot be kept by force; it can only be achieved through understanding. … There's been a quantum leap technologically in our age, but unless there is another quantum leap in human relations, unless we learn to live in a new way toward one another, there will be a catastrophe. — Albert Einstein

India and Pakistan face immense obstacles in learning to live peacefully as nuclear-armed neighbors. Fifteen years after demonstrating their nuclear capabilities, they have been unable to make headway toward a formalized peace and security framework. Instead, their strategic rivalry poses increasingly vexing challenges to maintaining and ensuring deterrence stability.[1] Current mechanisms for Confidence-Building Measures (CBMs) and Nuclear Risk Reduction Measures (NRRMs) are insufficient. Construction of a more ambitious and sustainable regional peace and security architecture will be extremely difficult but necessary to usher in an era of peace and détente on the Subcontinent.

The shifting international and regional roles of India and Pakistan pose both prospects and challenges for regional restraint. Continued tensions between the two countries point toward the fragility of bilateral relations. Three intertwined conditions are at the heart of South Asian instability: the terror infrastructure in Pakistan that operates freely in the region, India's conventional force buildup, and the lowering of the threshold for nuclear weapons' use resulting from diversified capabilities and evolving military doctrines. Unless these interlocking conditions are addressed and ameliorated, South Asia will continue to follow the post-partition pattern of short cycles of improved bilateral relations followed by an exceptional incident that abruptly derails prospects for normalization. This trend has continued regardless of the nature of coalition governments in India and civil or military governments in Pakistan. The continued disruption of attempts at normalization lends credence to conspiracy theories and strengthens the influence of hardliners. The media in both countries swing from *Aman Ki Asha* ("Hope for Peace") to *Akhri Yud* ("Decisive/Final War"). Two generations have ricocheted between hope and fear; their ultimate quest for a lasting peace in the Subcontinent continues to evade them.

After the 1998 nuclear tests, President Bill Clinton described South Asia as the "most dangerous place in the world."[2] He undertook a diplomatic initiative to construct a framework for strategic restraint in the region. The government of Pakistan counterproposed a strategic restraint regime in 1998. Both will be described below. The government of India has yet formally to propose a set of interwoven initiatives that could constitute a strategic restraint regime.

The 1998 Pakistani proposal — SRR 1.0, for the purposes of this essay — did not gain traction for four reasons: (1) Pakistan linked conflict resolution with conventional and nuclear force restraints, (2) India refused to consider conventional force

constraints, (3) Pakistan declined to formalize any nuclear restraint agreement in the absence of conventional force restraint, and (4) Washington quickly lost interest in Pakistan's proposal. These factors will be discussed below.

In September 2013, Prime Minister Nawaz Sharif gave a speech at the United Nations General Assembly articulating two important themes. He reaffirmed Pakistan's commitment to dialogue with India and its willingness to "build on the Lahore Accord signed in 1999, which contained a road map for the resolution of our differences through peaceful negotiations." He added, "Our countries have wasted massive resources in an arms race. We could have used these resources for the economic well-being of our people. We still have that opportunity."[3] In light of past failures, how might this constructive rhetoric be converted into actionable bilateral agreements to build credible regional restraint?

This essay underscores the importance of the resumption of strategic dialogue to promote deterrence stability between India and Pakistan. I propose a cooperative security framework that creates new constituencies for peace and stability, where the security paradigm is replaced with economic trade liberalization and people-to-people contact. This framework implies a mutually negotiated agreement on the nonuse of force to settle disputes and nondeployment of nuclear weapons as key elements on the best way forward.[4] Strategic restraint that is confined to nuclear weapons can only proceed in limited ways unless conventional forces are also restrained.

To create a realistic and durable strategic restraint regime, old initiatives need to be remodeled and new possibilities examined. The first section of this essay analyzes proposals for a strategic restraint regime emanating after the 1998 nuclear tests, examines the reasons for their limited success, and highlights their relevancy — or lack of relevancy — today. The next section proffers a new strategic restraint regime for South Asia — SRR 2.0 — that might be considered for forthcoming dialogue and negotiation. The last section outlines challenges to a new strategic restraint regime and illustrates how my SRR 2.0 proposal might address and overcome some of these barriers. Ultimately, this impasse can only be overcome if new constituencies in India and Pakistan are developed through economic liberalization and if they are convinced that a strategic restraint regime that includes both conventional and nuclear mechanisms is a worthwhile pathway to regional stability.

Prior Proposals for Strategic Restraint

In the spring of 1998, the hawkish Indian Bharityia Janata Party (BJP) formed a coalition government with a party platform rejecting "the notion of nuclear apartheid" and attempts "to impose a hegemonistic nuclear regime." The incoming BJP government declared, "We will not be dictated to by anybody in matters of security requirements and in the exercise of the nuclear option."[5] As the BJP prepared to form a coalition government, Pakistan was preparing to conduct its first major missile flight test of the liquid-fueled Ghauri (Hatf-5) ballistic missile.[6]

High regional tensions prompted Washington to ask both countries to undertake a "strategic pause" in March 1998. The Clinton administration proposed five points of adherence: avoiding flight tests of ballistic missiles, avoiding public display of new weapons, avoiding public announcements heralding accomplishments in nuclear/missile developments, avoiding the deployment of missiles near common borders, and not declaring nuclear weapon status.[7] Pakistan initially postponed the March Ghauri

(Hatf-5) flight test in deference to a US request, even though it risked being seen as deferring an important strategic milestone to pressure from Washington.[8] After reexamining this decision, Pakistani authorities decided to conduct the Ghauri flight test on April 6, 1998. In May, both India and Pakistan conducted nuclear tests, bringing an abrupt halt to the Clinton administration's request for a "strategic pause." On June 4, UN Resolution 1172 condemned both countries and outlined stringent sanctions and conditions for their relaxation.[9]

In July 1998, President Clinton tasked Deputy Secretary of State Strobe Talbott to lead a strategic dialogue with both India and Pakistan. The dialogue led by Talbott revolved around a "four plus one" agenda, which was euphemistically referred to as an elephant with "four legs and a trunk" or a "tail." The four legs of the process were: (1) the prompt, unconditional adherence to the Comprehensive Test Ban Treaty (CTBT); (2) the cessation of production of unsafeguarded fissile material and the entry into negotiations on a Fissile Material Cutoff Treaty (FMCT); (3) the adoption of a minimum deterrent posture with significant restraints on the production of nuclear weapons, their delivery systems and a commitment on nondeployment; and (4) the adoption of international norms and export control guidelines on sensitive technology. The fifth point of the Clinton agenda — the elephant's trunk or tail — was the resumption of a direct dialogue between India and Pakistan to resolve all outstanding disputes, including Kashmir. The elephant metaphor was subject to differing anatomical interpretations. Pakistan insisted on settlement of the Kashmir dispute as a core issue. Kashmir was, therefore, in Islamabad's view, the elephant's "trunk," underscoring the fundamental importance of international recognition for a Kashmir settlement. For India, Kashmir was a settled issue and of distinctly lesser importance than the Clinton administration's other agenda items. For New Delhi, the fifth US element was the "tail" of the elephant.

Talbott chose to engage India and Pakistan separately, hoping to create conditions that would allow reversal or mitigation of regional instability in the post-nuclear-test environment. Talbott's deputy in this initiative, Robert J. Einhorn, led the technical discussions. The State Department proposed a "minimum deterrent posture" to illustrate its proposals, employing a non-paper for this purpose. Whether the non-papers provided to India and Pakistan were identical has not been publicly confirmed; the analysis provided here is derived from the non-paper given to Pakistan.[10] The US-proposed "minimum deterrent posture" outlined mutual steps related to missiles, nuclear-capable aircraft and nuclear weapons. Six restriction were proposed: no flight-testing of missiles other than the Ghauri and Shaheen; only three flight tests to be conducted per year (one Ghauri and two Shaheen tests); the provision of 14 days' advance notice to the United States and all neighboring states before flight tests; limitations of the production of missile airframes to a specified number (to be determined); the geographical separation of missile systems and warheads; and the segregation of nuclear-dedicated and conventional-dedicated combat aircraft.[11]

The US "minimum deterrence posture" proposal was initially deemed by Pakistani authorities to be too intrusive. Upon closer examination, some aspects that did not compromise national security were opened for deliberation and discussion.[12] Among the five (four plus one) proposals, Pakistan (and India) had already declared a moratorium on further nuclear explosive testing but were unable to sign the CTBT for domestic political reasons. Notifications of flight tests could be accepted in principle, with the duration of pre-notification and the types of missiles to be negotiated with

India. Nuclear weapon storage sites were not contemplated to be near the border, which could become a topic for discussion. Pakistani authorities had reservations about accepting the termination of fissile material production but initially agreed not to be an obstacle to the commencement of FMCT negotiations in the Conference on Disarmament in Geneva. Discussions over the disposition of nuclear components, warhead preparations and the location of delivery means were deemed intrusive and compromising to operational security, and thus unacceptable. Because of the complexities involved, Pakistani authorities sought time to consider the US suggestions, agreeing to develop a comprehensive response to the US non-paper in about two months.

Pakistan's Proposal

In September 1998, Pakistan transmitted a non-paper titled, "Strategic Restraint Regime" (SRR) to the United States in New York and to the Indian government a month later during a bilateral dialogue in Islamabad.[13] The concept of the SRR was to develop a voluntary regional restraint regime along with CBMs and NRRMs on nuclear, missile and conventional force capabilities. Three intertwined sets of proposals of conflict resolution, conventional force restraint and nuclear restraint were proffered. Conventional and nuclear restraint was considered interdependent; conflict resolution required an overarching political framework promoting peace and stability.

Pakistan's non-paper suggested five principles on which to proceed: (1) creation of a political climate and culture of conflict resolution conductive to reducing tensions, (2) creation of a fair SRR that provided proportionate and balanced obligations on all sides, (3) recognition that Pakistan's nuclear deterrent posture was affected by conventional force imbalances and structural asymmetries, (4) creation of an institutionalized mechanism to prevent escalation in crises, and (5) recognition that supreme national security interests might warrant withdrawal from SRR arrangements.[14]

New Delhi was not very receptive to Pakistan's proposals, arguing that they were drawn from the superpower experience during the Cold War and were not applicable to the subcontinent, that they discussed conventional restraints instead of focusing solely on nuclear restraints, and that they did not take into account India's other security considerations.[15] The United States and Pakistan continued substantive deliberations at the expert level. Pakistan's positions were that nuclear restraint made sense in principle because it could foster a recessed nuclear posture, which would be more conducive to safety, the prevention of accidents, and simplified nuclear management. Moreover, the geographical separation of warheads and launchers was a reality in both India and Pakistan; it therefore made sense to formalize the existing nondeployed status of strategic forces. With respect to missile restraints, Pakistan proposed a limitation not to produce or acquire ballistic missiles with ranges greater than 2,500 km and an agreement not to mate missile frames with actual warheads. Pakistan also proposed mutual agreements with India not to produce or acquire submarine-launched ballistic missiles (SLBMs) and not to develop or deploy missile defenses. In essence, Pakistan sought to constrain Indian strategic options. Also, it aimed to codify conditions of mutual assured destruction in a South Asian version of the Anti-Ballistic Missile Treaty.[16]

Pakistan further maintained that nuclear restraint could only be guaranteed through reciprocal conventional force restraint, including barriers to short-notice, large-scale mobilizations. Pakistan's proposals were incremental and conceptual rather than prescriptive, drawing from the principles of the Treaty of Conventional

Armed Forces in Europe (CFE).[17] Pakistan proposed four areas of dialogue to develop agreed mechanisms: designation of offensive forces; creation of low-force zones (LFZs); avoidance of conventional force mobilization as a coercive instrument; and proportionate force reductions patterned on a mutual, balanced force-reduction agreement under negotiation during the Cold War. New Delhi rejected the linkage with conventional forces restraint and instead identified low-intensity conflict and cross-border terrorism emanating from Pakistan as the root of the strategic stability problem.

Assessing Pakistan's Proposal

Pakistan's proposed SRR package in 1998 and India's skeptical response resulted in a stalemate. Elements of this package could have contributed to stabilization; others were nonstarters and were not taken seriously. Pakistan's prior record of diplomatic gamesmanship from the mid-1970s detracted from the genuinely useful aspects of the proposed SRR.[18] Pakistan's diplomatic strategy has been to put the onus on India for lack of progress, indicating a readiness to follow India's lead in joining international treaties that New Delhi was reluctant to sign. This tactic bought time and deflected pressure from the international community, while allowing Pakistan to seize the moral high ground. Islamabad's diplomatic posture was cost-free, as New Delhi offered to renounce its nuclear weapon program only with full global disarmament. Meanwhile, India and Pakistan were covertly pursuing their nuclear weapon programs.

Overall, Pakistan's 1998 SRR proposal was a genuine offer from the weaker state that saw virtue in restraint and in avoiding a competition with an adversary enjoying greater resources and facing less international opposition in its quest for nuclear capability. Pakistani authorities anticipated that New Delhi would be hesitant toward conflict resolution, given India's view that the Kashmir issue was settled, except when stoked by acts of terrorism. New Delhi's demand to eliminate the infrastructure of terrorism was justified, but as difficult for Pakistan to address as conflict resolution was for India.

Washington had little enthusiasm for Pakistan's SRR proposal and openly tilted toward India and its positions. The combination of linking strategic restraint to conflict resolution, Indian rejection of conventional force restraint, Pakistani rejection of nuclear force restraint, and diminished US interest resulted in the collapse of Pakistan's offer of an SRR. The Kargil misadventure in 1999 further doomed Pakistan's proposed SRR as a nonstarter. Nevertheless, it was not a complete failure: the Lahore Memorandum of Understanding (MoU) in February 1999 adopted substantive principles from the SRR. The Lahore Summit and its MoU provided a promising framework for the future.

Contours of a New Strategic Restraint Regime

The prior failures of repeated attempts to normalize relations between India and Pakistan are not determinative: new opportunities can arise when political alignments allow national leaders to recognize structural and perceptive complexities rather than exploit vulnerabilities. Enlightened leaders can still undertake bold steps that simultaneously adapt to a new environment as well as shift away from objectives that are deemed undesirable or unachievable. This transformation requires high levels of time-consuming introspection and costly political will. The 1999 Lahore MoU resulted in modest progress, including bilateral consultations on security and disarma-

ment, a review of existing communications channels, and periodic assessments of the existing CBMs. More substantive accomplishments are needed.

Pakistan's 1998 SRR was premised on the assumption that conflict resolution or substantive progress toward the resolution of key disputes was a prerequisite for establishing a restraint regime. One lesson that could be learned from this experience is that restraint is required even when conflict is not resolved. Conflict resolution over Kashmir will continue to be a daunting challenge. A better strategy would be to identify pathways for success through initially negotiating and reaching agreements on less intractable issues. An incremental process is far preferable to approaches that create impasses. In part, Pakistan's 1998 SRR did not make progress because it was linked to unobtainable near-term goals of conflict resolution and the elimination of cross-border terrorist infrastructure. The fifth aspect — the "tail" or "trunk" of the US proposal for strategic restraint — was also problematic from the very outset, since India refused to accept Kashmir as the core issue, while Pakistan insisted otherwise. When a process of strategic restraint has no "legs," it doesn't matter whether its trunk or tail are moving.

Conflict resolution and dismantling of terror infrastructure are far too complicated and will take too much time to be tied to a strategic restraint regime. To the extent possible, these issues must be firewalled from near-term steps to reduce prospects for a sudden military crisis to spiral into uncontrolled escalation. The terrorist infrastructure problem within Pakistan is not just an issue for India; it is even more of an issue within Pakistan. Pakistan is obligated to take steps to redress this metastasized situation. Terrorism is also a regional problem requiring multilateral approaches. A reduction in tensions with India will be necessary for the Pakistani military to further redirect its conventional forces to deal with the existing terror infrastructure problem.

For any strategic restraint regime to succeed, India and Pakistan will be obliged to stand down from maximalist positions. New Delhi is unlikely to succeed in elevating its international standing and disassociating from its historic rivalry with Pakistan, unless it accommodates Pakistani concerns. For Islamabad, nuclear weapons were meant to counterbalance New Delhi, to deny Indian attempts at dictation, and to preserve national sovereignty. If nuclear weapons do, indeed, serve as an existential national insurance policy, Islamabad might well be able to find ways to accommodate India's rise as an Asian power. Clausewitz's concept of use of conventional military force as an instrument of policy is now fraught with unacceptable consequences in the context of an accelerated regional nuclear competition. Bernard Brodie's precept now applies to the Subcontinent: objective realities call for the prevention of wars rather than their prosecution.[19]

Pakistan's strategic thinking could benefit greatly from revision. There is no further need for Islamabad to use low-intensity conflict as a tool of security policy, and the loss of life from acts of terror within Pakistan for the past six years is sufficient evidence of the futility of pursuing this strategy. Even so, terrorist acts originating from Pakistan cannot be cordoned off completely, and punitive conventional force responses remain a possibility. A dangerous nexus between the use of conventional forces and nuclear weapons continues to exist, alongside the nexus between the acts of low-intensity conflict and responses with conventional forces. The only logical approach to deterrence stability is mutual strategic restraint. And strategic restraint with respect to nuclear forces cannot be entirely divorced from strategic restraint with respect to conventional forces.

SRR 2.0

A new framework and implementation strategy is now advisable for a successful and enduring SRR within the next decade. A new SRR concept — SRR 2.0 — would deconstruct Pakistan's earlier triangular approach linking conflict resolution and conventional and nuclear restraints. Instead, conflict resolution would be de-linked from nuclear and conventional restraints, and the new enterprise would be facilitated by cross-border economic trade and investments.

A new SRR might proceed on the basis of the following principles. First, create a constructive political climate of reduced tensions, using direct trade, investment and greater people-to-people contact as mechanisms for normalization. Second, refrain from the use of subconventional violence and the use of force to resolve problems. Third, while some CBMs and NRRMs might have value in their own right, true nuclear stabilization cannot be divorced from the conventional force balance. Fourth, develop institutional mechanisms to prevent crisis-triggering events. Fifth, insulate to the extent possible the pursuit of a bilateral framework to develop stabilization measures from other regional concerns, particularly those relating to China and Afghanistan.

Instead of the SRR 1.0's triangular dynamic of conflict resolution and nuclear and conventional restraint, SRR 2.0 would be based on a new triangle of economic progress and nuclear and conventional restraint. Direct economic trade and investment are essential, in any event, to removing obstacles that prevent South Asia from becoming a hub of trading states instead of the home of warring tribes, secessionism, terrorism and boundary disputes. Economic connectivity could help SRR 2.0 succeed where SRR 1.0 failed.

Conventional Force Restraints

Conventional force restraints constituted a pillar of Pakistan's SRR 1.0 proposal. India's refusal to accept this pillar or to entertain proposals for its construction contributed to the failure of Pakistan's diplomatic initiative. Nonetheless, Islamabad is unlikely to divorce Indian conventional forces from prospects of nuclear restraint. Given the history of wars on the Subcontinent and Indian attempts to use conventional forces for leverage in crises, Pakistani threat perceptions still focus heavily on conventional force imbalances. As these imbalances are growing, Pakistan is likely to continue to compete aggressively with India on the nuclear side unless its concerns over conventional capabilities are addressed in some way.

For its part, India feels obliged to improve its conventional forces to respond to acts of terror emanating from Pakistan — either through complicity or negligence — and to address growing Chinese conventional power projection capabilities. Even so, the more pressure New Delhi places on Pakistan's military with the growing conventional imbalance, the less likely it would be for Pakistani armed forces to further reorient force structure to deal with internal security threats — a reorientation that New Delhi seeks.

It will be very difficult to find an exit strategy out of these dynamics. Doctrinal understanding, if not agreement, is central to creating the basis for strategic CBMs and a restraint regime. Strategic CBMs may be defined as overlapping nuclear and conventional measures that facilitate the nondeployed status of nuclear weapons. Strategic CBMs would be greatly facilitated if New Delhi were to reconsider and revise its "proactive defense" or "Cold Start" doctrine. One approach would be to identify and place restrictions on conventional strike capabilities close to border areas, particularly

the constitution and deployment of Integrated Battle Groups.[20] Common agreements on the identification of offensive forces that might be subject to restraints, creation of LFZs and geographical separation might reduce drivers for the nuclear competition and establish footholds for deterrence stability.

Indian attempts to implement proactive defense/Cold Start concepts are apparently going slowly in any event,[21] and there may well be second thoughts about the utility of this strategy among Indian strategic analysts.[22] If fully implemented, an Indian proactive defense/Cold Start doctrine would be tantamount to fortifying the International Border and would perpetuate a standoff analogous to deployments along the Kashmir divide. The proposed SRR 2.0 would offer a very different outcome with agreed LFZs along the International Border where offensive force capabilities are recessed. The demarcation of LFZs on border areas would be mutually negotiated. Should there be requirements for the movement of additional forces into the LFZs, mechanisms to notify and monitor movements of forces toward battlefield assembly areas could be devised. These mechanisms could be useful for crisis management. In the long term, asymmetrical, proportional force reductions along the lines of the CFE Treaty would serve the interests of stability and peace on the Subcontinent. India's traditional opposition to such arrangements might soften as relations with Pakistan become more normal and if New Delhi's relations with Beijing worsen.

Air Force Restraints

The widening imbalance in air force capabilities on the Subcontinent is yet another cause of strategic anxiety in Pakistan. India's air dominance will eventually be ensured by virtue of growing qualitative and quantitative disparities.[23] The majority of the Indian air force infrastructure is across from its western border with Pakistan, warranting increased force readiness at Pakistani air bases. This state of affairs has contributed to air space violations that increase the probability of incidents that could prompt escalatory actions. While the Indian armed forces have had difficulty in becoming accustomed to joint operations, a proactive doctrine is in place calling for air and land forces to operate in concert. The more the Indian air force is tasked with carrying out responses to mass casualty acts of terrorism originating in Pakistan, the more likely clashes between the Indian and Pakistani air forces become, which may, in turn, prompt uncontrolled escalation. Air notifications and limitations along the borders have existed since 1991.[24] Nonetheless, these CBMs have not prevented violations, which have yet to trigger escalation ladders.[25] Existing CBMs pertaining to aircraft operations might be reinforced by the creation of LFZs and the creation of a communication channel between air force officers.

Maritime Restraints

Maritime issues, while important, are not as contentious as disputes on the ground over the Siachen Glacier and Kashmir. Maritime CBMs could therefore serve as ice-breakers to build trust and confidence in tackling more controversial issues. A seminal joint study carried out by two retired admirals, Hasan Ansari and Ravi Vohra, suggested pragmatic steps toward resolving the Sir Creek dispute, the repeated capture and release of fishermen and incidents at sea.[26] The Sir Creek issue might be resolved on the basis of the Thalweg Principle, which demarcates river boundaries as the most navigable channel for large ships traveling downstream.[27] The Thalweg Principle has been usefully employed in disputes between Guyana and Suriname, and between Benin and Niger. The delineation of the extension of maritime boundaries extending

from Sir Creek could have a positive, cascading effect on the treatment of fishermen and collaborative efforts in dealing with piracy.

In June 2011, a Pakistani ship, PNS Babur, operating under the flagships of a Combined Task Force (CTF) focusing on acts of piracy in the Indian Ocean, responded to a distress call. An Indian ship, INS Godavari, also responded, although not as part of the CTF. The ships brushed against each other, reflecting the absence of bilateral maritime communications, mixed command authority, and the inapplicability of the bilateral Advance Notice of Military Exercise Maneuvers and Troop Movements agreement.[28]

To avoid naval incidents, Pakistan and India might draw from and adapt the 1972 Incidents at Sea (INCSEA) agreement between the Soviet Union and the United States.[29] Continued air space violations and prospects for additional incidents at sea point to greater attention to proper implementation of existing CBMs and the negotiation of new measures.[30] An INCSEA agreement becomes even more important as India and Pakistan introduce sea-based nuclear capabilities.[31]

Nuclear Restraints

If India is able to agree upon restraints on conventional capabilities, as described above, there is little or no reason for Pakistan to waste precious resources and to continue its pursuit of tactical nuclear weapons (TNWs).[32] One useful step to halt and reverse the nuclear arms competition would be to limit and regulate expansions of weapons that are deemed strategically destabilizing. This would include not acquiring, developing or deploying ballistic missile defense (BMD) systems and multiple warheads atop missiles.[33] Strategic CBMs might include sharing information regarding the peacetime garrisons of all strategic missile units, as well as expanding existing flight-testing notification CBMs to include cruise missiles. The avoidance of using missiles for training and flight-testing during tense or hostile periods might also be advisable.

Furthermore, India and Pakistan might consider declaring the South Asian Association for Regional Cooperation (SAARC) to be a non-nuclear-weapon deployment zone. While this zone would fall short of being a nuclear-weapons-free zone, it might nonetheless serve as a useful strategic CBM. This zone would also apply to outside powers, helping to assuage the concerns of all South Asian states that their ports could be used to abet strategic power projection. In 1971, Sri Lanka proposed an Indian Ocean Zone of Peace, which was unanimously passed by the UN General Assembly.[34] Four decades later, there is an opportunity for India and Pakistan to lend substance to this initiative.

Fifteen years after Pakistan's first SRR proposal, civil servants and senior officials working on nuclear issues within India and Pakistan still do not engage in routine, bilateral communications.[35] One important subject of conversation, in light of the post-Fukushima and post-9/11 environment, relates to nuclear accidents. Another useful topic of conversation might be on an agreement not to attack each other's nuclear command centers.[36] After 15 years of mutual restraint, discussions on maintaining the moratorium of nuclear testing and signing the CTBT simultaneously might be in order. India and Pakistan might also engage in bilateral talks on how to move forward jointly to commence the FMCT negotiations. India might also consider leading a regional nuclear energy initiative for the SAARC region.[37]

Additional steps worthy of consideration are mutual commitments not to mate warheads with their delivery vehicles during peacetime. Transparency and confidence building might be advanced through the voluntary, mutual elimination of redundant and obsolete short-range ballistic missiles. Viable candidates include the Hatf-1 in Pakistan and the Prithvi-1 in India — missiles that add little strategic utility and have technical problems. In June 2013, the incoming Defense Research and Development Organization Chief Avinash Chander announced that India will withdraw the tactical versions of the Prithvi missiles and upgrade to Prahaar, a newly developed tactical missile.[38] Since the Hatf-1 is believed not to be in service, a joint, transparent process of decommissioning and dismantling the Hatf-1 and Prithvi-1 might signal high-level intent to pursue additional measures,[39] without prejudice to either country's deterrence posture. Missile components age silently and become obsolete much faster than realized. These weapon systems could be dangerous for operational use when stored for long durations. Future eliminations might therefore include the Hatf-2 and Prithvi-2.

Risk Reduction Centers and Cooperative Monitoring

Institutional channels of communication can provide operational capacity for notification and implementation of conventional and nuclear restraint measures. Protocols require development and maturation. Existing hotlines provide modest utility during peacetime but are rarely utilized properly during periods of increased tensions or military confrontations.[40] Existing hotlines might be expanded to encompass air and naval operations. As hotlines grow in number, centralized National Risk Reduction Centers (NRRCs) might be established in Islamabad and New Delhi. National, third-party and cooperative monitoring arrangements from space might be employed to confirm the information conveyed over hotlines and NRRCs. Nondeployment and limited deployment zones might also be monitored by space-based means.

Conclusion

Strategic restraint measures could revive the spirit of the 1999 Lahore MoU. They will be difficult to negotiate and implement because of an absence of trust and because regional dynamics naturally lean toward arms competition rather than conflict resolution. Obstacles to building trust and confidence have existed in the region for more than 60 years and will not be easy to dismantle given the entrenched stakeholders for confrontation rather than restraint.[41] Strategic anxieties are the result not just of structural realities that are unlikely to change but also of perceptions that might be modified.

New Delhi perceives Chinese malfeasance in Beijing's strategic partnership with Pakistan. Islamabad is deeply concerned about the US military's drawdown from Afghanistan and Washington's developing partnership with India. There is a widespread belief that Afghanistan's political and military elites want to assist India in encircling Pakistan. New Delhi is frustrated by Pakistan's denial of access for trade to Central Asia. Geography is a constant. Perceptions could be tempered through economic connectivity, including expanded Indian regional trade through corridors within Pakistan. Connectivity by means of trade and cooperative economic arrangements could promote restraint and build trust. India and Pakistan are locked into perceptions of victimization. SRR 2.0 offers a pathway forward by offering pragmatic steps of mutual benefit that are de-linked from, but conducive to, conflict resolution.

Ongoing conventional and nuclear modernizations pose serious challenges to implementing a strategic restraint regime. India is the world's largest importer and purchaser of arms. The bulk of these transfers — including enhancement in land/air mobility by inducting mechanized and armored forces, artillery, fighter aircraft and transport helicopters — reinforce offensive military capabilities against Pakistan, rather than China.[42] India's conventional military buildup enhances preparation for "limited punitive" incursions from its defensive formations or pivot corps to seize and hold territory. Meanwhile, Pakistani military modernization is slowed by a weak economy. Pakistan has marginally improved its indigenously produced mechanized forces; has made some progress in air defense capability and artillery firepower; and seeks to improve intelligence, surveillance, target acquisition and reconnaissance capabilities.[43] Pakistani defense forces must balance contingencies against external and domestic threats, especially in the Federally Administered Tribal Areas and Baluchistan. The Pakistan army is now giving priority to counterinsurgency operations over the historic threat posed by India. Despite these changes in threat perceptions, Pakistan's nuclear and conventional forces remain primarily oriented to meet the Indian threat.[44]

Nuclear capabilities are growing. India possesses a diversified family of ballistic and cruise missiles and is building out a nuclear triad. Pakistan is also. Missile accuracies are increasing. Pakistan's military has declared a requirement for TNWs. Pakistani weapon systems are clearly aimed at offsetting conventional force imbalances, including a declared readiness to lower the nuclear threshold to counter India's doctrine of limited war. Both India and Pakistan are increasing fissile material production both in highly enriched uranium as well as plutonium. One probable reason is the introduction and deployment of cruise missiles and TNWs, like the Hatf-9/ Nasr. Technological innovation is outpacing military doctrinal development and risk reduction. Consequently, a military crisis could result in inadvertent escalation. Arms control treaties are most unlikely on the Subcontinent. Strategic restraint measures offer the best avenue of tamping arms race and crisis stability. The pathway to peace, détente and economic prosperity, therefore, lies in strategic restraint.[45]

Notes

1. An early study that examined the complexities of the region is Samina Ahmed and David Cortright, *South Asia at the Nuclear Crossroads,* Harvard University, March 2001. For a comprehensive analysis of nuclear stability see Andrew Winner and Toshihara, *Nuclear Stability in South Asia* (Boston, MA: Fletcher, March 2001); Michael Krepon, Rodney Jones, Ziad Haider, eds. *Escalation Control and the Nuclear Option in South Asia* (Washington: Henry L. Stimson Center, 2004); Feroz Hassan Khan, "Challenges to Nuclear Stability in South Asia," *Nonproliferation Review* (Spring 2003).

2. Judith Miller and James Risen, "A Nuclear War Feared over Kashmir," *New York Times*, Aug. 8, 2000.

3. "Remarks by Pakistan Prime Minister Nawaz Sharif" UN General Assembly, Sept. 27, 2013.

4. Sameer Arshad, "Strikes on Pakistan can create nuclear holocaust: Feroz Khan," *The Times of India*, Oct. 28, 2013.

5. Bharatiya Janata Party, *BJP Manifesto 1998*, Our Nation's Security, Chapter 8, Feburary 2009. http://www.bjp.org/index.php?option=com_content&view=article&id=412:chapter-8&catid=75&Itemid=501.

6. The Ghauri or Hatf- 5 ballistic missile was derived from the Nodong, by means of a deal with North Korea that was brokered by Benazir Bhutto in 1993, resulting in the technology transfer to the Khan Research Laboratories.

7. An initiative started between previous Indian Prime Minister I. K. Gujral and Pakistani Prime Minister Nawaz Sharif to launch a composite dialogue began in 1997 with technical and expert groups working on eight baskets of issues. This composite dialogue process was already stalled by the time of the 1998 nuclear tests.

8. Subsequent to India's nuclear tests in May 1998, many in Pakistan concluded that Washington's efforts to secure a strategic pause reflected the awareness of US policy makers or their anticipation of India's nuclear tests.

9. The United Nations Security Council passed Resolution 1172 condemning the India and Pakistani tests and outlined thirteen stringent and unrealistic benchmarks for both countries. Subsequently, the United States reduced their number to five.

10. It is unclear if a similar US proposal was offered to India. New Delhi's response to the non-paper appeared aimed more toward developing a strategic relationship with Washington, rather than the particulars of its nuclear posture or its nuclear competition with Pakistan. For further details, see Strobe Talbott, *Engaging India: Diplomacy, Democracy, and the Bomb* (Washington: Brookings Institution, 2004).

11. Initially the US team called for Pakistan to share information about separated warhead and missile locations. Sensing a strongly negative Pakistani reaction, Washington promptly changed its position to "we would appreciate if Pakistan shared" this information, framing this proposal as ultimately being of help to Pakistan.

12. For details of this discussion see Feroz Hassan Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, CA: Stanford University Press, 2012), 292-95.

13. Strobe Talbott's account gave the impression that Pakistan had made no preparations for the dialogue. In reality there were serious studies and discussions on the next steps on these issues.

14. Khan, *Eating Grass*, 297.

15. Despite India's negative overall response, New Delhi was receptive to individual initiatives. These were later incorporated into the 1999 Lahore MoU.

16. Pakistan's motivation was to avoid a costly arms race that it could afford less than India. Despite limited resources and international sanctions, Pakistan has nonetheless matched Indian strategic developments. Pakistan's strategic restraint regime sought to restrain emerging Indian technologies and affirm mutual assured vulnerability with minimal deterrence.

17. The CFE Treaty, completed in 1989, obliged all members to refrain from the threat or use of force against the territorial integrity and political independence of any state, or in any other manner inconsistent with the purposes and principles of the Charter in Europe. See http://www.armscontrol.org/factsheet/cfe.

18. Since India conducted its first nuclear test, Pakistan made the following major regional proposals: South Asian Nuclear Weapon Free Zone, November 1974; Joint Renunciation of Acquisition of the Manufacture of Nuclear Weapons, 1978; Mutual inspections of Nuclear Facilities, 1979; Simultaneous Acceptance of IAEA Full Scope Safeguards, 1979; Simultaneous accession to the NPT, 1979; Bilateral Nuclear Test-Ban Treaty, 1987; Multilateral Conference on Nonproliferation in South Asian, 1987 and 1991.

19. Bernard Brodie, "Influence of Mass Destruction Weapons on Strategy," *Naval War College Review* (June 1956), 27-41.

20. Y.I. Patel, "Dig Vijay to Divya Astra: A Paradigm Shift in the Indian Army's Doctrine," *Bharat Rakshak Monitor*, Vol. 6, No. 6 (May-July 2004), http://www.bharat-rakshak.com/MONITOR/ISSUE6-6/patel.html.

21. See Christopher Clary, "Deterrence Stability and the Conventional Balance of Forces in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

22. Christopher Clary and Vipin Narang, "Doctrine, Capabilities, and (In)stability in South Asia," in *Deterrence Stability and Escalation Control in South Asia* (Washington: Stimson Center, December 2013).

23. Clary, "Deterrence Stability and the Conventional Balance of Forces in South Asia."

24. The Agreement on the Prevention of Violation of Airspace was signed in 1991. For a brief summary of recent CBMs, see Stimson Center, "Confidence-Building and Nuclear Risk-Reduction Measures in South Asia," http://www.stimson.org/research-pages/confidence-building-measures-in-south-asia-/.

25. Most notably, one month after the conclusion of the 1999 Kargil war, the Atlantique Incident occurred when a Pakistani patrol plan was shot down by the Indian Air Force in an alleged violation of airspace. Tensions reignited, but the conflict did not escalate.

26. Hasan Ansari and Ravi Vohra, "Confidence Building Measures at Sea: Opportunities for India and Pakistan," Occasional Paper no. 33, Sandia National Laboratories Cooperative Monitoring Center (December 2003), 5.

27. Sikander Ahmed Shah, "River Boundary Delimitation and the Resolution of the Sir Creek Dispute Between Pakistan and India," *Vermont Law Review* vol. 34 no. 357 (2012): 367-9.

28. For details see Michael Krepon and Amit Sevak, *Crisis Prevention, Confidence Building and Reconciliation in South Asia* (New Delhi: Manohar, 1996), 255-7.

29. See *Agreement Between the Government of The United States of America and the Government of The Union of Soviet Socialist Republics on the Prevention of Incidents On and Over the High Seas*, Bureau of International Security and Nonproliferation, US Department of State, May 25, 1972, http://www.state.gov/t/isn/4791.htm.

30. For more details see Muhammad Ali, "Maritime Issues Between Pakistan and India: Seeking Cooperation and Regional Stability," (MA thesis, Naval Postgraduate School, 2012), 1-4.

31. The implications of the introduction of sea-based deterrents and corresponding naval arms control requirements necessitate a separate comprehensive study.

32. "Transcript of Remarks by Pakistan Prime Minister Nawaz Sharif" UN General Assembly, Sept. 27, 2013.

33. For analysis of the cascading effect of missile defense, read Michael Krepon, "Missile Defense and the Asian Cascade," in *Nuclear Risk Reduction in South Asia,* ed. Michael Krepon (New York: Palgrave Macmillion, 2004), 237-270.

34. Geethangani de Silva, "Maritime Issues in South Asia," in *The Indian Ocean: Resource and Governance Challenges*, eds. Ellen Laipson and Amit Pandya (Washington: Henry L. Stimson Center, 2009), 46.

35. The chairmen of the Indian and Pakistani Atomic Energy Commissions informally met on the sidelines during the IAEA Board of Governors meeting. Neither government allows bilateral discussions on the issue of safety and security even though any incident affects the entire region.

36. The author recalls it was part of India's original proposal to Pakistan during the first bilateral strategic dialogue between India and Pakistan on Oct. 16, 1998 in Islamabad.

37. India is the beneficiary of a US-India nuclear deal. By sharing the peaceful use of nuclear energy with its neighbors, India can help foster better stability in the region. Dr. Shireen Mazari suggested a similar proposal in the "Joint International Workshop on Deterrence Stability in South Asia" convened in Islamabad on Oct. 23, 2013 by the Carnegie Endowment for International Peace (CEIP) and Center for International Strategic Studies (CISS).

38. "Prithvi missiles to be replaced by more-capable Prahar: DRDO," *Hindustan Times*, June 30, 2013.

39. Feroz Khan and Gurmeet Kanwal, "Let's stop being MAD, move to CBMs," *The Times of India*, September 11, 2001; Feroz Khan and Gurmeet Kanwal, "Building trust in Asia through cooperative retirement of obsolete missiles," *The Friday Times*, September 2011. Also see Feroz Hassan Khan, "A Missile Stability Regime for South Asia," *Sandia National Laboratories,* CMC Occasional Paper no. 35, (June 2004).

40. During the August 2013 hostilities when five Indian soldiers were killed on the LoC, the DGMOs spoke over the hotline but were unable to prevent escalation and reduce tensions.

41. For definition and examples of strategic anxieties, read Feroz Hassan Khan, "Prospects for Indian and Pakistani Arms Control and Confidence-Building Measures," *Naval War College Review* vol. 63, no. 3 (Summer 2010): 106-9.

42. The Indian share of defense spending in South Asia is 77.7 percent. Its share of total defense spending in Asia is 15.8 percent. See *The Military Balance 2013: The Annual Assessment of Global Military Capabilities and Defense Economics*, Institute of Strategic Studies, 251; 259-264; 297-302. Indian defense industry is not yet ready to produce high-quality weapon systems. See Gardiner Harris, "Explosion and Fire Trap 18 Indian Sailors and Partly Sink a Navy Submarine," *The New York Times*, August 15, 2013, A8.

43. Pakistan increased its defense budget by 4.84 percent in 2012, which followed real reduction in previous year by -1.8%. Pakistan defense spending share in South Asia is 11.7%. See *Military Balance 2013*, 250-251, 324-327.

44. Ibid., 324.

45. This essay contains the author's personal views and does not represent US Department of Defense, the Naval Postgraduate School (NPS) or the Pakistani government. The author is grateful to Emily Burke — NPS research associate, MA in security studies — for her research assistance.

The Yin and Yang of Strategic Transparency: Tools to Improve Nuclear Stability and Deterrence in South Asia

Zachary S. Davis

There are two kinds of light — the glow that illuminates, and the glare that obscures. —James Thurber

Transparency is a good quality when you want it, but bad when you don't. It's desirable for maximizing the view in picture windows, but too revealing for private places. In arms control parlance, transparency refers to voluntary openness about the true nature of one's military capabilities. A transparent picture of strategic assets is supposed to prevent inflated estimates of adversary strength and promote confidence in mutually agreed force levels. Transparency, however, does not always breed confidence, and it can even foster fear and insecurity.

Advocates of nuclear transparency in South Asia see it as a way to encourage accurate assessments of the strategic balance between India and Pakistan. According to this logic, a clear picture of mutual force levels should reduce the pressures that drive a budding arms race. Building on intelligence reporting and open source information, information acquired through mutual transparency efforts should, in this view, lead to rational decisions and help prevent wasteful and unnecessarily provocative procurements. With India and Pakistan apparently surpassing their oft-stated goal of "minimum nuclear deterrence," transparency is seen as a way to slow the pace of uncontrolled nuclear competition. Perhaps greater transparency would enable India and Pakistan to limit the growth of their arsenals and reduce the risks of misunderstanding and miscalculation.

Unfortunately, a benign view of transparency for promoting strategic and deterrence stability in South Asia is far too simple. Not all transparency is desirable. If transparency clarifies inequality, security concerns could be accentuated, and an arms competition could be accelerated. What is needed most is transparency about the thinking behind the weapons and the purposes for which they are being employed. Candid discussions about strategic doctrines could enable India and Pakistan to develop shared understandings of their nuclear relationship and help them to accommodate natural asymmetries in their nuclear arsenals, including the different value that each country places on its nuclear weapons. Understanding asymmetries is an essential element of strategic stability.

Truth, Transparency and the Art of War

All warfare is based on deception. Hence, when we are able to attack, we must seem unable; when using our forces, we must appear inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near. —Sun Tzu

The idea of strategic transparency postulates that open, honest and truthful portrayals of national capabilities can ease the insecurities that drive the "security-power" dilemma

in international relations.[1] Often associated with multilateral disarmament initiatives,[2] the concept of transparency has been applied to a wide range of international security issues. President Eisenhower proposed an Open Skies Treaty in 1955 to reassure the Soviet Union that the West was not preparing to invade Eastern Europe and vice versa. Open Skies would achieve transparency using overflights of enemy territory. A wide range of technologies are available to provide transparency, including cameras, sensors, detectors, satellites, sampling techniques and on-site monitors. Such techniques can be employed unilaterally, bilaterally or through multilateral institutions.

In arms control, advocates favor transparency to reveal the quantities, qualities, locations and status of particular weapons or delivery systems. Transparency can also highlight the research and development, production infrastructure, logistics chain and expertise needed to produce various military items. Once weapons have been produced, transparency can be used to monitor deployments and exports or to illuminate strategic doctrines that guide the actual use of the weapons. At the end of the weapon life cycle, transparency can be used to verify the removal from service and ultimate dismantlement of retired weapons. Finally, transparency about ongoing operations can clarify misperceptions, defuse crises, and cut through the fog of war. When employed to prevent the use of nuclear weapons, this type of transparency is known as a Nuclear Risk Reduction Measure (NRRM). Although transparency may not completely ease concerns about the military prowess of potential adversaries, the lack of it can breed suspicion, as in the cases of North Korea, Iran and elsewhere.

The availability of information from Google Earth and the Internet provide a degree of unavoidable transparency that has in some ways overtaken the initial transparency concepts such as envisioned by Eisenhower in his Open Skies proposal. Nevertheless, calculated offers of transparency can still enable adversaries to see for themselves that other nations are not hiding a secret stockpile of weapons or harboring weapon production capacity that could give them the upper hand should a conflict occur. Groucho Marx captured this logic in the movie Duck Soup when he asked, "Who are you going to believe, me or your own eyes?" In addition to the value of firsthand observation, the mere gesture of offering transparency can be an important symbol of warming relations. Building confidence about the absence of hidden capabilities should, according to this logic, confirm the absence of hostile intentions — or at least the ability to act on them on short notice.

Advocates of transparency argue that accurate accounting of strategic stockpiles enhances mutual confidence in international relationships.[3] Accurate assessments of strategic capabilities, they argue, reduce suspicions that stimulate hedging and drive arms races. Limited displays of transparency can be offered as Confidence-Building Measures (CBMs), which pave the way for more ambitious understandings and agreements. The hope is that mutual offerings of transparency will build confidence and develop patterns of cooperation that over time form the underpinnings of peaceful relations. Based on these ideas, a cottage industry developed around the concept of transparency and its contribution to international peace and security.[4]

Transparency, however, is not always without risk or cost. Revealing the *absence* of capabilities can confirm weakness, which could embolden an adversary rather than reassure him. This is particularly true for weak states facing powerful adversaries. For example, why would Pakistan, which faces a hostile and vastly superior Indian military,[5] reveal the extent of its perceived limitations to India? Conversely, transparency about one's strengths may be equally imprudent, as it could encourage unwanted

efforts to rectify imbalances and stimulate rather than quell military competition. Revealing qualitative or quantitative advantages such as production capacity or the existence of unknown weapons could just as easily frighten as reassure. Or information about India's air and sea superiority, fissile material production capacity, or its prospective deployment of missile defenses might spur Pakistan to compete even harder and/or acquire countermeasures. Moreover, the opposite of transparency — opacity — may be seen as desirable if it instills caution in the mind of an adversary. Thus, neither India nor Pakistan appears to be in a hurry to clarify its plans, postures, force structures or doctrines. Strategists in both countries remain optimistic about nuclear stability and deterrence.

Further complications arise from contrived transparency intended to spoof or mislead. Transparency is a double-edged sword that can strengthen or undermine strategic stability. For example, a misleading display of Soviet strategic bombers at an air show in 1956 fueled American fears of a "bomber gap," the result of which was ramped up US production of a variety of nuclear delivery platforms. Similarly, Khrushchev's claim two years later that the Soviet Union was producing nuclear missiles "like sausages" spurred fears of a "missile gap" that also ratcheted up the pace of the US-USSR arms race.[6] More recently, North Korea's pre-notification of missile flight tests and selective willingness to allow visits to nuclear facilities have increased tensions in the region. In South Asia, transparency about the development of new missiles such as Pakistan's short-range Nasr and India's intercontinental Agni V has not been reassuring. It is not clear that greater transparency about nuclear or missile capabilities would necessarily curtail arms competition or enhance strategic stability in South Asia.

Offering transparency to an adversary may also generate adverse domestic political consequences. Proponents of sharing sensitive national security information open themselves to charges of naiveté about enemy intentions and accusations of being "lulled into a false sense of security" by a wily opponent, even simplifying their efforts to target key assets. Critics may argue that transparency threatens rather than enhances national security and that the risks outweigh the potential benefits. Just as too much secrecy can be counterproductive and undermine national security, too much transparency can lead to charges of recklessness, undermining the credibility of political leaders as well as deterrence. Domestic political considerations are a major factor in India and Pakistan, and nuclear security issues evoke strong reactions in both countries.

Transparency, like secrecy, is an instrument that must be carefully integrated with the full array of political and military objectives to enhance national and regional security. Selecting the appropriate uses of transparency requires cost-benefit analysis of issues such as these:

- Which weapons systems to include.
- At what point in their life cycle to provide transparency: production, deployment or retirement.
- How much and what type of information to share.
- Which methods to use for the desired transparency (on-site monitors, open communications, Internet, commercial imagery, etc.).
- Which organizations and activities to include: production sites, logistics personnel, operations elements, etc.

- Which locations to use: actual deployment sites, open access areas, dedicated transparency zones, etc.
- How much access, monitoring, intrusiveness, verification to allow.
- Domestic and allied repercussions, both positive and negative.
- Benefits to be gained from reciprocal transparency of an adversary (knowledge of enemy deployments, force planning, operational readiness posture, etc.).

Analysis of these considerations might lead to the conclusion that transparency can contribute to national security.

Through a Glass Darkly: Transparency and CBMs in South Asia

Each one prays to God according to his own light. —Mahatma Gandhi

Transparency, properly applied, is a method of managing regional tensions and arms competitions. South Asia, therefore, offers an ideal laboratory for the development and application of transparency concepts. The history of war, strategic competition and periodic crises has given birth to a rich variety of CBMs and NRRMs intended to ease tensions and avoid miscalculation.[7] These include transparency measures for nuclear facilities, missile testing, military maneuvers and crisis management.[8] An extensive body of literature documents the history of these transparency-related CBMs and offers creative steps for using transparency to ease strategic tensions between Pakistan and India.[9] Many of these concepts have been adopted as official policy and endorsed by the two governments. Thus, South Asia ranks with the US-Soviet Cold War rivalry and the Arab-Israeli conflict as leading regions to apply CBM theory and practice. The results in South Asia have not lived up to expectations.

In the wake of the 1998 nuclear tests that confirmed the nuclear capabilities of India and Pakistan, a spate of high-level diplomacy culminated in an historic summit in the Pakistani city of Lahore. Indian Prime Minister Atal Bihari Vajpayee went the extra mile by traveling by bus across the Punjab divide to meet Pakistani Prime Minister Nawaz Sharif in Lahore, signaling his willingness to open a new chapter in bilateral relations. The ensuing Lahore Declaration and Memorandum of Understanding (MoU) associated with it committed the two countries to pursue a variety of nuclear and missile CBMs aimed at avoiding miscalculations that could lead to nuclear exchanges. The MoU outlined a program consisting of the following:

- Consultations about nuclear doctrine.
- Advance notification of missile tests.
- Notification of accidents that could be misinterpreted.
- A nuclear test moratorium.
- Commitment to negotiate an agreement to prevent incidents at sea or in the air.
- Establishment of a hotline.
- A continuing process to facilitate implementation of these and other measures.[10]

This ambitious agenda soon fell victim to the harsh realities of India-Pakistan relations. A foolhardy ploy executed by Pakistani military leaders only months after the upbeat Lahore summit sparked a new crisis in Kashmir that brought New Delhi and Islamabad back to the brink of war.[11] Under such conditions, it was politically undesirable to move forward with CBMs and NRRMs on the most sensitive aspect of their security relations, although some would argue it was the best time to do so. Nuclear transparency measures were frozen. Another major crisis in 2001-2002 sparked by an attack on India's Parliament by militants trained in Pakistan prolonged the freeze in bilateral relations and prompted both countries to reassess their strategic capabilities and doctrines. Indian strategists formulated what became known as the "Cold Start" doctrine to enable New Delhi to strike more rapidly against Pakistan in the event of another terrorist attack, but to do so without crossing the nuclear threshold.[12] Pakistani authorities accelerated the expansion of their arsenal and reiterated their commitment to a "first use" doctrine.[13] Implementation of Cold Start, Pakistani officials asserted, could cross their nuclear red lines and trigger a nuclear response.

Experts questioned whether growing arsenals would help or hurt nuclear and deterrence stability, with optimists arguing that robust arsenals would strengthen deterrence credibility and reduce the risk of war, while pessimists argued that the risks of mistakes and miscalculation were growing.[14] Transparency, were it to be employed by two countries busily expanding their nuclear arsenals, would only fuel suspicion about hostile intentions and destabilizing capabilities. In 2004, New Delhi and Islamabad renewed efforts to normalize relations by reaffirming a Composite Dialogue process to pick up where the Lahore process had ground to a halt. Over the next several years, working groups reengaged on a variety of CBMs and NRRMs, most of which stemmed from the Lahore Declaration. Despite renewed diplomatic contacts, annual exchange of lists of nuclear facilities and pre-notifications of ballistic missile tests, bilateral relations remained frosty and brittle. Existing CBMs built little confidence, especially in light of growing nuclear capabilities.

The terrorist assaults on Mumbai in November 2008 by individuals trained and based in Pakistan posed another setback to CBMs and NRRMs. Ten years after the 1998 nuclear tests, confidence and trust were again at a low ebb, with nuclear capabilities expanding with new and improved ballistic missiles, cruise missiles, sea-based nuclear capabilities and fissile material production. The 2008 US-India agreement for civil nuclear cooperation exacerbated Pakistan's longstanding fears of India's growing capacity to allocate fissile material to build up its nuclear arsenal, alongside its growing conventional weapon advantages over Pakistan.

A new and troubling chapter in the India-Pakistan strategic competition opened with a Pakistani military announcement in 2011 that it would "add a new layer of deterrence" by inducting the capability to use tactical nuclear weapons for battlefield use.[15] This public statement endorsing the rationale for short-range nuclear weapons, clearly intended to dissuade New Delhi from initiating Cold Start-type military operations, could prompt New Delhi to adopt comparable countermeasures, further destabilizing deterrence equations. Add to this mix the perennial disputes over Kashmir, water rights, Afghanistan, and India's growing preoccupation with deterring China, and the outlook for improving strategic stability on the subcontinent is, at a minimum, challenging. Under such circumstances, how might transparency be used to increase deterrence stability and to reduce the risks of nuclear war in South Asia?

The Lahore Declaration of February 1999 represents the high water mark of attempts to pursue a work program for CBMs and NRRMs, although implementation has fallen

far short of initial aspirations. By 2010, Indian and Pakistani officials were again searching for ways to move forward. Both sides signaled willingness to restart the Composite Dialogue, including the moribund working groups on nuclear CBMs. Even in the worst of times, diplomats, scholars and NGOs search for ways to repair shattered relations and open channels of communication. Back channels and Track II dialogues often fill the void when official contacts stall. The theory and practice of CBMs can still usefully be applied to South Asia to improve deterrence and strategic stability. Renewed efforts can still succeed when leaders in India and Pakistan are willing to take the risks necessary to succeed.

Darkest Before the Dawn?

It is better to light a candle than curse the darkness. — Chinese proverb

No amount of transparency can head off a burgeoning arms race in South Asia. Nevertheless, CBMs and NRRMs still make sense if Indian and Pakistani leaders see value in them and if transparency measures increase strategic stability. The overlay of a strategic competition between New Delhi and Beijing complicates the India-Pakistan nuclear calculus by making it difficult for Pakistan to distinguish between Indian forces intended to deter China and those directed primarily at Pakistan. New Delhi's calculus is complicated by the close ties and prior strategic cooperation between China and Pakistan.

Despite these complications, it is still possible to employ selected displays of limited transparency — call it "translucency" — to improve mutual understanding of deterrence forces and postures. Partial or limited transparency can be useful even if, as expected, Rawalpindi cultivates a degree of uncertainty about its nuclear red lines, and New Delhi remains vague about the particulars of its deterrence posture. Increased understanding about specific aspects of the deterrence relationship could strengthen the underpinnings of strategic stability and perhaps lead the way to more ambitious agreements aimed at risk reduction and effective management of nuclear relations. With a new government in place in Pakistan, and a new government in the offing in India, opportunities could arise to use carefully crafted and prudently administered transparency exchanges to support mutually agreed force management measures.

The old CBM agenda initiated by the Lahore Declaration and advanced in the Composite Dialogue includes several important approaches worthy of continued consideration, especially in the areas of crisis management and escalation control. Several of the CBMs already on the table rightly focus on timely communication — a key accompanying element of transparency. In past crises, the United States has played a key intermediary role in facilitating reliable communications.[16] This may not always be the case, especially if fast-moving events leave little time for outside diplomatic intervention. In the future, the timely receipt of authoritative official statements regarding the status of nuclear forces could be essential for Indian and Pakistani decision makers. False reports would need to be dispelled before triggering escalatory actions. Conversely, inflammatory public statements and efforts to deceive are likely to have increasingly serious consequences. Deepening suspicions about motives and expanding, diversified nuclear arsenals make reliable communication more important than ever. Thus, elements of the Lahore agenda aimed at increasing transparency through improved communications are particularly worthy of continued support and development. These include the following.

Properly functioning military hotlines. Always high on the list of CBMs, hotlines have been proposed repeatedly to address a range of issues, including nuclear stability and acts of terrorism. It is well understood by both sides that the road to nuclear war goes through unconventional warfare that prompts conventional conflict. Communication between military officials could be critical to avoiding, containing or concluding a war before it escalates. In practice, however, military hotlines in South Asia have underachieved. They have not been used in times of severe crisis, and they have not been reliable. Communication channels across the Kashmir divide have reportedly been used to good effect — when both sides wish to de-escalate tensions. Nevertheless, more could be done to facilitate real-time communications, especially between the relevant Pakistani and Indian military commanders who have knowledge and responsibility for nuclear assets. These commanders (and their staffs) might benefit from regular interactions and the establishment of a channel to send communications relating to the status of their nuclear forces. Military officials could use regularly scheduled and requested meetings to exchange information regarding planned exercises, movements of strategic forces and crisis management procedures.

Nuclear Risk Reduction Centers. Although South Asian strategic analysts understandably bridle at comparisons between India-Pakistan and US-Soviet nuclear dynamics, some parallels are unmistakable.[17] The value of establishing Nuclear Risk Reduction Centers (NRRCs) in Washington and Moscow for data exchanges, notifications and other military-related communications is undisputable. India and Pakistan could also benefit from establishing NRRCs for these purposes, as well as for communications regarding nuclear emergencies and accidents. The NRRCs could serve as operation centers to coordinate public and private notices of a wide range of nuclear-related civilian and military activities. Staffing of the centers would also serve as training for a cadre of nuclear experts from the relevant government agencies.

Incidents at Sea. With both countries adding a sea-based leg to their strategic triads, avoiding incidents and accidents at sea will become more important than ever. Without betraying sensitive information, India and Pakistan could agree on a set of "rules of the road" to avoid dangerous military practices at sea and, if necessary, help manage any unintended interactions involving nuclear-capable vessels. Regular discussions between naval commanders about their expectations for sea-based deterrence could have value. Some transparency measures for sea-based nuclear capabilities are inconceivable, but opening communication channels would be an important first step.

Non-deployment Zones. After the 1998 nuclear tests, several "non-papers" circulated between Washington, New Delhi and Islamabad explored ideas for managing the anticipated nuclear competition in South Asia.[18] One idea was to establish non-deployment zones so that certain nuclear weapon delivery systems might be kept distant from border areas. Another was to store warheads separate from missiles. These ideas were intended to help avoid miscalculation and lengthen the escalation fuse in the event of crises, adding time for decision makers to seek a diplomatic resolution. While the passing of time may have rendered these ideas impractical, further discussion of possible deployment limitation options might be worthwhile. These discussions could increase mutual understanding of military doctrines and yield a better appreciation of the readiness procedures associated with nuclear-related forces — essential ingredients for successful mutual deterrence.

Retired Missiles. As India and Pakistan forge ahead with a diversity of nuclear weapon delivery platforms, adjusting their force requirements to changing circum-

stances, some aging systems will become obsolete and will be retired. A number of Indian and Pakistani security experts known as the Colombo Group have devised a plan to share information about retired nuclear-capable short-range ballistic missiles (SRBMs).[19] Snapshots of transparency documenting the retirement process could be used to build confidence that older SRBMs have actually been removed from service and therefore do not belong in nuclear threat assessments. The Colombo Group identified first-generation Prithvi I and Hatf I as good candidates for mutual, transparent retirement. These missiles are nearing the end of their service life and could be honorably retired without undermining either country's strategic deterrent. In 2011 the Group conducted mock negotiations and transparency exchange exercises using cell phones and open-source data to exchange information about equivalent Soviet SRBMs located at a military museum in Sofia, Bulgaria. Recognizing that limited transparency about the retirement of obsolete missiles does not slow the overall expansion of strategic arsenals, the Colombo Group experts concluded that negotiated transparency of missile dismantlement could be an important conduit for improved communication channels regarding the bilateral nuclear relationship. The Columbo Group recommended a program of joint transparency exercises (JTEs) within the context of a renewed Composite Dialogue or a "Lahore Two" process. Such JTEs serve dual duty as CBMs and training grounds for both countries to build a cadre of nuclear experts in cooperative threat reduction.

Transparency for the Siachen Glacier

Beyond their application to the nuclear agenda, transparency measures could also be useful in addressing territorial disputes between India and Pakistan. Numerous studies have outlined how transparency derived from cooperative monitoring measures could help resolve territorial disputes in South Asia, including in Kashmir, which could alleviate a primary source of conflict between the two South Asian rivals.[20] A variety of cooperatively employed sensors, detectors, on-site monitors, and commercially available overhead imagery could ensure transparency even for remote areas like the Siachen Glacier. The avalanche that killed a reported 138 Pakistani soldiers April 7, 2012, highlighted once again the dangers associated with continued Indian and Pakistani deployments in "the world's highest battlefield."[21] Perhaps within the context of the Composite Dialogue, New Delhi and Islamabad could initiate a cooperatively monitored and transparent pull-back from Siachen.

Conclusion

Strategy, doctrine and forces are evolving as the India-Pakistan nuclear rivalry matures. A nuclear arms competition is not naturally stabilizing. To the contrary, added nuclear capabilities usually result in added security concerns. National leaders can take positive steps to manage their nuclear competition using widely available tools and established practices. These include CBMs, NRRMs and a variety of unilateral, bilateral and multilateral transparency measures. Increased bilateral communication is essential to gain insights into the mechanics of mutual deterrence, expectations for escalation management, nuclear use thresholds and prospects for war termination.

The two sides might not like, accept or believe what they hear, but they might nonetheless benefit from these discussions. Mutual transparency about nuclear doctrine and force planning need not lead to formal agreements or to meddling by third

parties. As India and Pakistan proceed through the second decade of an intensified nuclear rivalry, the absence of regular channels of communication that could help reduce the risk of miscalculation, especially in a crisis, has become increasingly noteworthy.

Bilateral discussions about nuclear doctrine and force postures could eventually lead to agreements aimed at cooperative management of certain aspects of the India-Pakistan nuclear competition. Candidate issues for collaboration might include joint monitoring projects of the existing moratorium on nuclear testing, collaborative responses to nuclear accidents, disaster management, and avoidance of dangerous incidents at sea. Satisfactory experience with voluntary transparency arrangements might someday provide the basis for more formal cooperative monitoring arrangements. Joint verification experiments could help develop procedures to authenticate authorized information exchanges and to detect unauthorized communications and deliberate misinformation. The dismantlement of old missiles could provide the basis for testing joint transparency concepts. The costs and risks of such exchanges would be quite small.

CBMs, NRRMs and transparency measures can help nations stabilize their nuclear competition. They become more necessary as a nuclear competition intensifies. These measures can be readily distinguished from arms control and disarmament treaties, which are unlikely between Pakistan and India. Well-conceived transparency measures reflect wisdom rather than weakness. Cooperative transparency measures can be carefully administered and adjusted as conditions warrant. Barriers to protect sensitive data can be erected.[22]

Carefully crafted transparency measures can go beyond gestures of good will and help to establish baselines of the general status and disposition of strategic forces. Baselines, in turn, can help with monitoring changes during crises and the validity of information provided in communication channels. Examples of baseline data could be the numbers and types of nuclear delivery systems in general locations or the production (or nonproduction) of certain items at key facilities. Other states with nuclear capabilities have found these arrangements to be useful.

Some assert that true confidence can only be gained after the underlying reasons for security concerns have been ameliorated.[23] Critics note, for example, that Washington and Moscow *reduced* their nuclear arsenals only after the Cold War ended. This perspective misses several relevant points. To begin with, CBMs, NRRMs and transparency measures could have value whether or not arms reduction agreements are reached. Moreover, CBMs, NRRMs, and transparency measures are most useful precisely when bilateral relations are poor — and when neither side wants a war that could lead to uncontrolled escalation.

CBMs, NRRMs and transparency measures could help establish the rules and boundaries within which a nuclear competition occurs. They can reaffirm but not serve as a substitute for trust. These measures will be undermined by continued acts of cross-border terrorism and incursions across borders. CBMs, NRRMs and transparency measures can help national leaders who wish to end these dangerous practices by helping to establish rules and boundaries for prudent management of national security interests. Rather than let fear and anger dictate the fate of South Asia, wise leaders can employ CBMs, NRRMs and transparency measures to devise strategies to chart a safe passage through current nuclear dangers to secure a more peaceful future for generations to come.

Notes

1. This concept gained popularity through its application to a wide range of multilateral diplomatic issues, particularly in connection with the United Nations, the Organization for Security and Cooperation in Europe and the Helsinki Accords in the 1970s. In addition to armaments and arms control, it has been applied to issues as far ranging as human rights, financial transactions, governmental accountability, and environmental conditions. On the broad applications of transparency to international peace and security see: Dan Lindley, *Promoting Peace With Information: Transparency as a Tool of Security Regimes* (Princeton, NJ: Princeton University Press, 2007).

2. See, for example, Randy Rydell, "Through a Glass Darkly: Transparency, Nuclear Weapons, and the United Nations," United Nations Office for Disarmament Affairs, March 30, 2012. Accessed at http://www.un.org/disarmament/content/speeches/oda-ny/rydell/2012-03-30-Transparency-Paper-Princeton.pdf.

3. Bill Richardson, Gay Dillingham, Charles Streeper and Ajun Makhljani, "Universal Transparency: A Goal for the US at the 2012 Nuclear Security Summit," *Arms Control Today* (January/February 2011).

4. VERTIC (Verification, Research, Training and Information Centre), established in 1986, specializes in transparency and verification issues. VERTIC maintains a large library of its publications, accessible at: http://www.vertic.org/pages/homepage/publications/serial-publications/trust-verify.php. Also see Therese Delpech, "Transparency, verification and safeguards," in *A Future Arms Control Agenda,* eds. Ian Anthony and Adam Daniel Rotfeld (Stockholm: SIPRI, 1999); Annette Schaper, "Looking for a Demarcation Between Nuclear Transparency and Nuclear Security," Peace Research Institute Frankfurt, Report No. 68, 2004; William Walker, "Some reflections on transparency in the contemporary security environment," in *Disarmament Forum*, no.2, 2003.

5. *The Military Balance 2011*, International Institute of Strategic Studies, March 2011; Anthony Cordesman, *The Military Balance in Asia, 1990-2010*, Center for Strategic and International Studies, September 2010.

6. See, for example, John Lewis Gaddis, *The Cold War: A New History* (New York: Penguin Books, 2005); and Michael Beschloss, *Mayday: The U-2 Affair* (New York: Harper Row, 1986).

7. The Stimson Center published a good timeline of India-Pakistan CBMs , available on their web site. http://www.stimson.org/data-sets/south-asia-confidence-building-measures-cbm-timeline/.

8. Naeem Salik, "Arms Control, Confidence Building, and Nuclear Risk Reduction — a Pakistani Perspective," in *The India-Pakistan Military Standoff: Crisis and Escalation in South Asia,* ed. Zachary Davis (New York: Palgrave Macmillan, 2011).

9. See, for example, Michael Krepon, *Nuclear Risk Reduction in South Asia* (New York: Palgrave Macmillan, 2004); P.R. Chari, "Nuclear CBMs: What is Possible?" IPCS Issue Brief No. 22, 2004; Chari, "Nuclear CBMs Between India and Pakistan," IPCS Issue Brief No. 24, 2004; and Nuclear Risk Reduction Centers in South Asia, Center for Strategic and International Studies, Working Group Report, May 2004.

10. Lahore Declaration and MoU, Feb. 21, 1999. http://www.stimson.org/research-pages/lahore-summit/.

11. Peter R. Lavoy, ed., *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict* (Cambridge: Cambridge University Press, 2009).

12. Gurmeet Kanwal, "India's Cold Start Doctrine and Strategic Stability," Institute for Defence Studies and Analyses, Comment, June 1, 2010; S. Paul Kapur, "Ten Years of Instability in Nuclear South Asia," *International Security* Vol. 33, No.2 (Fall 2008); Walter Ladwig, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security* Vol. 32, No. 3 (Winter 2007/08).

13. Thom Shanker and David Sanger, "Pakistan Is Rapidly Adding Nuclear Arms, US Says," *New York Times*, May 17, 2009; David Albright and Paul Brannan, "Pakistan Doubling Rate of Making Nuclear Weapons: Time for Pakistan to Reverse Course," Institute for Science and International Security, May 16, 2011; Hans Kristensen and Robert Norris, "Nuclear Notebook: Pakistan's Nuclear Forces, 2011, *Bulletin of the Atomic Scientists* (July/August 2011).

14. Scott D. Sagan, ed., *Inside Nuclear South Asia* (Stanford, CA: Stanford University Press, 2009); Sumit Ganguly and S. Paul Kapur, eds., *Nuclear Proliferation In South Asia: Crisis Behaviour and the Bomb* (New York: Routledge, 2009); Paul Kapur, *Dangerous Deterrent* (Stanford, CA: Stanford University Press, 2007).

15. Inter-Services Public Relations, Press Release No. PR94/2011-ISPR, April 19, 2011. Available at http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1721&search=1.

16. Davis, "Lessons Learned and Unlearned," in ed. Davis.

17. Michael Wheeler, "What Was Done to Achieve Strategic Stability during the Cold War? Lessons for South Asia," in ed. Davis.

18. Feroz Hassan Khan, "Pakistan's Nuclear Force Posture," in ed. Davis, 132.

19. Feroz Khan and Gurmeet Kanwal, "Building Trust in Asia Through Cooperative Retirement of Obsolete Missiles," *Friday Times*, Sept. 2-8, 2011, Vol. XXIII, No. 29; Feroz Khan and Gurmeet Kanwal, "Let's Stop Being MAD, Move to CBMs," *Times of India*, Sept. 11, 2011.

20. For example, the Cooperative Monitoring Center at Sandia National Laboratory has sponsored significant research on transparency and CBMs for South Asia. Examples of relevant CMC studies include: Asad Hakeem and Gurmeet Kanwal, *Demilitarization of the Siachen Conflict Zone: Concepts for Implementation and Monitoring*, Cooperative Monitoring Center, Sandia National Laboratory, SAND2007-5670, September 2007; Mahmud Ali Durrani, *Enhancing Security Through Cooperative Border Monitoring Experiment: A Proposal for India and Pakistan*, Cooperative Monitoring Center, SAND98 0505/21, July 2001; Tariq Mahmud Ashraf and Arpit Rajain, *The Role of Transparency in Achieving Strategic Stability in South Asia*, Cooperative Monitoring Center, SAND2005-4957, July 2005; Mohammed Arshad Chaudhry and K.C. Cariappa, *How Cooperative Aerial Monitoring Can Contribute to Reducing Tensions Between India and Pakistan*, Cooperative Monitoring Center, SAND 98-0505/22, December 2001; Hasan Ansari and Ravi Vohra, *Confidence Building Measures at Sea: Opportunities for India and Pakistan*, Cooperative Monitoring Center, SAND 2004-0102, December 2003.

21. Press Release, Pakistan Army, Inter Services Public Services, PR72/2012-ISPR, April 10, 2012. Accessed May 2, 2012.

22. David Cliff, Hassan Elbahtimy and Andreas Persbo, *Verifying Warhead Dismantlement: Past, Present, Future,* Vertic Research Report Number 9, September 2010.

23. Gregory F. Treverton, "Superpower Arms Control: Setting the Record Straight; Calculated Risks: A Century of Arms Control, Why It Has Failed and How It Can Be Made to Work," *Foreign Affairs*, Dec. 1, 1987. http://www.foreignaffairs.com/articles/42558/gregory-f-treverton/superpower-arms-control-setting-the-record-straight-calculated-r.

Beyond Incrementalism: Rethinking Approaches to CBMs and Stability in South Asia

Toby Dalton

In December 2011, and again in December 2012, Indian and Pakistani government experts met to discuss Confidence-Building Measures (CBMs) on nuclear and conventional military issues. At both meetings, the atmospherics were "cordial and constructive;" officials from each side conveyed their commitment to uphold past agreements and to consider additional measures. Predictably, though, the meetings produced no new agreements or any other signs of progress toward reducing long-standing tensions, neither side willing to take significant risks to move beyond the current framework. One Pakistani analyst described the talks as "reflect[ing] the overall bilateral state of play rather than being a catalyst for change."[1] This assessment aptly sums up the dilemma of how to pursue peace and stability in South Asia: incremental steps, designed to build trust in small bites rather than big leaps, have indeed not produced stability nor been a "catalyst for change," yet no viable alternative approach appears to be on the table.

For over 25 years, India and Pakistan have sought to negotiate and implement measures to avoid conflict, reduce military tensions, improve economic ties and build the confidence necessary to normalize their relationship and, eventually, to resolve disputes like that over the territory of Kashmir that are fundamental to a lasting peace. These efforts accelerated after 1998, when the danger of military escalation took on new importance once both nations openly tested nuclear weapons and declared themselves nuclear powers. Perhaps the crowning achievement of bilateral diplomacy to institutionalize such measures was the 1999 Lahore Summit and the Composite Dialogue process that resulted. But the reality of these measures has never matched the promise.

Efforts by Pakistan and India to establish and sustain an incremental process of building stability seem to follow a predictable and cyclical pattern. The need of both parties to find means to scale back tensions during crisis or conflict, and in recent decades to assure the international community that they are responsible stewards of nuclear weapons, has tended to yield agreement on ending hostilities as well as on determining vague principles for resolving broader issues. As Feroz Khan has observed, "every major treaty or CBM between these countries has its origin in crisis resolution."[2] The 1972 Simla Agreement, for instance, both concluded the hostilities in East Pakistan and established a Line of Control in Kashmir. But if these agreements managed the immediate termination of conflict or crisis, they have not resolved or even greatly attenuated the underlying sources of tension. As such, once the fanfare surrounding each agreement faded and international concerns were mollified, implementation lagged. At times, the dialogue and CBM process broke down completely, or it simply sputtered along *pro forma*. After some months or years, another crisis arrived and undid whatever progress and momentum toward stability might have existed. Thereafter, the cycle began anew. Incremental CBMs have not led to peace, and neither have moments of stability been consolidated by further steps. This rather

desultory history was adeptly captured by Dennis Kux in the subtitle of a recent work on this subject: for India-Pakistan negotiations "is past still prologue?"

The most glaring exception to this cycle is the Lahore summit, which created profound but momentary hope that a new course could be charted, based on a fundamental change in the terms of the Indo-Pakistan relationship. The reason that this summit, more than any other event in the nearly 70 years of bilateral relations between the two, raised hopes to new levels is that it comprised not just talk but also several symbolic acts by the leaders of both countries, acts that addressed directly and forcefully the aspirations and fears of people on both sides of the border. This symbolism seemed to augur new potential for peace and stability in a way not previously captured by treaties and other CBMs.

Today, the prevailing expert sentiment is that incremental CBMs remain the best hope for ending this cycle of crisis and mistrust. Despite a mixed record of success for this approach, it is common in track II fora to hear calls for a "Lahore II" in order to recapture and extend the gains made through CBMs in 1999.[3] But the idea of a second Lahore agreement based only on small advances seems to miss what made that summit unique: a process that surrounds such increments with major symbolic and risky steps taken by the leaders of both countries.

This essay explores the notion of incremental and symbolic steps and the prospect that these can produce a different trajectory in Indo-Pakistani relations, one characterized by sustained stability rather than a cycle of crisis, momentary progress, then stasis. Focusing in particular on the Lahore Summit, it assesses the record of incremental CBMs, mainly in the political-military sphere. Second, it discusses the symbolic component: high-visibility, leadership-driven, risk-laden measures — like the "leap of trust" taken by Prime Ministers Sharif and Vajpayee at Lahore in 1999.[4] It weighs the considerable hurdles that stand in the way of progress and then concludes with an argument for a new approach to stabilize relations between Pakistan and India based on a mix of small increments complemented by big, symbolic leaps that can establish a new baseline for relations. If there is one lesson to be distilled from past practices in South Asia, it is that faster incremental progress can be facilitated by sustained, high-level political involvement reinforced by symbolic acts. Without such high-level involvement, there seems little prospect that these antagonists can break out of the cyclical crises that frustrate progress toward peace.

Revisiting Lahore

The February 1999 Lahore Summit between Pakistani Prime Minister Nawaz Sharif and Indian Prime Minister Atal Behari Vajpayee was historic for several reasons, not least because it represents the apex of Indo-Pakistan peace efforts to date. First, more so than prior summits, it had an almost cinematic quality, characterized by the symbolism attending Vajpayee's arrival on the inaugural run of the Delhi-Lahore bus service and his visit to the Minar-e-Pakistan. For the Indian head of government to traverse ground that had once been the scene of profound tragedy during the partition of India and Pakistan, and then visit the most important monument to the idea of Pakistan as an independent homeland for Muslims in South Asia — this was a stunning, highly visible break with the past. Second, the public statements by both leaders seemed genuinely intended to put past enmity to rest, to resolve the most difficult outstanding issues, and to forge a new relationship built on trust. For instance,

Prime Minister Sharif declared, "I would like a Pakistan-India relationship that is free of tensions and based on mutual trust and confidence. ...We must bring peace to South Asia. We must bring prosperity to our peoples."[5] And Prime Minister Vajpayee stated his belief that, "there is nothing in our bilateral relations that can ever be resolved through violence. … We welcome sustained discussions on all outstanding issues, including Jammu and Kashmir."[6] Third, the Lahore summit for the first time produced agreement on a comprehensive framework — the Composite Dialogue — that would allow each side to raise issues of greatest concern without prejudice to progress in other areas. The symbolism, rhetoric and structure produced by the Lahore Summit resulted from a remarkable degree of initiative and risk-taking by two otherwise quite nationalist leaders.

The summit concluded a lengthy period of discord in the Indo-Pakistan relationship that began with a sharp rise in tensions in Kashmir in 1990.[7] Although the most threatening period of crisis in the first six months of 1990 dissipated without resort to arms, the lack of any specific resolution meant there was little basis from which to build toward an institutionalized process of relationship management. As such, the basic underlying sources of tension in Kashmir remained: Pakistan supporting "freedom fighters;" India suppressing "terrorists" and giving no quarter on self-determination. Efforts throughout the 1990s to find common ground resulted in a framework brokered by the foreign secretaries, which eventually became the Composite Dialogue, but at the time there was no real political commitment behind it outside of the foreign service bureaucracies in both nations.

The more immediate context for the Lahore Summit was the overt nuclearization of the subcontinent in May 1998. As early as the 1987 crisis sparked by India's Operation Brasstacks, which was perceived in Islamabad and Rawalpindi as preparation for an Indian attempt to dismember Pakistan, nuclear weapons had begun to feature in the Indo-Pakistani security dynamic through thinly veiled references by commentators on both sides. By the 1990 Kashmir crisis, officials and experts in South Asia assumed the emergence of a nascent nuclear deterrence, despite the fact that Pakistan's nuclear weapons program was still "in the basement." Prominent security officials in both countries participated in nuclear signaling through remarks broadcast by the media, indicating an awareness of the potential for nuclear escalation based on the mutual possession of nuclear arms.[8]

The May 1998 nuclear tests brought the potential for nuclear conflict into the open. Although both Indian and Pakistani leaders eschewed the possibility of an arms race or use of nuclear weapons, the rhetoric accompanying their acclamations did little to reassure the rest of the world. Then-Indian Home Minister L.K. Advani warned, for instance, that, "India's bold and decisive step to become a nuclear weapons state has brought about a qualitatively new stage in Indo-Pakistan relations … [signifying] India's resolve to deal firmly and strongly with Pakistan's hostile designs and activities in Kashmir."[9] A subsequent Pakistani government statement cautioned that an Indian attack would "receive a swift and massive retaliation with unforeseen consequences."[10] United Nations Security Council Resolution (UNSCR) 1172, adopted June 6, 1998, condemned the tests and urged India and Pakistan "to exercise maximum restraint and to avoid threatening military movements, cross-border violations, or other provocations in order to prevent any aggravations of the situation."[11]

The rise in global concerns about an arms race or nuclear conflict on the subcontinent — President Bill Clinton somewhat famously remarked, "The most dangerous place in

the world today … is the Indian subcontinent and the line of control in Kashmir" — resulted in intense pressure on India and Pakistan to restrain their nuclear programs, resolve bilateral issues and stabilize their security relationship through steps to reduce tension. The Lahore Summit, with the symbolism described above, assuaged some of the immediate concerns about potential conflict and nuclear escalation. In their Lahore Declaration, Sharif and Vajpayee explicitly recognized, "that the nuclear dimension of the security environment of the two countries add to their responsibility for avoidance of conflict between the two countries."[12] The Summit also held out the promise of a paradigm shift, with both sides recognizing that conflict and crisis must be resolved through peaceful means via a balanced mechanism that allowed each side to raise issues of greatest concern (e.g., cross-border terrorism for India, Kashmir for Pakistan).

In some respects, the Lahore Summit was not the failure it seemed when three months hence India and Pakistan became embroiled in a conflict at Kargil. For certain, the Summit and the CBMs it spawned did not prevent future conflict and crisis that could have led, at least as viewed from the outside, to nuclear escalation. It also did not reward the considerable risks that both prime ministers took to bring about a new paradigm. Following the Kargil and 2001-2002 crises, the Composite Dialogue structure did achieve lift, and some of the items elaborated in the Lahore MoU were subsequently negotiated and implemented, such as the missile test pre-notification agreement, discussed further below. That India and Pakistan have set as an objective their return to the Composite Dialogue suggests this structure retains value. But Kargil and subsequent crises catalyzed by terrorist attacks in India emanating from Pakistan laid bare some fundamental truths about the difficulty of negotiating and implementing meaningful and effective steps –political-military and nuclear ones in particular — that would reduce chances of future crisis and enhance stability.

Mixed Record of Incremental Approaches

The Lahore Summit differed from prior efforts for peace primarily due to the political risk-taking of Prime Ministers Sharif and Vajpayee and the high degree of symbolism attached to the affair. Underneath the symbolism, however, was the continuation of an incremental approach to stabilizing the relationship. Incrementalism in this sense is a long-term process that starts with small, discrete steps designed to build trust without requiring either party to take great risks, over time proceeding to harder steps that might diminish security if not reciprocated, but through reciprocation yield enhanced transparency and confidence in the intentions of adversaries. The implementation of such a process should establish mechanisms and habits of interaction that dampen the potential for crisis escalation.

The defining characteristic of the incremental approach is the inherent step function, whereby each successive action or accomplishment builds on prior steps. This process tends to be institutionalized and implemented through CBMs, though the initial steps may be rather inconsequential and not requiring formal agreement. Brahma Chellaney asserts, for instance, that CBMs "are by definition supposed to be modest steps to create the right environment to avoid new explosions and reduce tensions, and to allow political and military leadership on rival sides to communicate with each other."[13] States facing security dilemmas tend to avoid any steps that give adversaries any potential advantage, thus initial increments often necessitate a modicum of transparency or trust, not risking national security if it turns out that trust was poorly placed. Arms control as practiced by the United States and Soviet Union/Russia is an example

of an incremental approach that began with narrow discussions on unverified nuclear arms limitations; was followed by formal, verifiable limits on arms development and deployment; and currently is focused on broader and deeper reductions. In South Asia, there appears to be consensus in favor of incrementalism. Dipankar Banerjee argues, for example, "Ideally best measures are incremental, building on earlier successes and developing and expanding on them."[14]

When setting out to negotiate incremental steps, leaders face a series of choices that will structure both the process and the results. It is these choices that tend to drive the process, at least in South Asia, toward the crisis pattern observed above. The first and most significant choice is the amount of political investment leaders are willing undertake, and by extension, the level of risk they can tolerate. By and large, leaders find it difficult and too risky to invest in highly speculative and time-consuming negotiations and therefore delegate to diplomats and bureaucrats, who tend to be highly risk averse. It is worth underscoring that this bureaucratization of negotiations is a choice that leaders make, not a default option. Second, negotiators must decide the pace of discussions and actions. Oftentimes it appears that the goal of each negotiating team, once national leaders have delegated this task, is to give away as little as possible and over as long a period as possible; negotiations become an end rather than a means. This reinforces a process that emphasizes slow, low-risk/small-reward steps without any immediate subsequent actions to take advantage of the momentum. And third, negotiators must decide which types of measures are ripe for progress — political, economic, military, nuclear, social or cultural. The latter two areas might help create popular support for improved relations — like the "ping-pong diplomacy" between the United States and China in the 1970s — because they can break the ice and lead to major steps; they are probably less conducive to an incremental process given that they are one-shot. Others, such as military CBMs, can address a perceived security issue in a very technical manner without the high visibility of a cultural event, and bureaucracies seem to like to negotiate these type of measures since they can better control the agenda, process and outcomes. Precisely because these types of measures involve multiple bureaucracies, however, progress tends to be slow.

India and Pakistan have negotiated and implemented a diverse array of incremental CBMs to date.[15] Some of these small steps have achieved their limited objectives, for instance, the "cricket diplomacy" practiced by India and Pakistan most recently in the mid-2000s, which was helpful in improving overall relations between the two states, but in this instance the goodwill did not portend any big breakthroughs on hard issues, and there were no follow-on actions to build on the exchange. Others, such as military hotlines, are used with regularity. Ideally, these measures could narrow the range of contingencies and instill and reinforce patterns of behavior that would moderate tendencies by either party to escalate in response to provocations. But none of these incremental measures, mainly negotiated after the 1971 war, prevented crises in 1986-1987 (Brasstacks) and 1990 (Kashmir), conflict in 1999 (Kargil), and further crises in 2001-2002 ("Twin Peaks") and 2008 (Mumbai). The primary contemporary hurdle to the successful implementation of incremental steps in South Asia is discontinuity resulting from the mass-casualty attacks and subsequent frequent crises; if these steps grew out of crisis resolution, they were undone by the next crisis. Momentum is not sustained, and initial trust-building steps do not beget subsequent ones.[16]

Reflecting this pattern, the agreements reached in Lahore reveal the considerable distance that both parties must travel to stabilize the security aspect of their relation-

ship, in particular, as well as the difficult politics of doing so through political-military CBMs taken in small increments and at a slow pace. The three documents agreed during the Summit largely left the technical details of incremental steps to the foreign secretaries, while the prime ministers focused on higher level issues. The Joint Statement and Declaration released by the prime ministers referenced this technical work but placed higher priority on other issues of peace and security, such as Kashmir and trade policy. This division of labor, for better or worse, consigned the negotiation, implementation and review of incremental steps to government bureaucrats, without sufficient built-in supervision by elected officials, yielding the attendant inertia problems described above. Meanwhile, the Memorandum of Understanding (MoU) signed by Foreign Secretaries Krishnan Raghunath and Shamshad Ahmad demonstrated significant agreement on principles but left most of the details to further negotiation, such as on notification of missile tests and nuclear weapons accidents. Technical details are the crux of security CBMs, and in this respect the agreements deferred a lot of difficult work to the future without a clear sense of urgency or demand for additional increments.

This is not to say that some incremental CBMs have not been effective, or at least more consistently implemented. Military hotlines between India and Pakistan reportedly are used routinely.[17] There has been a gradual expansion of trade across the Line of Control in Kashmir. And the bus service inaugurated at Lahore continues to operate. But even here, progress has often been episodic, has lost some of its strategic value, or has failed to build a platform for subsequent measures. Two of the most frequently cited successes among South Asian CBMs — the agreement on pre-notification of ballistic missile tests and the agreement to declare and not attack nuclear facilities — make the limitations of these types of measures abundantly clear, as discussed below.

Missile Test Pre-Notification. The proposal for an agreement on pre-notification of ballistic missile flight tests was contained in the 1999 Lahore MoU signed by the Pakistani and Indian foreign secretaries. Under the agreement, both sides commit to provide three days' notice of the commencement of a testing window, to not launch or land missiles within certain geographical proximity to the International Border and Line of Control, and to ensure the trajectory of the missiles neither transects nor is directed toward the same borders.[18] Though a relatively simple agreement — none of the articles is longer than two sentences — it took six years to negotiate the document that was finally signed in October 2005. This delay presumably was caused by the disruptions in relations following the Kargil conflict and 2001-2002 crisis, though an entirely different but plausible cause was suggested by Suba Chandran: "the official faith, especially amongst the civilian and military bureaucracies on deterrence makes them believe that [nuclear] CBMs are not high priority. Both countries believe nuclear deterrence exists and view the Kargil conflict and the 2002 border confrontation as a proof of this."[19]

Still, development of improved and varied nuclear delivery capabilities and an evolving deterrence environment underscore the utility of an agreement that intends, as noted in the preambular paragraphs, to prevent misunderstanding and misinterpretations. Though not explicitly stated, it was quite obvious that missile tests hold the danger that the non-testing side might perceive an unannounced test as the opening salvo in a disarming or decapitation strike. (South Asia, of course, is no stranger to potential escalation based on misperception, as both sides experienced as a result of India's 1987 "Brasstacks" military exercises.) Publicly available information suggests that this

measure has been implemented consistently, but rumors of noncompliance in mid-2013 indicate potential for confusion, particularly about tests from sea-based platforms.

As a measure to avoid potential conflict, in particular nuclear conflict, the missile test notification regime is a highly important and meaningful step. It is also a good example of a tactical, conflict-avoidance measure that is strongly linked to a strategic objective. As noted above, the agreement stipulates a desire to avoid misunderstanding or misinterpretation, as well as to promote a stable environment. To the extent uncertainty or misperception are potential concerns in an evolving deterrence environment, measures to reduce such concerns can be exceedingly beneficial. It is also a good increment on which to build additional trust, for instance by adding cruise missile test notifications, joint verification or observation of missile launches, and in the long-term perhaps also restraints on missile development or stockpiling. Without new increments such as these to adjust to changing strategic circumstances and burgeoning nuclear-related capabilities, this CBM has lost some of its significance. Until now, however, there have been no subsequent agreements that advance the agenda, which is an opportunity lost.

Nuclear Facility Non-Attack. A new wrinkle in the pattern of Indo-Pakistan crisis emerged in the mid-1980s, when word about Pakistan's uranium enrichment plant at Kahuta started to spread. In 1984 and again in 1985, Pakistani officials went public with concerns that India (possibly in cooperation with Israel) was planning to attack Kahuta in an effort to stop Pakistan's nuclear program. Subsequent reporting suggested that India had in fact engaged in such planning, but it was not clear that these were serious efforts given that Indian nuclear facilities would have been vulnerable to Pakistani reprisals.[20] Chari, Cheema and Cohen argue that "a state of virtual deterrence already existed, even though no nuclear weapons were deployed or were probably even available at the time."[21]

During the second of these periods of tension, in July 1985, prominent Indian defense expert K. Subrahmanyam proposed that India and Pakistan negotiate an agreement prohibiting such attacks.[22] This idea was taken up by both governments and was given provisional approval by Prime Ministers Rajiv Gandhi and Zia ul-Haq when they met later that year. Following the resolution of the Brasstacks crisis, the Agreement between India and Pakistan on the Prohibition of Attack Against Nuclear Installations and Facilities was signed by the foreign secretaries of each on Dec. 31, 1988; it was ratified and entered into force in January 1991.[23] The agreement commits both sides to refrain from any action that would cause damage or destruction to nuclear facilities in the other state, and to exchange lists of these facilities along with their geographic coordinates on Jan. 1 of each year.

The agreement itself is both short and simple, consisting of just three articles that prohibit attacks on nuclear facilities, define those facilities, and promise an annual exchange of lists. The public record suggests that Pakistan and India have faithfully exchanged facility lists each year, even during periods of crisis such as in 2001-2002 and after the Mumbai attack in 2008, though there were periodic questions about the completeness of the lists.[24] As such, this agreement constitutes one of the longest running CBMs between the two.

The value of the agreement may be less relevant now than when the nuclear programs in both India and Pakistan were still undeclared, and there was some very real chance that a facility with nuclear material could be attacked, either accidentally or on purpose, thus causing a nuclear disaster. Today, with both programs declared and

the location of many (and probably even most) "strategic" facilities in both countries known with some certainty, this scenario seems remote. As such, the list exchange is devoid of real strategic meaning in the context of the current nuclear dynamic between India and Pakistan. And here, too, there have been no follow-on agreements that would have increased the value of this agreement in building trust or encouraging restraint — such as technical exchanges to demonstrate the security of nuclear facilities against terrorist attacks that might be blamed on either party.

So what do these two agreements suggest about incremental CBMs in general and military-nuclear ones in particular? First, if a CBM is clearly written, technically precise and easy to monitor, then implementation can be carried out consistently, as in the case of the missile pre-notification regime. Second, however, even small and relatively simple increments can take a very long time to negotiate, and much of this delay is due to bureaucratic process. Third, if these are two of the most "successful" CBMs, then the record on incremental agreements in South Asia is neither particularly useful nor promising in terms of building long-term stability, let alone a foundation for peace.

For a variety of reasons — bureaucratic inertia, military stonewalling, aversion to risk, lack of political will — India and Pakistan seem unable to break out of the constraints of existing frameworks despite no shortage of good and workable proposals. As former Pakistani Foreign Secretary Tanvir Ahmed Khan recently noted, "the negotiating habits of both the states have produced cyclical conversations with little forward movement."[25] By the same token, it is also fair to assess that those politico-military measures that have been implemented with some consistency, such as the missile notification regime, the nuclear facility list exchange, and even the use of hotlines between the Directors General of Military Operations established after the 1971 war, have lost significance over time. In the case of the latter, there is evidence that the hotline was at first used to convey misinformation but not to notify military exercises. Many reports indicate this channel was not used during the 1990 crisis because it was perceived by the militaries on both sides that to initiate use would be perceived as a sign of weakness. Today, apparently, the hotline is used weekly to convey routine information, but of course it is during a crisis that hotline use is most important.[26] In none of these examples, then, have incremental steps been effective at ameliorating some of the dynamics that drive periodic crises in South Asia. Quite simply, these agreements have not built a sustained process of incremental progress. They may be functional in the sense that they help diminish misperceptions, but they have neither helped avoid crisis or conflict nor encouraged restraint or additional transparency.

This is not to argue that incremental, functional approaches that build from enhanced communications to eventual transparency are not valuable or workable. The case of the missile test notification regime demonstrates that some measures can be used to avert highly dangerous misperceptions, and the record of implementation suggests room to build further trust. But incremental, halting steps taken in isolation or without sustained support from high-level leadership are unlikely to stabilize or fundamentally change security relations between Pakistan and India.

Lahore as a Model of Symbolic Action

The Lahore Summit did not bring about the "durable peace and development of harmonious relations and friendly cooperation …" that Prime Ministers Vajpayee and Sharif sought.[27] Nevertheless, as a model of how future efforts to promote peace and

stability might be pursued, Lahore is an interesting case, not for the incrementalism discussed above but for the potentially game-changing symbolism of the Summit. In the event, of course, the potential was lost, and the game did not change because the Kargil conflict nullified the gains made at Lahore.

By most accounts, and as discussed above, graduated steps are widely viewed as the most feasible approach to building stability, even though the record thus far suggests that it is difficult for such steps to be catalysts for change. Incrementalism is by definition risk averse. Though the specific measures agreed at Lahore were incremental, the Summit and the structure it created were actually rather radical departures from past practice, and in many ways defied international expectations at the time. By the end of May 1998, few experts or observers would have predicted that in just nine months the path toward peace in South Asia would look radically more positive. Like the 1972 Moscow Summit between Richard Nixon and Leonid Brezhnev, at which the two leaders cemented the new détente between the United States and Soviet Union through CBMs and arms limitation agreements, the Lahore Summit signaled the promise of a major evolution in the basic terms of their bilateral relationship: India and Pakistan for the first time appeared ready to bury the past and establish a new understanding (e.g., détente) to govern relations. As such, the symbolic steps taken by the two leaders formed an interesting and important complement to the incremental measures negotiated by their bureaucracies. This suggests a different model for thinking about how to improve stability and work toward peace in South Asia: high-level symbolism layered over and reinforcing ongoing incremental CBMs. Before assessing how this layered approach might work, it is worth exploring separately the function and importance of symbolism and what might be thought of as a "symbolic" model in counterpoint to the incremental.

A symbolic approach has as its objective a fundamental change in the baseline condition of a relationship. The pattern of events that describes the symbolic model is perhaps similar to the punctuated equilibrium theory of evolution or policy change: a period of stasis or very slow change is interrupted, through a confluence of factors that often includes some major precipitating event (e.g., a nuclear test), by a significant but momentary change in the trajectory of development that establishes a new equilibrium.[28] Instead of building only in a graduated fashion on past efforts, a symbolic approach to change thus seeks to establish a new, more positive basis for stability not based explicitly on the old paradigm. Past efforts (both successes and failures) may be set aside in order to effect this new status quo. A framework based on a shared vision for the future can provide a foundation for new approaches to solving problems.

The defining characteristic of the symbolic model is the risk-taking behavior of the leaders involved, what Nicholas Wheeler has described as a "leap of trust," and what Michael Krepon termed "risk-taking for peace." What makes such behavior unique is that it cuts against the grain of "normal," security-seeking behavior. If incrementalism seeks to ameliorate the security dilemma through a series of steps with graduated risk, a symbolic approach is based on a calculated but significant acceptance of up-front risk –political, economic, national security — by one or both parties. The large body of literature on trust and psychology in international relations tends to treat such risk-taking behavior as anomalous; realist models of international relations, and the concept of the security dilemma in particular, expect military balancing based on actual or misperceived mal-intent or weakness. States therefore tend to avoid steps that might initiate confidence building if such steps could be exploited for military gain by the other side. In describing the difficulty of demilitarizing the Siachen Glacier, for example, Pakistani

Air Vice Marshal (ret.) Shahzad Chaudhry captured this dilemma when he lamented, "So what is the hurdle? It's actually the fear that if one side withdraws, the other could occupy its positions."[29]

The only manner in which states can ameliorate the security dilemma, according to Jervis, is for both states to realize that they are caught in a predicament neither desires. On this basis, "one side must take an initiative that increases the other side's security. Reciprocation is invited and is likely to be forthcoming because the initiative not only reduces the state's capability to harm the other but also provides evidence of its friendly intentions. … The end result is not that the state has given something up, or even that it has proposed a trade, but that a step is taken toward a mutually beneficial relationship."[30] In Wheeler's formulation, "Rather than the dramatic moves that would signal a state's trustworthiness coming *after* trust has been built up … , the aim of a leap [of trust] is to signal one's potential trustworthiness to an adversary in a frame-breaking conciliatory move."[31]

But such risky, conciliatory steps are rare. Legitimate differences of interest drive states to pursue strategies that perpetuate rivalries; bureaucracies enshrine these strategies in their missions and therefore have a vested interest in maintaining the status quo. It is quite difficult for leaders to recognize that their security-seeking behavior, even if purely defensive in orientation, might be perceived by others as threatening. Empathy is complicated by pervasive negative images of adversaries that tend to dominate strategic cultures. With this kind of motivated bias, Jervis asserts, "once a person develops an image of the other — especially a hostile image of the other — ambiguous and even discrepant information will be assimilated to that image. … If they think a state is hostile, behavior that others might see as neutral or friendly will be ignored, distorted or seen as attempted duplicity."[32] Stein goes further: "Hostile imagery must change if conflict is to be reduced and resolved. Interstate conflict has been managed and routinized without edification in elite, much less public images, but neither civil violence nor interstate conflict can be resolved unless images change and leaders and publics learn."[33] In South Asia, Navnita Chadha observes, "The most fundamental aspect of Pakistan's enemy image of India is that New Delhi is unreconciled to Pakistan's independent existence … [while] India views Pakistan as a recalcitrant neighbor that has refused consistently to accept regional power realities."[34] Explaining how these images contributed to the Kargil conflict, for instance, Peter Lavoy argues that, "each side has adopted very negative interpretations of each other's motives and objectives and very benign interpretations of their own motives and objectives. Even though many Indian and Pakistani mutual perceptions are wrong, or at least partially flawed, they are rarely modified by the course of events, even over long periods of time."[35] With bloodshed an indelible image of the birth of both countries, the subsequent history of crisis and conflict, as well as enduring territorial disputes, it is little wonder that leaders in India and Pakistan, and their broader security establishments, retain hostile images that make any overtures toward peace both difficult to offer and even more difficult to reciprocate. This is in addition to their differences over regional interests in Afghanistan and further complicated by India's global ambitions and Pakistan's resort to unconventional and nuclear means to counter the growing military asymmetry between them.

After the Indian and Pakistani nuclear tests in May 1998, and the very heated rhetoric that followed, Prime Minister Vajpayee appears to have made three important calculations: first, that future security on the Indian subcontinent would be better se-

cured through peace with Pakistan than through a continuation of past behavior that had resulted in periodic crisis and conflict; second, that he was in a position to take significant personal and political risks to alter the negative imagery in both countries; and third, that Prime Minister Sharif was someone he could trust to be a partner in this effort. He made these decisions despite considerable uncertainty. He could not have known whether his bold proposal to establish a new framework for peaceful relations and invitation to meet would be reciprocated, though Sharif had signaled publicly his interest in taking some kind of big step. He also did not know whether Pakistani leaders would interpret his proffered hand as genuine or as an exploitable sign of weakness borne out of Pakistan's achievement of parity in the nuclear realm. The record now makes clear that Sharif did in fact share Vajpayee's vision and was willing to shoulder his own political risks in order to proceed, though his understanding of what the Pakistan Army was contemplating in Kargil remains in question.[36]

The prerequisites for success with incremental steps are probably also necessary conditions for a symbolic approach, but with one major difference. Not simply political will, but risky, powerful, affecting symbolism is the *sine qua non*, backed by sustained, high-level involvement in follow-up steps. This can only be undertaken by leaders at the apex of government, not by bureaucracies. It is by definition bold and courageous, rather than risk averse. It may be easier for leaders with a conservative or nationalist pedigree to take such bold steps, as they are less likely to be attacked from the right. It is notable, for instance, that nearly all of the US-Soviet/Russian arms control treaties were negotiated when Republican administrations occupied the White House. And broad domestic support, including from security agencies, is particularly important. Krepon observes that bold steps often "energize opposing forces, and opposing forces in tense regions often resort to violent means."[37] In the case of Lahore, Sharif held his nerve and proceeded to take big steps with Vajpayee despite a lack of support from the Pakistan military and vocal and violent protests by groups such as Jamaat-e-Islami that opposed accommodation with India.

The rarity of successful "leaps of trust" is telling: the confluence of factors that seemingly must align to make such bold steps both possible and politically feasible is most difficult for leaders to achieve. However, there are examples of such efforts that have succeeded to fundamentally redefine previously conflictual relationships, such as Richard Nixon's surprise visit to China in 1972, Anwar Sadat's trip to Israel in 1974, and Mikhail Gorbachev's efforts to reform the Soviet image in the United States.[38] The US-China and US-Soviet examples are instructive, if not perfectly analogous: these initiatives were not produced by third-party intervention, rather through direct engagement, and they were successful principally because of the sustained commitment and follow-through by the leaders of both states. Indeed, in the US-Soviet case, it was Gorbachev's personal actions around his 1987 summit with Reagan in Washington that had the greatest effect on changing US views of the Soviet Union. Of course, such epic changes may not happen without considerable effort to lay the groundwork, often including backchannel discussions, though the available record seems to indicate that there was not a high degree of choreography involved in the lead-up to the Lahore Summit. But what is striking about these examples, as well as the Lahore Summit, is that they did not directly build or rely on previous trust-building efforts. These were organic initiatives, not simply extensions of trust that had been sought through prior incremental approaches.

Prior to Lahore, there had been little agreement between Pakistan and India on how to define problems, let alone on approaches to resolving them. The nuclear tests and subsequent bilateral diplomacy gave no suggestion that such a momentous change in the terms of the relationship could be possible. Nevertheless, at Lahore, Prime Ministers Vajpayee and Sharif not only agreed to put all issues on the table, which allowed each side to raise their principal concerns — cross-border terrorism and Kashmir, respectively — but to establish a new, relatively flexible structure for handling these discussions, with both formal (the Composite Dialogue) and informal (the Kashmir backchannel) mechanisms. This result was conditioned by few if any of the CBMs that had been adopted previously (though the Composite Dialogue structure had been discussed over the preceding five years) and was agreed in a relatively short period of time, compared to the years it took to negotiate some of the incremental CBMs described above. This established the potential of a new baseline in the relationship, discontinuous from the previous trends.

Importantly, the symbolic measures discussed by Sharif and Vajpayee at Lahore, gestures and promises that they entailed, were the part of the agenda that could be controlled by the leaders themselves. Their statements reflected a recognition that past efforts had failed and that both sides needed to commit to changing negative images of each other in order to find accommodation. Such symbolic statements are a necessary agent of change, but they are not sufficient. Neither Vajpayee nor Sharif was able to translate words into follow-on actions through some irreversible steps.[39]

This dependency of the symbolic model on action, of turning promising words into recognized facts on the ground, means it probably cannot operate on its own. Just as incrementalism alone is not likely to be a "catalyst for change," neither can symbolism alone sustain a breakthrough and establish the new baseline. In this sense, the failure of the Lahore Summit was a lack of commitment to an initiative that changes the game in real terms, as well as the inability of the civilian leadership in Pakistan to overcome actions by the Army (in Kargil) that would undermine progress, a dynamic that any civilian leader will have difficulty resolving. But the summit did help foster a general improvement in relations and established the Composite Dialogue to manage differences, so as a model for thinking about symbolic change, it holds promise.

The kind of actions that might help translate such symbolic efforts into a new reality is most likely nonmilitary in orientation. Social, cultural and, in particular, economic actions are easier to negotiate, quicker to implement, and far more visible to ordinary citizens and political elite alike. Sporting matches, music and theater exchanges, and arts exhibits are examples of some low-hanging fruit that leaders can use to demonstrate changing relations. Of more lasting value, though, are economic steps that facilitate commerce and communications, and potentially even interdependence over time.

Historically, it appears that economic and trade initiatives in both Latin America in the 20th century and Europe after World War II played a key role in reducing tensions in those regions, despite very different political and security interests among states. Though it is not clear that this relationship is causal, it is certainly correlated. Granted, the loosening of trade restrictions and easing of border inspection procedures can take time to negotiate and implement and may still be held hostage to bureaucratic politics, but this sort of top-down initiative is better suited to the symbolic model for several reasons. First, leaders can speak about trade in both aspirational and concrete terms in ways that will resonate with the public, creating a powerful effect. These initiatives may lack theatrics, but they can still be quite risky

for leaders to undertake. Second, this type of initiative comes with built-in constituencies. While there are questions in both India and Pakistan about who stands to gain more from increasing trade, there is little question that any efforts to improve the economies in both countries through trade is win-win overall and a benefit to general consumers.[40] For instance, recent studies have shown there to be a strong basis for intra-industry trade across the border, not just trade among different sectors.[41] Business communities in both countries will lobby their governments extensively to continue trade liberalizations. And lastly, economic initiatives may strengthen interdependencies that will support restraint during crises and might check the tendencies (and power) of the security services to dominate the debate. Cross-LoC trade in Kashmir, for instance, seems to have helped reduce hostilities there. One recent report on the prospects of growing Indo-Pakistan trade found that "The buy-in of local communities has helped to sustain this initiative and has kept LoC trade insulated from tensions between Pakistan and India."[42]

Taking all this into consideration, the Lahore summit failed to achieve the lofty goals it set in part because the symbolic steps were largely declarations of intent, not concrete measures with substantive content or built-in follow-on steps. Moreover, in considering the views of domestic constituencies, it seems clear that the Pakistan Army did not buy into the strategic vision and process that Prime Minister Sharif delivered, and indeed none of Pakistan's military chiefs accompanied Sharif to welcome Vajpayee in Lahore. In their view, leverage was needed to achieve proper outcomes vis-à-vis India: the Army had its own tactical objective to establish new facts on the ground in areas around the Line of Control and perceived an opportunity to seize advantage (as, Pakistani experts claim, India had done previously on the Siachen Glacier and in other instances).[43] Such divergence of tactical and strategic objectives, despite the introduction of nuclear weapons, remains a significant hurdle to peace efforts, as does the prospect that different actors within Pakistan's security establishment continue to pursue parochial interests not favorable to the sustainment of incremental steps. A similarly troubling divergence between strategic orientation and tactical reality is often evident in India, whose leaders seem at times to continue to prefer to look with aspiration at China as its peer competitor and to simply wish their "Pakistan problem" away. It is abundantly clear that there must be constituencies arguing for the continuation of stabilizing measures in both countries for them to survive the frequent security crises characterizing the Indo-Pakistan relationship.

The Troubled Path Ahead

States in deterrence relationships will find it difficult to place significant trust in their adversaries sufficient to negotiate meaningful steps that can help them avoid future crises and conflict, unless and until there is a shift in the balance of thinking among top leaders and security establishments about external enemies. Incremental steps negotiated when deterrence is the dominant behavioral pattern, and when the states involved have very divergent strategic interests that do not give priority to stability, tend to have limited practical value and a short shelf life. Big, symbolic steps, accompanied by some smaller increments to lock in progress, on the other hand, may help facilitate this change of frame. Leaders willing to take greater risks to break this pattern in a sustained way may be rewarded with bigger gains and ultimately a change in the relationship status quo. But their efforts may also attract determined opposition, and violent opposition at that, as the Mumbai attacks in 2008 demonstrated.

Prior to Nov. 26, 2008, Indian and Pakistani officials invested a great deal of time and effort in the Composite Dialogue, as well as in a very active backchannel on Kashmir. Several of the Dialogue's subgroups — primarily devoted to security and territorial issues, such as Sir Creek, Siachen and terrorism — met regularly to discuss implementation of existing measures and to try to identify additional incremental steps. This process received regular personal support from India's prime ministers and Pakistan's then-President and Chief of Army Staff Gen. Pervaiz Musharraf, who presumably also had the backing of Pakistan's military services. In describing these efforts in his 2006 memoir, Musharraf argued that, "There is no military solution to our problems. The way forward is through diplomacy."[44] Accordingly, he made repeated attempts to establish relationships with Prime Minister Vajpayee and his successor, Manmohan Singh. Despite the institutionalization of dialogue and high-level support, the process suffered periodic setbacks — cross-border firing along the Line of Control and an attack on the Indian consulate in Afghanistan by militants assessed to receive support from the Inter-Services Intelligence (ISI) — and by 2008 had started to drift again toward stasis. The spectacular Nov. 26, 2008, attack on Mumbai by Lashkar-e-Taiba militants brought the process to a standstill and, as with previous peace efforts, undid prior incremental progress.

Looking back, the achievements of the Composite Dialogue and improvements in the overall relationship apparently were not sufficient to alter the Pakistan military's image of and calculus on India, its concerns about Indian conventional military strength, and therefore its use of asymmetric tactics, specifically through relationships with militant proxy groups that continue to pursue actions against India. Following the Mumbai attack, the options available to India to retaliate against what it perceived as state- or military-sponsored terrorism emanating from Pakistan included kinetic ones, such as military strikes against terrorist camps or intelligence facilities in Pakistan, as well as political steps, such as breaking off talks on subjects of interest to Pakistan. It chose to pursue the latter and exercise restraint on the former. Many experts worried, however, that with political options exhausted and punitive economic leverage virtually nonexistent, India would have confronted a much narrower set of options had there been a compound crisis in 2008 as in 1990 and 2001-2002; an Indian military reprisal was not out of the question.[45]

Political CBMs could still play this "firebreak" role in the future. Interestingly, after the Mumbai attacks, the bus lines between the two countries stayed open, although there was a marked diminution in trade in both directions and in cultural and sports exchange. But it was primarily the political-military sphere that saw the interruption of relations, ironic considering that it is through those channels that crisis management takes place. An expansion of social, cultural and economic CBMs could in theory provide still greater insulation in the relationship to future shocks.

The politics of future steps, both small and large, suggest continued frustration. The particular formula that resulted in the Lahore Summit may not be replicated again soon. Even high-level support for the Composite Dialogue did not prevent the Mumbai crisis. One critical variable is the extent to which a change in preferences among Pakistan's security elite to prioritize stability and economic growth yields a different national security strategy. (Considering that the Pakistan military is a major economic actor, it has substantial incentives to promote trade and investment that will benefit its subsidiaries.) At this time, Pakistan's civilian leaders do not appear to have the support of the military to undertake a risky peace effort with India, while Indian politics also do not favor accommo-

dation with Pakistan that does not begin with some concessions on terrorism. Leadership changes in both countries present new opportunities or may reinforce these trends to the extent that governments in one or both countries continue to be politically weak.

Beyond political circumstances, two other trends militate against a big breakthrough at this time. The first is the continued orientation of the Pakistan military toward India, despite or perhaps because of internal instability. With India, the long-term existential threat, the primacy of the Pakistani security establishment in the affairs of government, was assured. But the US raid in Abbotabad in May 2011 brought unwelcome questioning of the military's competence and criticism that threatened to undermine its pre-eminent role in the Pakistani system. Prevalent and populist anti-Americanism may presage a lowering of temperatures with India, but Pakistani military leaders still have incentive to focus on India as a unifying point of reference. The growth in Pakistan's nuclear and missile capabilities is one reflection of this focus.

The second trend is India's continued emergence as a global power and its concomitant diminution of interest in bilateral issues. With stable and sustained economic growth their first and foremost objective, Indian leaders seem disinterested in going out of their way to negotiate with Pakistan. China is the bigger prize, both in economic and strategic terms, and India is increasingly focusing its trade and national security policies toward its neighbor to the north, not the west. When problems with Pakistan flare up, there is a strain of thought in India that explains these away as immutable problems that come with living in a dangerous neighborhood. To the extent that such an attitude becomes more prevalent among Indian leaders, they will be less interested in bargaining or taking risks with Pakistan that might tarnish them politically or divert focus from more important objectives.

Finally, and specific to nuclear CBMs, important civil-military differences between India and Pakistan have emerged as an impediment to dialogue that might mitigate the uncertainties that challenge deterrence stability. For instance, despite the commitment contained in the Lahore Memorandum of Understanding to initiate a dialogue on nuclear doctrine, the very different philosophies and approaches of the two states to operationalizing their nuclear arsenals has been an obstacle to progress. The military officers in Pakistan's Strategic Plans Division, who have custody of nuclear weapons and serve as the secretariat for the nuclear decision-making body, have no military analog in India's civilian-run nuclear hierarchy and, therefore, no partner they believe suitable for such discussions. India's leaders, on the other hand, argue that lack of civilian control of the nuclear program in Pakistan creates "a dangerous situation precisely because the military's perceptions are not fully anchored in a larger national political and economic narrative."[46] More broadly, Indian and Pakistani experiences and command and control structures are different, as are the views of strategic elites on deterrence and the value of nuclear weapons. In India, Ali Ahmed notes, "nuclear weapons are [seen as] political weapons and not for war-fighting. … For the military, being historically little integrated at the nuclear strategy-making level, the interface between the conventional and nuclear doctrines and strategy is limited. As a result the two are undertaken autonomous from each other."[47] Pakistan, on the other hand, tends to have a tighter linkage between nuclear and conventional doctrines, postulating first-use of nuclear weapons, including in operational and tactical roles. This mismatch results in divergent agendas for nuclear talks. Maleeha Lodhi asserts that India and Pakistan have such different objectives — restraint and dialogue, respectively — that there is no intersection of interests from which to start.[48]

This is a rather bleak outlook for any steps, big or small, to stabilize security in South Asia, at least in the short term. Notwithstanding the failures of incremental approaches in the past and the long odds of new successes, it is still worth considering a future agenda for the long-term promise of better relations. For that matter, there appear to be few other means currently on the table or over the horizon for nurturing peace between Pakistan and India, so such measures will retain focus. In fact, there are also a few seeds of hope, particularly in the area of trade and investment, on which to build.

Implementing a New Approach

The analysis presented here suggests two ways of thinking about steps to promote peace and stability and some choices contained therein. One approach — incrementalism — is the status quo in South Asia. The other — symbolic acts coupled with small steps — is an alternative method. The Lahore Summit is an example of this latter approach, for it combined the big, risky initiative of the two leaders with the narrow, technical understanding on CBMs agreed by the foreign secretaries. Even though the immediate success of the Summit turned quickly to failure and did not yield the promised fundamental change in relations, it points to this different path.

The difficult road ahead aside, it is clear that India and Pakistan will continue to pursue steps toward peace and stability. Given that the incremental approach alone has not brought relations between the two much closer to lasting stability, a new approach that combines incremental and symbolic changes seems preferable. Such a model could help avoid the pitfalls and discontinuity that plagued past efforts. In assessing how the lessons of Lahore might inform more effective work on future Indo-Pakistani CBMs, four seem most prevalent.

- The first, and most obvious, lesson is on the importance of sustained and high-level commitment from the top political leadership. If prime ministers or presidents are "all in" (to borrow a gambling term), change is possible. Absent such an investment of political will, with responsibility for negotiations delegated to the foreign service and security bureaucracies, halting incrementalism will result without any guarantee of progress past the first increment. Support from the civilian bureaucracies and militaries in both countries is also necessary — no national leader can devote time to bird-dogging implementation of agreements by unsupportive bureaucracies.
- Second, negotiating teams require the right mix of technical expertise and political heft. Leaving negotiations to bureaucrats in both countries is likely to produce very narrowly construed agreements that do little to actually reduce strategic uncertainties; the inclusion of elected officials could break this dynamic. By the same token, political gestures that lack specific, concrete and observable follow-up actions undertaken by government agencies will most likely be honored in the breach if implemented at all. The missile pre-notification and nuclear facility non-attack agreements were blessed by top leaders in both countries, providing the high-level political cover bureaucrats needed to negotiate in good faith.

- Third, there is a balance to be struck between symbolism and incrementalism in the content of agreements. The Lahore process was highly symbolic and appeared to have the potential to usher in a fundamental change in the bilateral relationship, but it lacked a detailed foundation of specific, functional, and achievable agreements in the areas most ripe for symbolic change, principally in the economic and social sphere. (The bus service at Wagah was a great start, but opening transport and communication links at other crossing points would have greatly expanded the symbolism.) Institutionalizing the vision through concrete steps can make it concrete and visible. Too much focus on function without sufficient symbolic political acts, however, yields modest incremental agreements that may be additive but are insufficient to bring about fundamental changes in the relationship.

- Finally, for symbolic acts to be realized, they must be married with appropriate content and tactics. For this reason, economic and socio-cultural CBMs fit better with a symbolic change strategy. These types of steps are more compatible with the emotion of symbolic acts and can have tangible effects on the lives of ordinary citizens, turning the vision of a changing relationship into concrete action. Politico-military CBMs, on the other hand, are better suited to incrementalism. To be credible, these steps require heavy involvement by security establishments, which have a tendency to be averse to risky measures and to take their time in working through difficult security challenges.

One indirect lesson from Lahore, but clearly a critical element of a symbolic approach, is the need to tackle enemy images. This is true of both India and Pakistan, and probably weighs more significantly today on officials in Islamabad and Rawalpindi, though the initiative is India's to take. Pakistan's shattered economy, chronic energy shortages, and growing violent extremism provide powerful impetus for change; Delhi can facilitate this change by challenging Pakistani images of India through concrete and risky acts designed to improve Pakistan's security. Interestingly, an intervening variable in this equation is the rise in anti-American sentiment in Pakistani popular opinion, to such an extent that the United States now ranks above India in some surveys of threat perception. Accommodation with India may be more palatable for Pakistani leaders if the negative imagery solidifies against Washington. This, of course, brings a different set of problems but is interesting to contemplate. Drawing on these lessons, a future framework and agenda for a new approach to Indo-Pakistani negotiations could look like the following:

1. Through existing channels and mechanisms, representatives from the security establishments of both countries can (and presumably will) continue to seek incremental progress in areas not ripe for big changes and that require careful technical and legal negotiations, mostly in the security field. Such negotiations will keep the bureaucracies busy and focused. For instance, the two sides could try to negotiate a broadening of the missile test notification regime to include cruise missiles, an idea that has been proposed on numerous previous occasions. They could also initiate new topics of discussion, such as on nuclear-conventional balance and deterrence (Pakistan has called for such a dialogue but proposes conventional parity, which is out of step with economic and geopolitical

realities in South Asia). Security officials on both sides could also look for opportunities outside of formal bilateral negotiations to advance cooperation. The participation of both countries in the nuclear security summit process is one such opportunity that could facilitate a broadening of the range of issues for discussion. For instance, both countries could host reciprocal regional training courses on topics discussed at the summit, perhaps in radiological security and safety. Relationships formed between technical communities in both countries during such exercises could be quite useful in future crises or contingencies, and the little bit of transparency involved might build confidence in the practices of both states.

2. While the security establishment remains focused on incremental politico-military steps, elected officials could plant the seeds of symbolic changes in other fields, such as trade and energy cooperation, which are ripe for major progress but do not require the same level of formality as security CBMs. For example, politicians might try to help business communities in their districts to grow into organized constituencies that would gain from expanded trade opportunities. Pakistan's decision to grant India most favored nation trade status and its work to curtail its negative trade list is one opportunity. India could also consider removal of many other stifling nontariff barriers to trade. The expansion of the trading zone at Wagah is an important and creative step in the right direction, but other steps surely are possible.[49] These are the kinds of initiatives that suspicious security agencies will find harder to block; successful implementation of these steps may in fact improve flexibility in considering incremental security steps, particularly if security agencies also gain from trade. And, as economic opportunities through trade expand, the built-in constituencies that gain from enhanced bilateral cooperation can become louder voices arguing for progress and stability.

3. Government leaders in Delhi and Islamabad, who see the problem at a higher level of abstraction than do their bureaucracies, can be opportunistic in looking to build good will. For example, periodic natural disasters in both countries provide openings for symbolic aid and cooperation in an emotional context that can change opinions. Following the 2005 earthquake in Pakistan, for instance, India was lauded for its efforts to send relief supplies through Kashmir. Regional regimes, such as the South Asian Association for Regional Cooperation (SAARC), might be used for training on disaster relief that would bring militaries and relief agencies together in common cause. Additional cricket diplomacy at the right time might help create the conditions for symbolic change.

4. When the political stars align and sufficient political will exists, Indian and Pakistani heads of government can seek to build on the incremental progress with a significant leap. Summitry, including emotional and visionary rhetoric, is one means of facilitating symbolic change, but the content and follow-up to the summit requires risky and image-changing steps. A major deal to build and share electric power generation is one ex-

> ample of the kind of step that could consolidate symbolic gains by leading to a change in frame in how Indians and Pakistanis view each other. A major overhaul of bilateral visa requirements (beyond the important but limited "liberalization" begun in 2012) and opening of multiple and regular transportation routes are other steps that could be taken reasonably quickly. A solution to long-standing territorial issues (Sir Creek, Siachen and, most prominently, Kashmir) is the major prize that might result from such an effort, though not as a first measure. Here, the security agencies would have to be full partners at the outset.
>
> 5. For interested parties outside the region, there are some opportunities, albeit rather limited, to influence the process and prospects for this approach. Rather than focusing on improving security and political relations between the states, which appears not to be welcomed by either or both India and Pakistan depending on the outside party, interested governments can look for means and opportunities to bolster economic initiatives like those described above. Bilateral aid and multilateral lending programs could be directed at improving competitiveness of some industries in both states that would gain from enhanced bilateral trade, or toward facilitating bilateral energy development projects. Outside parties could also host bilateral delegations of business leaders, conduct joint technical trainings in various public works sectors, and establish regional forums to share best practices for achieving and monitoring industrial standards, all efforts that would enhance competitiveness, create opportunities for Indian and Pakistani counterparts to build ties, identify openings for trade and investment, and hopefully implement new ideas to enhance bilateral ties when they return home.

An approach that stresses both formal and informal incremental progress while laying the groundwork for big leaps forward seems like the best route forward in South Asia given the political hurdles and difficulty of sustaining trust. A crisis could erupt at any time; this type of framework might limit the damage of the next crisis, break the cycle that has prevented progress, and sustain stability. This idea already seems to have the support of at least some key officials. Indian National Security Advisor Menon argued recently that India and Pakistan

> should build the economic and other links that we can, while attempting to resolve the political and security issues that divide us. This does not mean that we ignore the political and security issues. In fact it means the opposite. … In the meantime, we should also move forward much more rapidly on the connectivity, including energy and grid connectivity, tourism, people to people, trade and economic links that can make such a major contribution to improving our future.[50]

Similarly, a recent editorial in *Dawn* argued, "Even solutions to long-running disputes — from Siachen to an issue as big as Kashmir — may receive a boost through the normalisation of trade ties, so the general understanding goes."[51]

Although there is a decidedly mixed record on steps toward stability in South Asia to date, there are positive signs, including sentiments such as these. With focus and

dedication of national leaders and elected officials, security establishments, business communities and civil society in Pakistan and India, and with well-timed and -directed support from outside parties, fundamental changes in the relationship are achievable, both in increments and big leaps.[52]

Notes

1. Tariq Osman Hyder, "Building Nuclear Confidence?" *The Nation*, Jan. 4, 2013.

2. Feroz Hassan Khan, "Prospects for Indian and Pakistani Arms Control and Confidence-Building Measures," *Naval War College Review*, (Summer 2010): 109.

3. See, for instance, Jehangir Karamat and Shashi Tyagi, "CBMs in South Asia," *Dawn*, March 20, 2012.

4. Prime Minister A.B. Vajpayee said the following: "'I had gone to Lahore with a message of goodwill but in return we got Kargil': The Promise and Perils of 'Leaps of Trust' in India-Pakistan Relations." See Nicholas Wheeler in Bhumitra Chakma, ed., *The Politics of Nuclear Weapons in South Asia* (Surrey, England and Burlington, VT: Ashgate Publishing, 2011), 155-176.

5. Prime Minister's remarks at the Pakistan-India Joint Press Conference Lahore, Feb. 21, 1999, available at http://www.stimson.org/research-pages/lahore-summit/.

6. Text of the speech of Prime Minister Atal Bihari Vajpayee delivered at the banquet organized by Pakistan Prime Minister Nawaz Sharif in his honor, Feb. 21, 1999, available at http://www.stimson.org/research-pages/lahore-summit/.

7. See P.R. Chari, Pervaiz Iqbal Cheema and Stephen P. Cohen, *Four Crises and a Peace Process* (Washington: Brookings Institution Press, 2007), 80-95.

8. For a discussion of nuclear signaling in the 1990 crisis, see Pervez Hoodbhoy, "Nuclear Issues: Myths and Realities," in Michael Krepon and Amit Sevak, eds., *Crisis Prevention, Confidence Building, and Reconciliation in South Asia* (Washington: Henry L. Stimson Center, 1995), 53-76.

9. Quoted in Paul Watson, "India Issues New Threats Over Kashmir, Minister's Fiery Rhetoric Sparks Fears in Pakistan," *The Toronto Star*, May 20, 1998.

10. Quoted in John F. Burns, "Nuclear Anxiety: The Overview; Pakistan, Answering India, Carries out Nuclear Tests; Clinton's Appeal Rejected," *New York Times*, May 29, 1998.

11. United Nations Security Council Resolution 1172, June 6, 1998.

12. Lahore Declaration Signed by the Prime Ministers of India and Pakistan on Feb. 21, 1999, available at http://www.stimson.org/research-pages/lahore-summit/.

13. Brahma Chellaney, "CBMs — A Critical Appraisal," in Dipankar Banerjee, ed., *Confidence Building Measures in South Asia* (Colombo, Sri Lanka: Regional Centre for Strategic Studies, 1999), 27.

14. Dipankar Banerjee, "Confidence-Building Measures in South Asia: Role of Research Institutions," in Moonis Ahmar, ed., *The Challenge of Confidence-Building in South Asia* (New Delhi: Har-Anand Publications, 2001), 87.

15. A reasonably comprehensive list is available at http://www.stimson.org/research-pages/confidence-building-measures-in-south-asia-/.

16. Kanti Bajpai, for instance, offers other probable reasons that progress is not sustained, including among them a feeling that incremental steps enshrined in CBMs do not get to the heart of security problems in South Asia, and in any case they take too long to negotiate. Kanti Bajpai, "CBMs: Contexts, Achievements, Functions," in Dipankar Banerjee, ed., *Confidence Building Measures in South Asia* (Colombo, Sri Lanka: Regional Centre for Strategic Studies, 1999), 15-17.

17. See for instance Chari, Cheema and Cohen, *Four Crises and a Peace Process*, 93.

18. Text of the agreement is available at http://www.stimson.org/research-pages/agreement-between-india-and-pakistan-on-pre-notification-of-flight-testing-of-ballistic-missiles/.

19. Suba Chandran, "Indo-Pak Nuclear CBMs: Looking Beyond the Pre-Notification Agreement on Missiles," *Institute of Peace and Conflict Studies*, Aug. 22, 2005, available at http://www.ipcs.org/article/military/indo-pak-nuclear-cbms-looking-beyond-the-pre-notification-agreement-1827.html#comment.

20. These episodes are recounted in Chari, Cheema and Cohen, *Four Crises and a Peace Process*, 23-28.

21. Ibid., 27.

22. C. Raja Mohan and Peter R. Lavoy, "Avoiding Nuclear War," in Michael Krepon and Amit Sevak, eds, *Crisis Prevention, Confidence Building, and Reconciliation in South Asia* (Washington: Henry L. Stimson Center, 1995), 28.

23. Available at http://www.nti.org/media/pdfs/aptindpak.pdf?_=1316555923.

24. Mohan and Lavoy, "Avoiding Nuclear War," in Krepon and Sevak, *Crisis Prevention*, 28.

25. Tanvir Ahmad Khan, "Talking with the Indians," *Dawn*, May 8, 2012.

26. See C. Raja Mohan, "Crisis Management and Confidence Building," 198, and John Sandrock, "Prerequisites for Success," in Sumit Ganguly and Ted Greenwood, eds., *Mending Fences: Confidence- and Security-Building Measures in South Asia* (Boulder, CO: Westview Press, 1996), 210-211.

27. Lahore Declaration.

28. See Stephen J. Gould, *Punctuated Equilibrium* (Boston: Harvard University Press, 2007), and Frank Baumgartner and Brian Jones, *Agendas and Instability in American Politics* (Chicago: University of Chicago Press, 1993).

29. Quoted in Richard Leiby and Simon Denyer, "India and Pakistan Remain Frozen On Glacier Border Dispute," *Washington Post*, May 2, 2012.

30. Robert Jervis, *Perception and Misperception in International Politics* (Princeton: Princeton University Press, 1976), 82.

31. Wheeler, "'I had gone to Lahore," in Chakma, *The Politics of Nuclear Weapons in South Asia*, 161.

32. Jervis, *Perception and Misperception*, 68.

33. Janice Gross Stein, "Image, Identity, and Conflict Resolution," in Chester A. Crocker and Fen Osler Hampson, with Pamela Aall, eds., *Managing Global Chaos* (Washington: United States Institute of Peace, 1996), 103.

34. Navnita Chadha, "Enemy Images: The Media and Indo-Pakistani Tensions," in Michael Krepon and Amit Sevak, eds., *Crisis Prevention, Confidence Building, and Reconciliation in South Asia* (Washington: Henry L. Stimson Center, 1995), 172.

35. Peter R. Lavoy, "Introduction: The Importance of the Kargil Conflict," in Peter R. Lavoy, ed., *Asymmetric Warfare in South Asia* (New York: Cambridge University Press, 2009), 27.

36. See John H. Gill, "Military Operations in the Kargil Conflict," in Lavoy, *Asymmetric Warfare*, 95.

37. Michael Krepon, "Conflict Avoidance, Confidence Building, and Peacemaking," in Michael Krepon, Michael Newbill, Khurshid Khoja and Jenny S. Drezin, eds., *Global Confidence Building* (New York: St. Martin's Press, 1999), 10.

38. For more on these examples, see Stein, "Image, Identity, and Conflict Resolution," in Crocker et al, *Managing Global Chaos*, 93-107.

39. Ibid., 104.

40. One recent study World Bank study found that that under a full free trade regime both India and Pakistan would increase bilateral imports by over $1 billion each. Eugenia Baroncelli, "Pakistan-India Trade Study: Economic Gains and the "Peace Dividend" from SAFTA," unpublished World Bank report, quoted in "Implications of Liberalizing Trade and Investment with India," Report by the State Bank of Pakistan, 62, available at http://www.sbp.org.pk/publications/pak-india-trade/ See also Aisha Chowdhry, "Real Talk: Perceptions of India-Pakistan Trade," *Foreign Policy AfPak Channel*, May 2, 2012, available at http://afpak.foreignpolicy.com/posts/2012/05/02/real_talk_implications_of_india_pakistan_trade.

41. Pradeep Mehta, "Trade Relations Between India and Pakistan," *PILDAT Report*, January 2012.

42. See, for instance, Sayem Ali and Anubhuti Sahay, "Pakistan-India Trade — Peace Dividend," *Standard Chartered Global Research*, June 7, 2012, 3.

43. See, for instance, Zafar Iqbal Cheema, "The Strategic Context of the Kargil Conflict: A Pakistani Perspective," in Peter R. Lavoy, ed., *Asymmetric Warfare in South Asia* (Cambridge: Cambridge University Press, 2009), 47-55.

44. Pervez Musharraf, *In the Line of Fire: A Memoir* (New York: Free Press, 2006), 299.

45. Daniel Markey, "Terrorism and Indo-Pakistani Escalation," *CPA Contingency Planning Memo #6*, January 2010. Available at http://www.cfr.org/india/terrorism-indo-pakistani-escalation/p21042.

46. Shyam Saran, "Is India's Nuclear Deterrent Credible?" speech at the India Habitat Center, April 24, 2013. http://krepon.armscontrolwonk.com/files/2013/05/Final-Is-Indias-Nuclear-Deterrent-Credible-rev1-2-1-3.pdf.

47. Ali Ahmed, "Cold Start: One Step Forward, Two Steps Back?" *Institute of Peace and Conflict Studies Article 3563*, January 2012. Available at http://www.ipcs.org/article/india/cold-start-one-step-forward-two-steps-back-3563.html.

48. Maleeha Lodhi, "Confidence Building Needs Bold Approach," *The News*, Jan. 11, 2012.

49. Aditi Phadnis and Shahram Haq, "Major Strides: India Opens Door to More Trade with Pakistan," *Express Tribune*, April 14, 2012.

50. Speech by Indian National Security Advisor Shri Shivshankar Menon at the Asian Relations Conference, March 9, 2012, available at http://icwadelhi.info/asianrelationsconference/images/stories/NSASpeechARC2012.pdf.

51. "Pakistan-India Trade," *Dawn*, May 9, 2012. Available at http://dawn.com/2012/05/09/pakistan-india-trade/.

52. The author wishes to thank Michael Krepon, Dinshaw Mistry, Dan Markey, and participants at a workshop at the Henry L. Stimson Center held on July 31, 2012, for their insightful comments and suggestions, as well as Jaclyn Tandler and Alexandra Francis for their excellent research assistance.

Contributors

Christopher Clary is a PhD candidate in the Department of Political Science at the Massachusetts Institute of Technology and a Stanton Nuclear Security Predoctoral Fellow at the RAND Corporation in Washington, DC. He was a Council on Foreign Relations International Affairs Fellow in India (2009), a country director for South Asian affairs in the Office of the Secretary of Defense (2006–9), a research associate at the Naval Postgraduate School (2003–5), and a research assistant at the Henry L. Stimson Center (2001–3). He regularly writes and speaks on South Asian security matters, and his work has appeared in *Survival, American Interest, Disarmament Diplomacy,* and *Disarmament Forum*, as well as several edited book volumes.

Toby Dalton is deputy director of the Nuclear Policy Program at the Carnegie Endowment. An expert on nonproliferation and nuclear energy, his research focuses on cooperative nuclear security initiatives and the management of nuclear challenges in South Asia and East Asia. From 2002 to 2010, Dalton served in a variety of high-level positions at the US Department of Energy, including senior policy adviser to the Office of Nonproliferation and International Security. He also established and led the department's office at the US Embassy in Pakistan, managing critical bilateral and multilateral nonproliferation issues and overseeing the implementation of US nonproliferation and counterproliferation initiatives.

Zachary S. Davis is Senior Fellow at the Center for Global Security Research at Lawrence Livermore National Laboratory and Research Professor at the Naval Postgraduate School. He has broad experience in intelligence and national security policy and has held senior positions in the executive and legislative branches of the US Government. His regional focus is South Asia. Davis began his career at the Congressional Research Service at the Library of Congress and has served in the State Department, Congressional committees, and the National Security Council. In 2006-2007 he was Senior Advisor at the National Counter Proliferation Center, in the office of the Director of National Intelligence. As an analyst and group leader in Livermore's Z Division, he authored numerous reports on technical and regional proliferation issues. His scholarly publications include articles in *Orbis, Asian Survey, Arms Control Today, Security Studies*, *The American Interest*, and chapters in numerous edited volumes. He was editor of the widely read 1993 book *The Proliferation Puzzle: Why States Proliferate and What Results*. His edited book on the 2002 South Asia crisis was published by Palgrave Macmillan in 2012, and his new book on emerging and disruptive technologies is due out in 2014. Davis holds doctorate and master's degrees in international relations from the University of Virginia.

Neil Joeck is a Visiting Scholar, University of California, Berkeley. He worked as an intelligence analyst at the Lawrence Livermore National Laboratory from 1987 to 2013 and retired as a Distinguished Member of the Technical Staff. He served as the National Intelligence Officer for South Asia (2009 – 2011), Director for Counter Proliferation Strategy at the National Security Council (2004 – 2005), and Member

of the State Department Policy Planning Staff (2001—2003), where he received a Meritorious Honor Award. Dr. Joeck received a PhD and MA in political science from UCLA, an MA from Carleton University, and a BA from UC Santa Cruz. His publications include *Maintaining Nuclear Stability in South Asia,* Adelphi Paper #312 (1997), *Arms Control and International Security, ed.* (1984) and *Strategic Consequences of Nuclear Proliferation in South Asia, ed.* (1986). He taught at the Chinese Academy of Social Science (1987) and UC Berkeley (2004, 2006-2007).

Feroz Hassan Khan is Lecturer in the Department of National Security Affairs at the Naval Postgraduate School, Monterey, California. He is a former Director Arms Control and Disarmament Affairs, in the Strategic Plans Division, Joint Services Headquarters. Khan had been a key contributor in formulating Pakistan's security policies on nuclear and conventional arms control and strategic stability in South Asia and represented Pakistan in several multilateral and bilateral arms control negotiations. He has served on numerous assignments in the United States, Europe, and Asia. He has widely participated in international and national conferences on strategic issues, international security, terrorism, nuclear arms control and non-proliferation issues. Has published articles and book chapters in several reputed journals, newspapers and publishers. He is the author of recently published book *Eating Grass: The Making of the Pakistani Bomb* (Stanford University Press, 2012)

Michael Krepon is the co-founder of the Stimson Center. He worked previously at the Carnegie Endowment, the Arms Control and Disarmament Agency within the State Department, and on Capitol Hill. He is the author or editor of sixteen books, including *Better Safe than Sorry, The Ironies of Living with the Bomb*; *Nuclear Risk Reduction in South Asia; Escalation Control and the Nuclear Option in South Asia; Cooperative Threat Reduction, Missile Defense, and the Nuclear Future; Global Confidence Building: New Tools for Troubled Regions*; *Crisis Prevention, Confidence Building, and Reconciliation in South Asia*; and *Rummaging in Shoeboxes for Stories about the Bomb, the Nuclear Age and Arms Control,* two collections of blog posts from www.armscontrolwonk.com.

Dinshaw Mistry is associate professor of Political Science at the University of Cincinnati. He specializes in international relations, security studies, technology and politics, and Asian security. He has been a fellow at the Woodrow Wilson Center; the Belfer Center for Science and International Affairs, Harvard University; and the Center for International Security and Cooperation, Stanford University. Professor Mistry is author of *Containing Missile Proliferation*, a comprehensive study of the Missile Technology Control Regime (MTCR). He has written extensively on regional security in Asia and on nuclear, missile, space, and missile defense issues in journals such as *International Security*, *Security Studies*, and *Asian Survey*, and in the *International Herald Tribune*, *New York Times*, and *Washington Post*.

Vipin Narang is assistant professor of political science at the Massachusetts Institute of Technology, and a member of its Security Studies Program. He received his PhD from Harvard University's Department of Government, and holds a B.S. and M.S. in chemical engineering from Stanford University, and an MPhil in international rela-

tions from Oxford University. His research interests include nuclear proliferation and strategy, and South Asian security.

George Perkovich is vice president for studies and director of the nuclear policy program at the Carnegie Endowment. He centers his research on nuclear strategy and nonproliferation, with a focus on South Asia and Iran. He is the author of the award-winning book *India's Nuclear Bomb* (2001) and, most recently, *Do Unto Others: Toward a Defensible Nuclear Doctrine*. He authored the Carnegie report, *Toward Realistic U.S.–India Relations* and the Carnegie policy outlook, *Stop Enabling Pakistan's Dangerous Dysfunction*. Perkovich was a member of the Council on Foreign Relations Task Force on US Nuclear Policy and is a member of the National Academy of Sciences Committee on International Security and Arms Control. He served as a speechwriter and foreign policy adviser to then-Senator Joseph Biden before becoming director of the Secure World Program of the W. Alton Jones Foundation, where he worked from 1990 to 2002. He holds a BA in politics from the University of California, Santa Cruz, an M.A. in Soviet studies from Harvard, and a PhD in foreign affairs from the University of Virginia.

David O. Smith is a consultant to the Lawrence Livermore National Laboratory and works on a variety of projects for the Naval Postgraduate School in Monterey, CA and the Stimson Center in Washington, DC. He retired from government service in May 2012 after serving as the Senior Defense Intelligence Analyst for Pakistan in the Defense Intelligence Agency. Before that, he was the Senior Country Director for Pakistan in the Office of the Under Secretary of Defense (Policy). A career US Army officer, he retired in 2003 after 34 years of service. His last military assignment was a three-year tour of duty as Army Attaché in the US Embassy in Islamabad, Pakistan, his second assignment in that capacity. He has frequently lectured on Pakistan at the State Department's Foreign Service Institute, Georgetown University, the US Army War College, the National Defense University, and several agencies of the United States government.

Julia Thompson is a research associate with the Stimson Center's South Asia program. Before Stimson, Thompson interned at National Defense University's Institute for National Strategic Studies. She received her undergraduate degree in international politics from Georgetown University and an M.A. in war studies from King's College London, where she focused on counter-terrorism and nonproliferation.

DETERRENCE STABILITY AND ESCALATION CONTROL IN SOUTH ASIA

India and Pakistan have developed and flight tested seventeen new nuclear weapon delivery vehicles since testing nuclear devices in 1998 — an average of more than one per year. Military doctrines have also evolved to emphasize more rapid mobilization to engage in limited conventional warfare. Diplomacy to reduce nuclear risks has lagged far behind nuclear weapon-related advances and doctrinal change. Since 1998, Pakistan and India have negotiated four notable military-related Confidence-Building and Nuclear Risk Reduction Measures. No new measures have been agreed upon since 2007.

There is no basis for deterrence stability on the Subcontinent when diplomacy and nuclear risk reduction are moribund while nuclear capabilities grow and military doctrines evolve. The most desirable off-ramp to increased nuclear dangers is to secure normal relations with a nuclear-armed neighbor. This collection of essays — the product of bi-monthly discussions at the Stimson Center — provides analysis and ideas for deterrence stability and escalation control on the Subcontinent. This pursuit awaits leadership in India and Pakistan that is strong enough to persist in the face of violent acts designed to disrupt progress.

STIMSON

1111 19th Street, NW, 12th Floor
Washington, DC 20036
www.stimson.org

ISBN 978-1-939240-06-4
9 781939 240064