# Challenges to Nuclear Stability in South Asia

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Nearly five years after India and Pakistan demonstrated a nuclear weapons capability, debate rages on as to whether or not deterrence has "worked" in South Asia. If anything, the region has witnessed increased regional tensions, a rise in religious extremism, a growing arms race, tense stand-offs, and even armed conflict. Despite the apparent success of U.S. diplomacy in diffusing escalatory situations—at least twice since overt nuclearization in 1998 and once earlier in 1990—an era of genuine stability and détente has not emerged. [2] Under normal circumstances, history suggests that achieving stability between nuclear antagonists requires years of confidence building and willingness on both sides to make the concessions necessary for relations to mature into détente. In South Asia, political attitudes toward conflict resolution, domestic and regional compulsions, and conditions generating nuclear tensions continue to foster instability. Furthermore, the region has demonstrated that below the nuclear threshold space remains for low-level conflicts, and dangerous assumptions regarding the feasibility of limited conventional war persist.

The specter of such a conventional war escalating into a nuclear conflict has triggered a fierce debate among deterrence theorists about whether or not nuclear weapons have had a stabilizing impact in South Asia. This new debate harkens back to similar discussions during the mid-1980s, some four decades into the Cold War, when experts raised some questions about security in the nuclear age. These questions pertained to managing nuclear operations that had previously remained shrouded in operational secrecy and were not discussed publicly. This discussion identified two problem areas. The first pertained to the performance of the nuclear command and control system in peace and war; the second pertained to the dangers of inadvertence resulting from uncertain control of escalation during a conventional war in Europe.[3] By the time these problems were discerned, the Cold War was in its terminal phase, and during the last five years of the Reagan-Gorbachev era, both superpowers signed a series of arms control agreements that assured stability and considerably reduced chances of an accidental war.

The demise of the Cold War made the strategic balance between the world's two nuclear superpowers irrelevant. But similar concerns about stability then became

applicable to other regions, especially South Asia. As the Cold War was winding down in the late 1980s, both India and Pakistan were covertly passing through the critical curve of their nuclear weapons development programs. By the late 1990s, following the overt demonstration of their nuclear capability and the acknowledgement of a "force in being," there was a rational hope that both sides would grasp the futility of attempting nuclear blackmail or coercion, and eschew dangerous practices. On the basis of this premise, both India and Pakistan commenced bilateral negotiations in 1998-1999, culminating in the Lahore Agreement of February1999. It was accepted by both countries at Lahore that, given the inherent dangers created by overt nuclear weapon capabilities, war as an instrument of policy had become obsolete. But this declaration has not been realized, and shortly afterward, the region underwent a series of tense crises.

Now that nuclear weapons have become the prevailing feature of the region, the paradigm of stability needs to be closely examined. Under structurally asymmetrical conditions, and with emerging force postures and evolving command systems, India and Pakistan have both mobilized conventional forces in formal deployments and also engaged in other dangerous military practices. While it remains unclear whether their nuclear forces have been shifted from peacetime conditions to formal deployments or even placed on crisis alert status, there is no guarantee that crisis-management systems in either country are secure or reliable enough to prevent miscalculation in the future. The foremost factor that must be acknowledged is that any limited or low-level conflict now carries with it the threat of escalation and nuclear inadvertence. Nuclear systems are in a dangerous state of constant transition from varying levels of deployment. This kind of nuclear force posturing or semi-deployment of nuclear weapons, especially in the environs of South Asia (where there is an excess of heat, dust, poor infrastructure, and the close proximity of major targets) places the entire region at the highest level of risk. Crisis stability can only be ensured by a clear doctrine of restraint with respect to weaponization and deployment that enforces a policy of recessed and latent deterrence.

This article will examine challenges to nuclear stability in the crisis-prone South Asian environment. The foremost of these challenges is the inherent propensity of India and Pakistan to take actions that escalate into a repeated state of crisis, which pushes their command systems into high gear, and places their nuclear weapons management systems under stresses that are unprecedented

in the nuclear age. The article argues that in the absence of a regional structural framework, encompassing a sustained conflict-resolution process and strategic restraint regimes covering both nuclear and conventional forces, the region will continue to live under the threat of nuclear war. The article concludes with some recommendations for improving nuclear stability in South Asia, including possible roles for major powers in helping achieve stability in the region.

## THE NUCLEAR AGE AND CRISES

Since their independence, India and Pakistan have generally remained in a constant state of hostility. Periods of peace have at best remained uneasy and have been characterized by what analyst Ashley Tellis terms "ugly stability."[4] After the 1971 Bangladesh War and the Simla peace accord in 1972, there was relative peace between the two countries. Through several domestic crises (for example, the Sikh crises in India and a military coup in Pakistan) and regional crises (for example, the Soviet invasion in Afghanistan and the Islamic revolution in Iran), relations between India and Pakistan remained relatively good. During this period, the nuclearization of the region had already commenced, with India conducting a nuclear test (at Pokhran in 1974) and Pakistan proceeding apace in acquiring a nuclear capability. This trend was broken in 1984 when multiple crises began to originate primarily from India, involving not just India and Pakistan but also other neighbors of India, notably China and Sri Lanka.[5] Two crises in sequence made India-Pakistan relations deteriorate. The first India-Pakistan crisis began in June 1984, when the Indian Army conducted two simultaneous military operations. At the same time as Indian troops were storming the Sikh Golden Temple in Amritsar near Lahore (Operation Blue Star), the Siachin glacier, an undemarcated zone above the Line of Control (LoC) in Kashmir, was also occupied by Indian forces (Operation Meghdoot). The second crisis came two years later—India planned a huge military exercise (code named Brasstacks) in 1986-87. These two crises had nuclear overtones that will be analyzed below.

In 1989-1990, after nearly two decades of dormancy since the last Kashmir war in 1965, Kashmiris revolted against India in 1989. This uprising was unprecedented, and coincided with the end of the Cold War, specifically the winding down of the Afghanistan conflict following the Soviet withdrawal. This Kashmiri uprising is still un-

der way, and the dispute over Kashmir remains central to the acrimonious relations between India and Pakistan. Three major crises triggered by the Kashmir dispute, in 1990 (Kashmir insurgency), 1999 (Kargil) and 2001-2002 (Compound Crises), have resulted in armed conflicts and standoffs between the two antagonists. Although none of the Kashmir-related crises escalated into full-scale wars, all of them were serious enough to prompt the United States to send special envoys to the region and publicly intervene. Even in the Siachin and Brasstacks crises during the Reagan era, the United States played a quiet and behind-the-scenes role to defuse tensions.[6] These repeated crises and the means through which they have been resolved leave open the question of whether nuclear weapons have played a stabilizing role.

South Asian history took two critical turns in the past five years. In 1998, the Bharatiya Janata Party (BJP), a Hindu nationalist party, came to power in India. This development was followed by an unprecedented increase in tensions with Pakistan and with some minorities (Muslims and Christians) within India. The second turning point came with the tragedy of September 11, 2001, which prompted the U.S.-led war on terrorism. The impact of 9/11 in South Asia was seen in increased terrorist attacks in both India and Pakistan, presumed to be the work of extremists.[7] Once Pakistan joined the U.S. effort to eliminate the Taliban and Al-Qaeda in Afghanistan, India found Pakistan caught in a two-front situation.

Believing that time was on its side, India implemented a two-tier strategy of compellance. First, India mobilized troops along the Indian-Pakistani border and demanded that Pakistan stop infiltration of Kashmiri separatists across the LoC. For thirteen years, India had failed to crush the Kashmiri movement that was fueled and kept alive by Pakistan. India's strategy likely aimed at raising the cost for Pakistan of the low-intensity war in Kashmir and coercing it to terminate economic and military support for the insurgency. Second, India pressured the United States to compel Pakistan to give up its position on the Kashmir issue. India succeeded partly in reducing infiltration by separatists to a minimum and also convinced the United States to extract a commitment from Pakistan to "permanently" end infiltration. Pakistan agreed to block infiltration from its territory, and also asked for a verification mechanism to be put in place. But Pakistan did not give up its principled position calling for a negotiated settlement of the dispute. The stalemate on Kashmir continues, despite the de-escalation of Indian and Pakistan forces along the LoC since autumn 2002.

Contrary to expectations, neither nuclear deterrence nor more direct U.S. engagement in the region after 9/11 has assured crisis prevention. The clear failure of India and Pakistan to develop a détente or to establish restraints on their conduct presents a somber prognosis for stability in the region. The region remains tense and there appears no scope of beginning a process of a structured dialogue between the two protagonists. Both India and Pakistan have barely managed the crises on their own, but still resist taking a reasoned approach that could assure stability and détente. Periodically, however, they take modest steps in this direction, primarily in response to U.S. concerns.

In South Asia domestic realities and institutional chauvinism make concessions too costly and rapprochement untenable. Promising agreements, such as that signed at Lahore in February 1999 and an almost signed accord negotiated at Agra in July 2001, were undermined by detractors in both countries, makings such efforts ephemeral. Religious chauvinists in both Pakistan and India oppose rapprochement for a variety of reasons. In 1999, Indian hardliners were reluctant to have a dialogue with Pakistan regarding Kashmir. Consequently, India retracted its commitment to discuss the resolution of the Kashmir conflict with Pakistan before the proverbial ink had dried on the Lahore Agreement. In Pakistan, various institutions did not agree on the agenda of the peace process as a whole. It developed too suddenly and there was no policy deliberation within Pakistan among various state institutions. The political leadership failed to give clear policy directions to state institutions about major changes in its initiatives and relations with India. The result of this disconnect was that, even though the Lahore summit ended successfully, the subsequent Kargil Crisis of 1999 scuttled the entire peace process.

Similarly, two years later, India decided to eschew bitterness over Kargil and invited Pakistan to a July 2001 summit in Agra that again raised high hopes. According to Pakistani accounts, the summit reached an understanding. But sharp disagreement persisted within the Indian establishment. Apparently, the hardliners continued to oppose rapprochement with Pakistan and had the final word. Just before a joint declaration was due to be signed, India refused to agree, and the summit failed.[8] It can be surmised that behind these failed high-profile summits lie adverse domestic factors, a lack of institutional resolve, and different policy approaches in India and Pakistan. Both sides want to have their cake and eat it too. India believes it can marginalize and isolate Pakistan and force it to back off from its Kashmir policy, which in turn gives hardliners

in Pakistan a reason to stiffen. Pakistan, by contrast, believes it can bring India to accept a negotiated settlement without having to alter its current policy on Kashmir. This stance, in turn, vindicates hardliners in New Delhi, who insist on isolating Pakistan. Regardless of the causes, the failure to overcome disagreements and commence a process pushes the region into deeper crisis and mistrust. Unless the two countries are able to break this impasse and start a process that grinds forward enough to generate a momentum that will eventually produce a durable settlement in Kashmir, peace and stability in the region seem far off.

## DEFINING STABILITY

Stability must be defined in both its strategic and technical contexts. Strategic stability refers to ensuring the safety, security, and survivability of nuclear weapons under all conditions—peace, on alert in crisis, and war. Safety implies measures to prevent nuclear weapons from being involved in accidents and to permit them to perform as intended. Security includes the practices involved in the physical custody of weapons and sensitive nuclear materials that will prevent theft or sabotage, and control procedures that will prevent unauthorized tampering with, access to, and use of nuclear weapons. Survivability refers to force deployments, mobility, dispersal, and hardened silos for weapons and command centers that will make nuclear weapons invulnerable. In the technical sense, stability implies comprehensively configuring the command, control, communication, and intelligence systems that guarantee a retaliatory second-strike capability, which the adversary must perceive as credible. According to deterrence theory, having a credible second-strike capability will reduce the incentive of potential opponents to strike first during a crisis.[9]

Stability assumes a state of balance between two adversaries even though there may not be parity between them.[10] Jaswant Singh, Indian Minister of External Affairs, claimed "parity is not essential for deterrence." Instability will occur if either of the adversaries is ready to risk changing this state of balance and prepared to escalate without fear of consequences. For optimal deterrence, moreover, crisis stability must also be assured. By implication, wars and dangerous military practices must be eschewed and command configurations made robust to meet high security requirements, provide communication redundancy, and obviate hair-trigger deployments that entail the

risks involved in delegating authority to military field commanders. A common belief in South Asia is that because nuclear arsenals there are smaller than those of the United States and the Soviet Union during the Cold War, an elaborate command structure may not be necessary. Sir Michael Quinlan, a well-known nuclear specialist and former Secretary of Defense in Great Britain, has commented that maintaining nuclear stability is analogous to "answering an examination paper with no [multiple-] choice questions. Each and every question must be answered in full with no room for an incorrect answer." Referring to the requirements of stability in terms of cost and complexities of the elaborate arrangements in the Cold War, Quinlan has also written that

> They [the requirements] would not be as heavy in South Asian circumstances, where armouries of such [Cold War] scale and diversity are not in contemplation. Requirements do not, however, decrease proportionally with size; it is not to be supposed that a small nuclear force does not need sophisticated control— indeed, small size may entail potential vulnerability that heightens demands. [11]

In other words, there is a zero tolerance for mistakes in nuclear management and the fact that command systems are still evolving in South Asia poses great risks. Despite sophisticated command systems in the Soviet Union and the United States, the world was lucky that cases of mismanagement in the Cold War did not result in a nuclear catastrophe.[12]

For stable nuclear deterrence, three criteria must hold. The first pertains to the credibility of nuclear weapons systems and the resolve of a country to use them, and the perception the adversary holds about these issues. Second, neither side must believe it can destroy its opponent's nuclear capability in a preventive or preemptive attack. The third criterion is fulfilled when nuclear forces meet the above two stability conditions under all circumstances. By implication there must be assurance that both human and technical errors will be overcome and that weapons will remain secure from unauthorized or unintended use, safe from accidents, and survivable throughout the spectrum of peace, crisis, and war. In the following section, these criteria for stable deterrence are examined in the case of South Asia.

### Reliability and Will

The first criterion implies that nuclear weapons must be technically reliable and proven in performance, and the

adversary must perceive that there is a "will" to respond with nuclear weapons. Both India and Pakistan have proven nuclear weapon designs and have demonstrated nuclear capabilities. Until May 1998, the region was satisfied with "existential deterrence," which kept both countries' nuclear capability in ambiguity and in a non-weaponized state. The May 1998 demonstration of capability by Pakistan was carried out in something of a crisis situation. Proof of Pakistan's capability was demanded by domestic political forces in India, such as L. K. Advani, then Indian Home (Interior) Minister. There was also intense international pressure on Pakistan, including threatened punishments (sticks) and possible inducements (carrots) if it refrained from testing. Pakistan chose to suffer the sticks because it considered that a lack of response would erode the credibility of deterrence, which required not just demonstration of the "capability" but also demonstration of the "will" to respond. In general, South Asia currently meets the first criteria of stable deterrence, as both sides sufficiently understand the capabilities of the other.

## Crisis Stability

The second criterion—sometimes also referred to as crisis stability—has been defined as "a measure of a country's incentives not to pre-empt in a crisis."[13] This condition is linked with the decisionmaking system in each country and the perception that adversaries have of that system. An adversary would contemplate a preventive or preemptive first strike if it believed that it could destroy its opponent's strategic arsenals, decapitate its command authority, and thus prevent the opponent from launching a retaliatory strike. The distinction between prevention and preemption is important. A preventive strike refers to "a repertoire of strategies to forestall the acquisition of weapons of mass destruction" by an opponent and implies waging a war before the adversary acquires WMD capability. Preemption pertains narrowly to military action when actual WMD use by an adversary is imminent."[14] Israel's destruction of the Osiraq reactor in 1981 is an example of a preventive strike. No example of a preemptive strike against a nuclear deployment has happened so far. But the 1967 air strikes by Israel against the Arab conventional forces serve as an example of conventional preemption. In the case of South Asia, the potential for preemption remains uncertain. Though a preemptive episode resembling the 1967 Arab-Israeli conflict has not occured in South Asia, several wars have been fought. Deterrence optimists might look on this pattern as demonstrating stability.

However, Pakistani analysts are well aware that India contemplated "preventive strikes" on two occasions in the mid 1980s. In 1984, as tension grew following the occupation of the Siachin glacier, India considered but rejected plans for attacking Pakistan's nuclear facility at Kahuta before Pakistan could acquire the capability to produce highly enriched uranium.[15] Again from 1986-87—during the Exercise Brasstacks crisis—many believe that large-scale, provocative Indian troop exercises were a part of a masked plan for a "preventive war."[16] This perception of a possible bolt out of the blue strike—by India itself or in concert with another extra-regional hostile power—is now an indelible part of Pakistani threat perceptions. Pakistani strategic planning cannot discount this possibility. On the other side, since the Kargil episode, India is not sanguine about the coherence of the political-security nexus in Pakistan. Indian leaders continue to fear that elements of the Pakistani military may act without consulting the political leadership. This fear remains potent, even if Pakistani political leaders are themselves military figures. As a result of these calculations, the second stability criterion—the recognition by both sides that preventive or preemptive strikes are not viable—remains shaky and uncertain in South Asia. An outside analyst might conclude that in practical terms neither Pakistan nor India could successfully execute a preemptive attack. But the lack of trust on both sides in the process through which decisions are made in the other state means that this criterion of stability remains unrealized.

## Nuclear Discipline

The third condition is also problematic under the conditions of South Asia. It is reassuring that in managing their nuclear arsenals, both India and Pakistan have demonstrated nuclear discipline during peacetime, as well as during the crises of recent years. Though concerns have been voiced in Western media, security and safety standards in the region have remained high. In South Asia, nuclear weapons have never been put into formal deployments or put into alert status, despite a series of crises.[17] But the real test of safety and security will come when nuclear weapons are formally deployed and put on alert, dispersed, and put into a mobile mode to bolster invulnerability and survivability. The region will then confront the challenges that the United States and the Soviet Union faced during the Cold War. The challenges will be far greater in South Asia because the environment and

conditions are not the same. On the one hand, there are the geophysical and strategic asymmetries between India and Pakistan that present challenges different from those faced during the Cold War. On the other hand, in both countries several aspects of the environment are identical and inimical to nuclear stability, including harsh climatic conditions, poor communications infrastructure, frequent power breakdowns, and a disturbed domestic climate with communal/ethnic violence. Ensuring stable conditions will be a monumental challenge.

## THE STABILITY-INSTABILITY PARADOX REVISITED

The Cold War-era nuclear-stability model described by Glenn Snyder as the "stability-instability paradox" has never been put to the test to the degree it is in South Asia. In brief, the paradox states that rather than bring stability to a pair of potential adversaries, nuclear weapons may create instability by encouraging one or both sides to engage in "limited" military adventures against the other, as long as they do not put at risk the vital interests of the target country. Much to the dismay of "deterrence optimists"—who might contend that the mere prospect of nuclear war is enough to deter any sort of hostilities—both India and Pakistan have boldly attempted to test the threshold of nuclear escalation. The two countries have demonstrated that below the nuclear threshold there is room to continue ongoing hostilities without regard to the new reality of nuclearization. Pakistan has continued its support for Kashmiri separatist fighters without fear of escalation into conventional war, even using its own troops during the Kargil crisis in 1999. India, failing to crush the Kashmiri separatists, has claimed that it can counter this Pakistani support through a "limited conventional war," again without fear of escalation into a full-fledged war that could precipitate a nuclear exchange.

Deterrence has therefore proved problematic, as considerable disagreement persists between India and Pakistan about the practical location of the "nuclear threshold" and which actions would constitute a step across the "red lines" that could trigger nuclear war. The fact of the matter is that neither country is deterred by the other, but rather, each is ready to push to the limit, and then weigh the diplomatic costs against the potential gain that brinksmanship, or even the limited use of force, might bring. Not mutually assured destruction, but a third factor—the possibility of U.S. intervention—brings about effective deterrence. Though the nuclear factor clearly

helped restrain crises from turning into war, it took a crisis with nuclear risks to prompt the U.S. to intervene. Might a dangerous paradigm emerge in the region—reliance on U.S. intervention to ensure stability? For the region to bank on U.S. diplomacy to deliver stability reflects the fragility of deterrence stability and offers a dismal prognosis for the future of Indo-Pakistani relations. Worse, there is a potential danger that U.S. policymakers may begin to believe that South Asian crises can always be managed with U.S. diplomatic assistance, and, therefore, they may leave the two protagonists in their current status quo, to sort it out between themselves, until the next crisis. Perhaps a new paradox has emerged—the independence-dependence paradox—in which India and Pakistan sought to acquire nuclear weapons in part to assert their independence vis-à-vis the Western, formerly colonial, powers, only to find that the weapons have made them more dependent on the West than ever before.

## NUCLEAR DOCTRINAL ASYMMETRY

In August 1999, Brajesh Misra, national security advisor to the Indian Prime Minister, formally announced "India's draft nuclear doctrine." Coming on the heels of the Kargil crisis, the release of the draft doctrine evoked international criticism, and India quickly realized that the release of the draft doctrine had backfired and clarified that it did not constitute policy. It was, however, widely viewed as a statement of intent. Public opinion in Pakistan demanded a matching doctrine, but after some deliberation Pakistan decided to refrain from issuing one. It nevertheless analyzed and closely followed international reaction and subsequent doctrinal pronouncements by India.

Six months later, India announced another doctrine—limited war. On January 24, 2000, the Indian Defense Minister presented a limited war concept in a seminar.[18] The doctrine of limited war under the nuclear umbrella was to be waged in the "strategic space" between Low Intensity Conflict (LIC) and nuclear war. The Pakistani nuclear command authority responded this time. On February 2, 2000, Pakistan announced the creation of a nuclear command apparatus and delineated the roles and responsibilities of all organs of the state. Pakistan avoided making any formal comment on doctrinal use aspects. Its strategy was to underscore that India's stress on "doctrine," "use," and "application of force" set the stage for the use of nuclear weapons, not simply for deterrence, but as military instruments.[19]

Potential instability stems not just from the intrinsic structural asymmetry between the military capabilities of the two sides, but also from doctrinal asymmetry—differences in philosophy, rationale, concepts, and deployment postures. Structurally, it is the geophysical and force imbalance, combined with the unequal economic potential that puts any one country at a situational advantage over another. The weaker is required to offset its intrinsic disadvantages or face annihilation or perpetual subservience. Both countries acknowledged this mismatch, and in Lahore, in 1999, after a series of meetings, found it necessary to "engage in bilateral consultations on security concepts, and nuclear doctrines, with a view to developing measures for confidence building in the nuclear and conventional fields, aimed at avoidance of conflict."

India has adopted a "no first-use doctrine," and a "no high alert status." India feels that the mere existence of nuclear weapons precludes a major war. But it does not want to give up the possible use of conventional force in a set of limited contingencies. Because of its conventional advantage over Pakistan and the lack of an imminent threat from China, it proffers a more relaxed deterrent policy of no first use, while declaring a doctrine of retaliatory use of nuclear weapons and, as of late, massive retaliation.

The Pakistani situation is akin to NATO's position in the Cold War. There are geographic gaps and corridors similar to those that existed in Europe (such as the erstwhile "Fulda gap") that are vulnerable to exploitation by mechanized Indian forces. In general, the situation is as it was with East and West Germany. With its relatively smaller conventional force, and lacking adequate technical means, especially in early warning and surveillance, Pakistan relies on a more proactive nuclear defensive policy. As Michael Quinlan puts it, "Pakistan's rejection of no-first-use seems merely a natural refusal to lighten or simplify a stronger adversary's assessment of risk; it implies retention of an option, not a positive policy of first use as a preferred course."[20] Its declaratory policy is kept deliberately ambiguous—i.e., intended to deter against aggression, conventional or nuclear.[21] Periodically, however, Pakistani officials have informally stated the parameters and factors that would be considered by the employment committee of the national command authority.[22]

The United States and the Soviet Union also developed dissimilar nuclear doctrines during the Cold War. Unlike in Europe during the Cold War, however, the South Asian situation of "doctrinal asymmetry" is volatile, due to conditions of endemic crises brewing out of unresolved issues, that bring the two nuclear powers to the brink and obviate mutual agreements on "non-provocative" military posturing. Agreements to avoid escalation like those between the United States and the Soviet Union during the Cold War are precluded in South Asia because there is no culture of concession and accommodation. Under the current political-strategic environment in South Asia, inimical doctrines are in themselves a source of instability.

## THE CHALLENGE OF INADVERTENCE

In the 2001-2002 crises, India mobilized and prepared for a "limited war" and was confident of escalation control. Pakistanis are convinced that behind the political objective of compellance, the strategic objective was to test the "limited war concept." One Indian analyst has argued that limited war gives India four basic options:

> The first option is to attack across the international boundary or LoC, but to keep the objectives limited. The second optoon is to attack at selected points along the LoC, presenting Pakistan with the option of escalating by responding with a riposte. The third option is to capture and hold a critical area along the LoC. The final option is to carry out surgical strikes across the border, then return.[23]

The Indian doctrine of limited conventional war assumed two elements. First is that asymmetric assured destruction—both conventional and nuclear—will enable India to punish Pakistan without fear of retaliation. Second is that India will have escalation control. This doctrine did not regard inadvertence to be of any significance, but was based on the predictability of the Pakistani nuclear threshold. Sumit Ganguly, a respected American scholar, explaining India's attitudes, has asserted that the Indians are aware of the Pakistani nuclear thresholds. Responding to the question as to what would precipitate a nuclear exchange in the event of a conventional war with Pakistan, he said, "I don't think the Indians are foolish enough to engage in such an utterly provocative and reckless act….Indian decision-makers are acutely cognizant of the horrific nature of nuclear weapons."[24] In contrast, a high-level Indian diplomat has stated:

> We've found there is a lot of strategic space between a low-intensity war waged with Pakistan and the nuclear threshold. Therefore we are utilizing the military option without worrying about the nuclear threshold. If that turned out to be a miscalculation and Pakistan initiated the use of nuclear weapons, then India would respond in force and Pakistan would cease to exist.[25]

Notwithstanding the stark contrast between the these two assessments, in 2001-2002, India was prepared to take the risk of coercing and even attacking Pakistan despite full knowledge of Pakistan's nuclear capability. A section of the Indian leadership is convinced that Pakistan will have a hard time operationalizing its nuclear first-use doctrine in a limited conventional war. They believe, however, that the same does not hold true for retaliation using conventional forces.[26] According to the logic of this Indian argument, Pakistan would find its nuclear deterrence useless in this "limited war" scenario. However, Indian confidence regarding the possibility of escalation control, the predictable outcome of a war, and the faith of Indian leaders in the safety of nuclear weapons on full- or near-full-alert status raises the question of whether India fully realizes the possible repercussions of its mobilization. It seems clear that the international political climate worked against any escalation or war in South Asia. Reciprocal conventional force deployment by Pakistan led to a standoff that made it strategically difficult to fight a "limited war" unless the war was expanded, and that was not feasible. The ensuing logjam led to a prolonged deployment that eventually produced diminishing returns that forced a welcome withdrawal of troops. Optimists believe that a nuclear deterrent worked; pessimists, however, worry about the inherent dangers that this precedent may establish for the future.[27]

In his classic study of inadvertent nuclear escalation, Barry Posen identifies two major possible causes of nuclear escalation that are applicable to India and Pakistan. He contends that conventional attacks against nuclear forces could come into direct contact with nuclear forces and threaten the survivability of those forces, or at least could be mistaken for a preemptive strike. Second, conventional attacks could cause infrastructure degradation of the adversary, which might include decapitating the strategic command and control infrastructure.[28]

Indian Air Force doctrine is based on deep penetration, as Lieutenant General V. R. Raghavan points out in his article on the risks of limited war and its possible escalation.[29] Recent transfer of conventional military technology to India has bolstered Indian conventional strike capabilities and could embolden India to undertake a conventional strike primarily using air power. India's has some precision-guided munitions, such as the U.S.-made Paveway II and its aircraft inventory includes some 250 state-of-the-art aircraft. When compared to less developed Pakistani capabilities, the imbalance creates a temp-

tation to strike vulnerable targets especially air bases and key infrastructure. Pakistani strategy aims to restore balance through development and acquisition of ballistic missiles. However, Russian and Israeli assistance is already improving the intelligence-gathering capacity of India and the sale of the Russian S-300 air defense missile system, and possible Israeli transfer of the joint U.S.-Israel Arrow anti-missile technology will strengthen Indian ballistic missile defenses. Combined with other advantages, these acquisitions could give India the confidence that it is sufficiently protected from Pakistan's missiles to launch a surprise attack intended to destroy key Pakistani assets. It is also conceivable that India may not contemplate launching a "preemptive" strike, but in a war, even a limited one, initiated by India, the Indian Air Force would attempt an initial offensive air campaign that to Pakistani leaders will appear no different than a preemptive strike, as Posen has referred to above. Concerned about this scenario, Pakistan will start to acquire matching capabilities to offset Indian advantages and will endeavor to match India's conventional capabilities. The region will thus be engaged in an arms race.

Because the use of nuclear weapons is perceived as "unthinkable," the initiator of conventional war must believe that it can control escalation of the conflict and avoid taking it to the point of triggering a nuclear response. A belief in such strict escalation control is fraught with danger, as several studies from the Cold War period pointed out. In early 1963, Morten H. Halperin studied the application of force for attaining limited objectives without running the risks of an all out war. Halperin's study assumed the framework of concern arising from the presence of nuclear weapons and lack of mechanisms for guaranteeing the absence of war, which made it necessary to discuss seriously how a war can be kept limited.[30] Unfortunately, he concluded that a limited war would expand, since it would be guided by anticipation of the adversary's response, and prediction of the adversary's reactions is certain to prove wrong.

In South Asia, the greatest probability for the expansion of war is likely to occur at the outbreak of a local war (in Kashmir, for example) or at a time when one side achieves a clear tactical superiority within the established limiting conditions (e.g., Kargil in 1999). There will then be pressure on the losing side to expand the war in order to reverse the battlefield decision (as India did in Kargil) and pressure on the winning side to expand the war termination conditions. It was in such hypothetical situa-

tions in Cold War scenarios that the concept of using nuclear weapons to redress conventional imbalance was introduced. As Paul Bracken notes:

> Nuclear weapons were gradually introduced into these [general purpose] forces. The strategic logic was that if these forces were outnumbered in a local war, they would not automatically have to face defeat. They could introduce limited use of so-called tactical nuclear weapons, and thereby offset any conventional disadvantages.[31]

Since Indian limited war doctrine remains ambiguous and previous studies have demonstrated that the risk of escalation and inadvertence is extremely high, it can be conjectured that India would attempt to undertake limited actions aimed at raising the political and domestic cost for Pakistan. In one possible scenario India might launch punitive strikes against Pakistan after consulting with major powers that are sympathetic to the Indian position. The most likely triggering event for such a scenario would be a terrorist incident in India that would prompt international sympathy and serve as a justification for a military response. Pakistan's reaction would be unpredictable, but there would certainly be some sort of counterretaliation. Following this logic, such a crisis would be likely to spiral, belying the hope of precise escalation control.

In peacetime nuclear forces in South Asia are not kept on an alert status, comparable to those maintained by U.S. and Soviet forces during the Cold War. But in an unfolding crisis, the imminent possibility of conventional war could compel India and Pakistan to keep nuclear weapons in as close to a "ready state" as possible without being visible. The state of preparation of weapons would thus be directly proportional to the state of tension and crisis. To avoid being caught unprepared, in the event that a conventional war begins to go badly, both sides are likely to bring their nuclear forces to alert status at virtually the same time that they assemble their conventional forces. From this point on, the danger of inadvertence (something going awry because of the combination of high alert status and the fog of war) would become very real. In this situation, the Indian declaration of no first use would become practically irrelevant. Despite Indian pledges not to use nuclear weapons first, Pakistani leaders could not assume that a future conventional force assembly by India will take place in a fashion that is visible and prolonged, thereby providing strategic warning, and that there will be no change in the status on the Indian side of nuclear weapons prior to that assembly. Ambiguity about the state of weaponization and deployment is a deliberate part of the strategic doctrine of both countries. It is thus reasonable to conclude that escalation of tensions in a crisis, let alone in a conventional war, will bring nuclear weapons to a heightened state of readiness. This conclusion will prompt corresponding levels of nuclear alert in both countries that create a dynamic which may not be controlled. This situation has the propensity to spiral, eroding command and control over nuclear weapons and setting the stage for their inadvertent use.

## THE ALWAYS/NEVER DILEMMA AND INVULNERABILITY-VULNERABILITY PARADOX

Commenting on the ability of emerging nuclear powers to ensure stability, Bruce Blair said:

> For emerging powers, with fewer resources to lavish on control and command systems indeed face even higher risks. Their safeguards are bound to be cruder and weaker and are likely to be tested more often. The volatile relations between many have a large potential to erupt into a full-blown military confrontation, intensifying the trade off between positive and negative control and providing more opportunities for weaknesses in safeguards to emerge.[32]

As an example, the evolving nuclear command and control systems in South Asia are vulnerable to conventional attack—the destruction of which may prompt local commanders to launch. Both sides face a serious dilemma as they develop their command systems. On the one hand, the strategic command systems of each are relatively invulnerable, as each side has mobile assets and is unaware of the details of the other side's command and control structure. On the other hand, in a crisis, decisionmakers would be functioning under a high level of stress, with imperfect information, exaggerated threat perceptions, and worst-case assumptions. With imperfect information and a sense of responsibility to act or risk losing their nuclear assets, predelegation of nuclear launch authority might look attractive to leaders in both countries, especially after an outbreak of a conventional war. Dispersed nuclear forces under negative control by the national command authority would operate under fear that communications, which are invariably disrupted in a conventional war, might break down. Although the chain of command is clearly spelled out under all military contingencies, in the event of a command breakdown, a theater commander, seeing the opponent's forces marching into his area of responsibility, would be hard-

pressed to stand by and take no action. In the absence of communication with national command authorities, such a theater commander would likely take matters into his own hands.

In the crisis or conventional war scenario outlined above, Pakistani and Indian leaders will be confronted with the classic "always/never" dilemma. As Peter Feaver has argued, "leaders want a high assurance that weapons will *always* work when directed and similar assurance the weapons will *never* be used in the absence of authorized directions."[33] In the South Asian context, the always/never dilemma requires squaring several conflicting demands. The first is to keep weapons safe yet ready when required. Second, if an Indian or Pakistani nuclear weapons system is fully deployed and on full alert, it will be construed as posing an "imminent threat" to the other, generating further complications. For example, the state will receive opprobrium for having deployed and made an "overt" threat. Such a deployment could also provoke or at least provide a pretext for a preemptive strike by the adversary, though preemption may not be a possible, for reasons mentioned earlier. Third, nuclear weapons mated with delivery systems and dispersed for protection are prone to accidents and loss of control. Control will therefore be traded off with the demand for partial predelegation to make response effective. Dispersal of weapons also pushes the command system into a "vulnerability-invulnerability" paradox—a challenge to calibrate authorization and capability.[34] This paradox means that under threat of an attack the national command authority (NCA) would disperse assets to make them invulnerable, but it then becomes vulnerable to loss of control necessitating negative technical controls. While much would depend on the redundancy of communication, even negative control technology provides only a marginal degree of safety if the troops managing a particular weapon are determined to act before they are destroyed.

Such a posture of dispersal and predelegation would be undesirable from a crisis stability standpoint but justifiable under the prevailing circumstances in South Asia and thus stable. In a conventional war and under attack by modern conventional air forces, the command system will assure that the *always* part of the always/never dilemma is addressed and the *never* element becomes of lesser significance. In this regard, a conventional war in South Asia will be an excruciating command and control

challenge, especially for Pakistan, which is more vulnerable. The only possible way to assure stability in the absence of sophisticated positive and negative technical controls is by adopting a policy of assured destruction—i.e., a policy giving local commanders the authority to launch nuclear weapons at times of extreme jeopardy to conventional forces. Custodians of dispersed weapons must therefore be technically self-sufficient and capable of launch even if orders from the NCA are not received. The situation in South Asia thus compels the adoption of a loosely coupled nuclear command arrangement, which will necessitate a high degree of personnel reliability for nuclear weapons personnel and the highest standard of professional discipline.

## PATH TO THE FUTURE

The region now faces four political and strategic challenges. Two political challenges must be met to assure stability within the context of enduring India-Pakistan rivalry. The first challenge is how to break the current gridlock in bilateral relations. The second challenge is how to maintain a credible minimum deterrence force without engaging in an economically debilitating arms race. This challenge is greater for Pakistan than for India, but failure to address it will have negative implications for both countries. The first strategic challenge is how to create a security balance in the asymmetrical environment of South Asia. The second security challenge is how to configure the nuclear command system to assure safety (preventing accidents), security (maintaining authorized physical custody, preventing unauthorized tampering, access, and use), and survivability (mobility, dispersal, and hardening silos and command centers) under the harsh conditions of South Asia.

### Political Challenges

In their march into the 21st century, India and Pakistan have essentially two paths from which to choose. The first is a confrontational path based on cognitive biases. This path will involve an unconstrained arms race, dangerous military practices, and possibly the open deployment of nuclear forces in a "hair-trigger" alert status, resulting in increased security requirements. The second path is that of mutual accommodation and development of a cooperative security framework. This second path would imply a major political attitudinal change in both countries toward resolving outstanding political disputes, eschewing an arms race by building restraint regimes, and

creating an environment that improves the socioeconomic welfare of their citizens.

The cognitive path is a result of biases developed over a long period of time. Broad segments of the power elites (both secular and religious) in both countries share animosities that have gradually grown into institutionalized distrust, owing to several episodes since independence. However, the level of acrimony and bitterness has decidedly increased in recent years owing to the rise of extremism within both India and Pakistan. Hard-line attitudes beget uncompromising policies, which in turn sour the domestic climate and foster communal and ethnic violence. Under these circumstances, the prospects for a peace process seem dim. Without facilitation from outside powers, the process is unlikely to start on its own in the region. For example, as this article goes to press in April 2003, the bilateral negotiation track between India and Pakistan is completely blocked. In addition, world attention is focused on the crisis in the Persian Gulf, making outside facilitation unlikely for the moment. Over the longer term, efforts should aim to launch a process that will eventually lead to a lasting peace. Meanwhile, medium-term efforts should focus on regional crisis prevention. For the time being, crisis prevention rather than a sustained peace process appears to be the realistic course.

The immediate need is to move away from the path defined by past biases to the second model: a cooperative security framework. Steps should be taken to change the political climate from competition to accommodation and transform the zero sum mentality in both countries into a positive sum one. Indian attempts to isolate and marginalize Pakistan and Pakistani attempts to challenge Indian primacy are both futile and serve no one's interests. But such a transformation of the political climate and elite perceptions can come about only when a process is commenced that grinds forward, albeit painfully. It will become possible only with the honest arbitration of major powers in creating and sustaining a process.

## Strategic Challenges

In regard to the strategic challenges, unlike the Cold War, where resource constraints were not a limiting factor, affordability is an important factor in the case of South Asian regional deterrence. In terms of hardware, the technical stability of South Asian nuclear forces is currently lower than their Cold War counterparts. But it will gradually improve—albeit at a slow pace because the technologically advanced countries are following a denial policy.

Peacetime experience will allow the command systems to gradually mature. Safe management practices for nuclear weapons will improve over time. But beyond the economic factor, the conditions of instability in South Asia have to do more with the software—the attitudes and policy choices—than with hardware. Both India and Pakistan have declared minimum deterrence as a policy, but the requirement appears dynamic and there are no clear limits. In fact, India is the determining power as its "minimum deterrent" limits are measured against "unspecified enemies," implying both China and Pakistan. Indian strategic thinkers consider China to be the greater and potential long-term threat. But Pakistan is much more affected by Indian decisions than China, as the potential threat to Pakistan is real. Over 80 percent of India's armed forces are postured to fight against Pakistan, and Indian arms acquisitions and conventional fighting doctrines are tailored to fighting in the plains and deserts along the Indo-Pakistani border. The challenge is for Pakistan to make prudent choices by assuring balance, but not parity. Given current dynamics, Pakistani choices, not Indian restraint, will be the crucial factor in determining whether the region avoids the trap of an arms race. Pakistan must therefore determine its force level in terms of "affordability" and carefully trade off against other national requirements.

With an inward focus at the political level and at the strategic level, Pakistan must maintain its nuclear and conventional capabilities at a level that will make an adventure costly for India. Managing nuclear capability in peace, crises, and wars will remain a heavy task and affordability in the age of technological denial will be a key factor for both India and Pakistan as they move ahead with their nuclear forces development. Both India and Pakistan are expected to rely more on personnel and less on technology in their nuclear management systems. This emphasis will make the system prone to environmental and psychological challenges and human errors. In both societies, religious extremism is on the rise, and propaganda and campaigning is on the rampage. Therefore, reliance on human beings—who are affected by emotions and patriotism—will increase the requirements of personnel reliability programs. A middle course balancing reliance on personnel and technology will be more feasible because weapons are limited in numbers and are located within Indian and Pakistani territory. The harsh climatic conditions will make it challenging to prevent accidental explosions, especially with soaring temperatures dur-

ing summers. Maintenance of sensitive equipment in the field conditions of heat and dust will be another challenge.

Unlike Europe, where the mobility environment was profoundly different, South Asian roads and railways are relatively poor and the traffic is dense and often undisciplined. Moving liquid-based missile components would be hazardous and prone to accidents. Even solid-motor casts are vulnerable to damage as the result of poor road conditions; cracks can lead to catastrophic failures. These factors limit the utility of road-mobile missiles in South Asia. India has tried to overcome this problem by making its Agni I and Agni II missiles rail-mobile. Pakistan is also contemplating both rail and road mobility for its ballistic missiles. However, in Pakistan the railway line pattern is generally North-South and perilously close and almost parallel to the border with India. So while rail-mobile systems may work for India, Pakistan may have to seek other techniques to increase the survivability of its forces. In general, thus far both countries have managed safety and security even with their own low-tech arrangements. But the risk of technical failure will force them to make security arrangements that rely more on personnel. Humans can be relied upon where technology might fail. But humans are prone to temptations and mistakes. This is yet another paradox—the human-technology paradox—with which both India and Pakistan must contend.

## THE PROSPECTS FOR A REGIME BASED ON STABILITY MEASURES

Under a cooperative security framework, strategic challenges can be best addressed by negotiating a regime based on stability measures. Cooperative U.S.-Soviet efforts during the Cold War to maintain stability can be placed into two categories: (1) doctrinal resonance and recognition of the legitimate concerns of the other, and (2) mutual concessions and technical cooperation. The latter were made possible by the former. Any cooperation agreements or treaties that are signed without the bedrock foundation of mutual understanding will certainly not prove viable. This proposition has already proven true in South Asia, where numerous attempts at establishing communications and "hot lines" between India and Pakistan have fallen into disuse when the crises came.

A key to the region's future lies in creating a foundation and framework for peace and security, which could function as a support base, especially during crises. Immediately after the 1998 nuclear tests, India and Pakistan

conceded that since overt nuclearization had occurred, the use of force and war were no longer feasible instruments of national policy. The approaches of the two countries differed greatly, however. India probably believed that nuclearization would freeze the status quo in Kashmir. Pakistan, by contrast, believed that overt nuclearization implied speedy conflict resolution, particularly with regard to Kashmir. This hope was recognized in the Lahore Declaration of 1999. In the declaration, India and Pakistan acknowledged that "the nuclear dimension of the security environment of the two countries adds to their responsibility for avoidance of conflict between the two countries" and that they were "convinced of the importance of mutually agreed confidence-building measures for improving the security situation." Among others efforts, they committed themselves to "take immediate steps for reducing the risk of accidental or unauthorized use of nuclear weapons and discuss concepts and doctrines with a view to elaborating measures for confidence-building in the nuclear and conventional fields, aimed at prevention of conflict."[35] But with deep political mistrust and the strategic intent to outmaneuver the other or even old scores, India and Pakistan do not share a common connotation of stability and differ on the fundamentals of peace, not just over the concept of war in the nuclear age. Recent history between the two has seen that slapdash agreements reached in haste or under coercion inevitably fall by the wayside. There remains an urgent need for a durable peace and security framework.

Two historical examples suggest what might be possible in South Asia. In Europe the Conventional Forces in Europe (CFE) agreement was reached, stabilizing the military balance, but only after the larger conflict resolution process had run its course. Similarly, in the Middle East, the Arms Control and Regional and Security (ACRS) structure followed the Madrid Conference of 1991, which involved not just the regional players but also the United States. ACRS failed to produce an agreement because resolution of the larger Israeli-Arab conflict stalled at the political level. South Asia can learn from these two cases and add its own recent experience to produce the contours of a structure for a future regional peace process. The first lesson is that a peace process will collapse if progress toward the resolution of the underlying conflict is stalled. Second, a healthy conflict resolution process would lay the basis for military restraint and confidence-building measures, which in turn reduces the role played by military forces. Third, a process of conflict reso-

lution between two countries is better than one involving multiple actors (as was the case in ACRS). Fourth, facilitation provides room for less friction and dilutes biases and agendas. Perhaps, at the current moment, with Kargil and the crisis of 2001-2002 in the past, externally supported violence in Kashmir on the decline, and the United States actively building its relations with both India and Pakistan, the stage may be set for a new phase of talks directed at negotiating confidence-building measures between the two South Asian states. It may be better to begin at the outset with establishing crisis prevention measures so that potential "triggering events" do not turn into a crisis and erode any new progress that might be made.

## Restraint Measures

As the late Israeli Prime Minister Yitzhak Rabin pointed out, you don't have to make peace with friends; you only make peace with your enemies. A formalized restraint arrangement between India and Pakistan would be an important element of any settlement because of the adversarial relationship. A regime based on nondeployment of nuclear weapons would lower fears on both sides. For crisis stability, restraint with respect to weaponization and deployment is critical. Both countries have nuclear weapons and proven missiles to carry them. Prior to the 1998 nuclear tests, there had been a desire on both sides to have "only recessed or latent deterrence."[36] But after the tests, the question of "non-weaponized deterrence" is no longer relevant. The question that remains open, however, is whether the region will adhere to "nondeployed deterrence." Pakistan has offered to formalize such an arrangement in the past, but this offer was rejected by India. Nonetheless, both India and Pakistan in practice have nondeployed nuclear forces. The possibility of formalizing this situation remains open.

### Avoiding Dangerous Military Practices

As highlighted above, India and Pakistan can barely maintain normal diplomatic relations as this article goes to press. The United States and the international community have major stakes in preventing a nuclear conflagration in South Asia. Outside actors can play a major role in assuring stability in the region. The United States is now in a unique position to have leverage on both countries. The United States can seek assurance independently from each country that it will desist from dangerous military practices that could trigger a crisis and ensure that

command systems are effectively working in peacetime under recessed and non-mated conditions.

### Restraints on the Line of Control and Conventional Forces

In the 1987 Agreement on Prevention of Dangerous Military Activities, the United States and Soviet Union agreed to curtail border/boundary incursions, the use of range-finding lasers, ship/troop maneuvers in regions of high tension, interference with command/communication/control networks, and promote a joint military commission to discuss incidents and disputes.[37] Building on this precedent and others, India and Pakistan could craft an agreement that would seek to prevent crisis-triggering events. As part of such an agreement, the two countries could: 1) agree that the objective of their policy would be to remove the danger of war and that they will act to prevent the development of situations that could endanger peace and security in the region;2) agree to refrain from threat or use of force against each other and avoid military confrontations or activities that could lead to dangerous exacerbation of relations and/or out break of war; 3) undertake a program to maintain and improve existing organizational and technical arrangements to guard against accidental or unauthorized use of nuclear weapons; 4) agree to immediately enter into urgent consultations with each other when there is any risk of the outbreak of war; and 5) promptly notify the other side in the event of any questionable incidents, using all direct communications links/ hotlines.

### Nuclear and Missile Restraints

In the nuclear and missile fields, restraints are needed to bolster stability. Although both countries at present reject restraint arrangements that involve any intrusive verifcation measures, even a nonverifiable agreement on nondeployment that involves written assurance deposited with a third party would be sufficient. Below, some possible nondeployments measures are suggested. These general examples are illustrative, and not prescriptive.

A restraint regime for nondeployment would seek a mutual agreement based on three variable conditions in which nuclear weapons may be maintained. The margin of safety in each case will decrease as the warheads are placed on increasingly higher alert status. The status of the weapon must make security sense for managers of the command system. First, in normal circumstances, warheads should be stored without the cores and triggers installed. This

is the safest state and probably the way both sides manage them at present. Second, in crises or imminence of war, if the warheads are brought to a higher state of readiness, then critical components should still be kept removed so that at the least the non-nuclear and nuclear component are insulated from each other. Finally, if warheads are brought to an even higher state of readiness, in which nuclear and nonnuclear explosives are coupled, then they should still not be mated with delivery vehicles. Some additional steps could also be taken, such as keeping arming devices separate from missiles or using environmental sensing devices (ESD) and safety fuses. Missile-related restraints could include formalizing the agreement on notification of missile tests and refraining from testing during periods of heightened crisis or tension.

### Personnel Reliability Measures

A personnel reliability system will ensure that responsible people are involved in nuclear weapons management. Such personnel should be highly aware of the horrific nature of nuclear weapons, not be prone to knee jerk responses, and remain extremely disciplined even under pressure. The system should also include backup measures such as "two to three source" warning, and at a minimum, a "two or more persons" rule for access, which will reduce the risk of unauthorized use.

## OUTSIDE ASSISTANCE IN CRISIS MANAGEMENT

The only remaining strategy to avoid conflict in the absence of a dialogue and process to resolve issues will be crisis management. Indo-Pakistani crises must be avoided or, if this is not possible, contained. Aside from taking diplomatic measures, the United States can help provide crisis stability by strengthening technical stability measures in both countries. One of the key areas that should be addressed is surveillance and early warning. Shortcomings in these areas can cause misperceptions, false alarms, and instability. Generally, both India and Pakistan lack reliable, up-to-date surveillance or warning systems. However, because of its greater vulnerability, this issue is a bigger disadvantage for Pakistan. The United States can help leaderships in both countries by throwing light on the "blind spots" that currently exist. The United States might consider establishing a cooperative arrangement with India and Pakistan and assist them by providing timely information that could alleviate their concerns, especially in crisis situations. If both countries give a nondeployment pledge, for example, and as remote sensing and other monitoring technologies keep improving, the United

States could verify absence of deployment to both parties using its own satellites and other national technical means (NTMs). Such an arrangement could prevent misperceptions from spiraling into dangerous moves.[38] As an extension of this measure, a joint assessment arrangement, set up at a mutually acceptable location, could be established. The United States could also involve Russia and China, so as to placate any concerns of India and Pakistan regarding objectivity. In the long run, India and Pakistan must themselves accord a high priority to achieving a bilateral agreement on aerospace developments for surveillance and satellite monitoring. Such a confidence-building measure may look premature at present, but it will be critical to the nuclear future of both India and Pakistan.

India and Pakistan must enhance communication arrangements and establish Nuclear Risk Reduction Centers (NRRC), in their respective capitals.[39] The basic purpose of NRRCs will be to prevent nuclear crises and to establish a focal point for preventing any impending crisis from escalating. Outside countries could help establish such centers. One important role would be to help neighbors promptly respond to any unanticipated developments. This arrangement could be further extended to act as "nuclear accident centers." In the event of nuclear accident, the centers could confer with each other and report to their respective NCA or head of state, providing critical information for decisions.

The United States can play a vital role in encouraging such nuclear and political confidence-building measures. It must "carefully weigh the merits and pitfalls of sharing [its] expertise and, where possible, technology."[40] The United States could share experiences in various fields where management problems could arise, especially concerning possible technical and human errors. Personnel Reliability Programs (PRP) must be established in India and Pakistan so that an appropriate selection process is instituted. The United States may consider sharing its experience and procedures, as it has done with Russia under the Cooperative Threat Reduction Program. Similarly, the United States could share aspects of the experience of its Nuclear Emergency Search Teams (NEST), which could help India and Pakistan cope with a variety of nuclear incidents.[41] The United States could also share accident avoidance techniques and measures to reduce technological challenges, such as electromagnetic radiation and computer fallibility. The United States might also consult with India and Pakistan regarding generic physical protection and material accounting practices. A further step might include sharing sophisticated vaults and

access doors, portal command equipment, and possible advanced circuitry to prevent accidental launch.[42] Two key roadblocks must be overcome for such cooperation to take hold, however. The United States is constrained by its export control laws, and both India and Pakistan are sensitive to sharing nuclear designs and management techniques and locations for their own national security reasons. Therefore, the foregoing assistance suggestions are generic and general and any actual cooperative measures would need to be carefully designed. The basic idea is to strengthen stability where possible, without prejudice to respective national security requirements.

## CONCLUSION

It is incumbent upon India and Pakistan, as nuclear neighbors, to alter their relationship. The international community must also seek early resolutions to their apparently intractable political conflicts. Though conflict resolution seems a distant goal in South Asia, there is an urgent need to prevent formal nuclear and/or increased conventional force deployments. Aggressive military policies and engagement in an unrestricted arms race with inadequate safety measures and communications are a recipe for instability and crisis. Greater cooperation and the construction of a mutually acceptable framework for a stability regime will not happen, however, without resolve, a willingness to compromise, and outside facilitation.

This article has proffered possible risk reduction and confidence-building measures based on the identification of conditions that cause instability. The United States and the West more generally could help by sharing experiences, expertise, and technology. Political considerations, as well as bureaucratic interpretations of nonproliferation regimes and export control requirements, have so far stymied the development of meaningful cooperative efforts to build stability arrangements. Such assistance has been regarded by many in the West as "rewarding" Pakistan and India for proliferation. However, in the current situation, enhancing Indian and Pakistani capabilities to ensure stability and peace and providing incentives to reduce the risks of a nuclear war is a goal that necessitates reconsideration of previously accepted principles and practices.

[1] This article was written while the author was a visiting fellow at the Center for Nonproliferation Studies, Monterey Institute of International Studies. The author wishes to acknowledge valuable comments and suggestions by Leonard Spector and Gaurav Kampani. Special thanks are also due to Neil Joeck, Rodney Jones, Michael Krepon, and Gaurav Rajen. The views expressed here are, of course, entirely the author's and do not constitute those of the Pakistani government, any other agency, or of the reviewers and commentators.

[2] 1990—the start of the Kashmir insurgency; 1999—the Kargil conflict; 2001-2002—Compound Crises involving a massive mobilization of troops by both India and Pakistan.

[3] See, for example, Ashton Carter, John D. Steinbruner and Charles A. Zraket, eds., *Managing Nuclear Operations* ( Washington, DC: The Brookings Institution, 1987); Desmond Ball, *Can Nuclear War Be Controlled?* Adelphi Papers No. 169 (London: International Institute for Strategic Studies, 1981); and Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell University Press, 1991).

[4] Ashley J. Tellis, *Stability in South Asia* (Santa Monica, CA: RAND, 1997).

[5] The Tamil insurgency commenced in Sri Lanka and continues to date. The border clash with China happened in 1986-1987 in the Sumdorong Chu valley (Indian operation code named Chequerboard). See Waheguru Pal Siddhu and Jing–Dong Yuan, *Cooperative Monitoring for Confidence Building: A Case Study of Sino-Indian Border Areas*, Occasional Paper No. 13 (Albuquerque, NM: Cooperative Monitoring Center, Sandia National Laboratories, 1999), <http://www.cmc.sandia.gov/Links/about/papers/SAND98-0505-13/index.html>.

[6] Comments made by Ambassador Dr. Shirin Tahir-Kheli at a conference on "Minimum Nuclear Deterrence," sponsored by the International Institute of Strategic Studies (IISS), Mauritius, June 20, 2000

[7] After September 11, 2001, unprecedented tensions and a spate of terrorist attacks gripped South Asia. In Pakistan, the American Embassy and Christian churches were attacked, French officials were killed, and a *Wall Street Journal* reporter was kidnapped and murdered. In India the Parliament was attacked on December 13, 2001, and attacks on Indian army camps at Kaluchak in Jammu and Kashmir led to a massacre in May 2002 by unspecified terrorists. These incidents triggered crises that escalated into large-scale mobilization of troops and a ten-month standoff. A U.S.-led diplomatic effort succeeded in containing the crisis and the eventual demobilization of troops.

[8] Pakistani President Pervez Musharraf, "Address at the Woodrow Wilson International Center for Scholars," Washington, DC, February 12, 2002.

[9] Jessica Stern and Gregory Koblentz, "Preventing Unauthorized Access to and Use of Nuclear Materials and Weapons: Lessons from the United States and Former Soviet Union," paper delivered to the Stanford University Conference on Preventing Nuclear War In South Asia, Bangkok, Thailand, August 4-7, 2001.

[10] Jaswant Singh, the former Indian Minister of External Affairs, stated that parity is not essential for deterrence. Cited by Rajesh Basrur, "India's Evolving Nuclear Deterrence: the December 13 Crisis," unpublished manuscript, Henry L. Stimson Center, Washington, DC, 2002, p. 2.

[11] Michael Quinlan, interview by author, Rawalpindi, Pakistan, February 19, 2000; Michael Quinlan, "How Robust is India–Pakistan Deterrence?" *Survival* 42 (Winter 2000-01), p. 148.

[12] See, for example, Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, NJ: Princeton University Press, 1993). Sagan cites several Cold War-era near misses and dangerous practices during both the 1962 Cuban missile crisis and at other times.

[13] James J. Wirtz, "Beyond Bipolarity: Prospects for Nuclear Stability after the Cold War," in T.V. Paul, Richard J. Harknett, and James J. Wirtz, eds., *The Absolute Weapon Revisited: Nuclear Arms and the Emerging International Order* (Ann Arbor, MI: University of Michigan Press, 1998), p. 142.

[14] Robert S Litwak, "The New Calculus of Pre-emption," *Survival* 44, (Winter 2002-03), p. 54.

[15] See Waheguru Pal Singh Sidhu, "India's Nuclear Use Doctrine," in Peter Lavoy, Scott Sagan, and James J. Wirtz, eds., *Planning the Unthinkable* (Ithaca, NY: Cornell University Press, 2000), pp. 132-134; George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley, CA: University of California Press, 1999), pp. 239-244.

[16] Perkovich, *India's Nuclear Bomb*, p. 280, and Raj Chengappa, *Weapons for Peace: The Secret Story of India's Quest to be a Nuclear Power* (New Delhi: Harper Collins Publishers, 2000), pp. 322-323. See also Lieutenant General P. N. Hoon, *Unmasking Secrets of Turbulence* (New Delhi: Manas Publications, 2000), cited by Scott D. Sagan in a presentation at Stanford University Conference, Bangkok, Thailand, August 2001.

[17] V. R. Raghavan, "Limited War and Nuclear Escalation in South Asia," *Nonproliferation Review* 8 (Fall–Winter 2001), p 84. Some accounts differ, such as that by

Raj Chengappa, who claims that India upgraded the alert status of four Prithvi missiles and at least one Agni during the Kargil crisis. See Chengappa, *Weapons of Peace*. Similarly, Bruce Riedal, former Deputy National Security Advisor in the Clinton administration, has asserted that President Clinton confronted the Pakistani Prime Minister during a Blair House meeting with the assertion that Pakistani missiles had been armed with nuclear warheads. Pakistan did not take such actions, according to the personal knowledge of this author. During the "Compound Crisis" of 2001-2002, it is not known if India or Pakistan did anything to change the status of their nuclear forces.

[18] Address by Indian Defense Minister George Fernandes to the "2nd International Conference on Asian Security in the 21st Century," Institute of Defense Studies and Analyses, New Dehli, January 24-25, 2000; and a statement made by V.P. Malik, Indian Army Chief of Staff, that "Limited war can erupt anytime." See *Times of India* ( New Delhi), January 6,2000.

[19] Numerous authors disagree with this view, believing instead that the Indian security establishment views nuclear weapons primarily as tools which provide the political benefit of helping India avoid nuclear coercion. See, for example, Ashley J. Tellis, *India's Emerging Nuclear Posture: Between Recessed Deterrent and Ready Arsenal* (Santa Monica, CA: RAND, 2001); and Rajesh M. Basrur, "Nuclear Weapons and Indian Strategic Culture," *Journal of Peace Research* 38 (March 2001), pp. 181-98.

[20] Quinlan, "How Robust is India–Pakistan Deterrence?" pp.149-150.

[21] Pakistani Foreign Minister Abdul Sattar, Address to the Carnegie International Non-Proliferation Conference, Washington, DC, June 15 2001, <http://www.ceip.org/files/nonprolif/prolif2001/index.htm>.

[22] Italian scientists of the Landau network, based on interviews the author conducted with the Director-General Strategic Plans—the secretariat of the NCA in Pakistan—cited four factors that would be considered: capture of critical space, destruction, economic strangulation, and domestic uprising. The Pakistani Foreign office later clarified that these factors did not constitute operational nuclear thresholds as reported.

[23] Maj. Gen. Ashok Krishna, "Deployment of India's Armed Forces along the International Border (IB), the Line of Control (LoC) and at Sea," July 8, 2002, <http://www.ipcs.org/issues/700/788-mikrishna.html>, cited by Major Stephen Smith, U.S. Army, "Assessing the Risk of Inadvertent Nuclear War between India and Pakistan," Master's Thesis, Naval Post Graduate School, Monterey, California, December 2002, <http://www.ccc.nps.navy.mil/research/theses/smith02.asp>.

[24] "Nuclear Nightmare," Interview with Pakistani Brigader General Feroz Khan, Matthew McKenzie, and Professor Sumit Ganguly, PBS News Hour with Jim Leherer, May 31, 2002, <http://www.pbs.org/newshour/bb/asia/jan-june02/nuclear_5-31.html>.

[25] "Crisis in South Asia" The New Yorker, January 8th, 2002. p.40

[26] The author thanks Gaurav Kampani, Center for Nonproliferation Studies, Monterey Institute for International Studies for elaboration of this point.

[27] The exact reasons as to why India decided to de-escalate and not initiate war cannot be as ascertained unless records of the Vajpayee cabinet's deliberations are made public. A recent report in *India Today* suggests that the above was a restraining factor in June-July 2002, though not in January 2002.

[28] Posen, *Inadadvertant Escalation*, p. 2 . ; Smith, "Assessing the Risk of Inadvertent Nuclear War."

[29] V. R. Raghavan, "Limited War and Nuclear Escalation,"pp. 83-98.

[30] Morten H. Halperin, *Limited War in the Nuclear Age* (New York: John Wiley & Sons,1963), p. 2.

[31] Paul Bracken, "Delegation of Nuclear Command Authority," in Carter, Steinbruner and Zraket, eds., *Managing Nuclear Operations*.

[32] Bruce Blair, *The Logic of Accidental Nuclear War* (Washington, DC: The Brookings Institution, 1993), p. 9.

[33] Peter Feaver, "Command and Control in Emerging Nuclear Nations," *International Security* 17 (Winter 1992-1993), p. 163.

[34] This term has also been used by Scott Sagan recently in a different context. Sagan now contends that nuclear weapons dispersed under crises to ensure invulnerability become vulnerable to terrorist attacks or seizure.

[35] Michael Krepon and Chris Gagne, eds., *The Stability-Instability Paradox: Nuclear Weapons and Brinkmanship in South Asia*, Stimson Center Report No. 38 (Washington, DC: Henry L. Stimson Center, June 2001), p. 51; see also the Lahore declaration, February, 21 1999, <http://www.indianembassy.org/south_Asia/Pakistan/lahoredeclaration.html>.

[36] See Neil Joeck, "Nuclear Relations In South Asia," in Joseph Cirincione, ed., *Repairing the Regime*, (Washington, DC: Carnegie Endowment for International Peace, 2000).

[37] Agreement between the United States of America and the Soviet Union on Prevention of Dangerous Military Activities, 1987.

[38] Stephen P. Cohen, *Moving Forward in South Asia*, Policy Brief No. 81, (Washington, DC: The Brookings Institution, May 2001).

[39] A recent Henry L. Stimson Center Study proposes such risk reduction centers. See Rafi-uz Zaman Khan, *India and Pakistan: Can NRRC Help to Strengthen Peace?* Occasional Paper No. 49. (Washington, DC: Henry L. Stimson Center, 2002), <http://www.stimson.org/southasia/pubs.cfm?ID=69>.

[40] Kurt M. Campbell, "The Future of Military Diplomacy in US-Soviet Relations," in Alexander George, ed., *Avoiding War: Problems of Crisis Management* (Boulder, CO: Westview Press, 1991), p. 525.

[41] Pakistan expressed an interest in learning from the United States about the Personnel Reliability Program (PRP) and the Nuclear Emergency Search Teams (NEST) from the U.S. See Pakistani Foreign Minister Abdul Sattar, Address to the Carnegie International Non-Proliferation Conference.

[42] Similarly suggestions were made in David Albright, "Securing Pakistan's Nuclear Weapons Complex: Thought-Piece for the South Asia Working Group," paper delivered to the Stanley Foundation conference on "US Strategies for Regional Security," Airlie Conference Center, Warrenton, VA, October 25-27, 2001.