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INDIA'S NUCLEAR OPTIONS AND ESCALATION DOMINANCE

Toby Dalton and George Perkovich

MAY 2016



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Summary

Since the early 2000s, Indian strategists have wrestled with the challenge of motivating Pakistan to demobilize anti-India terrorist groups while managing the potential for conflict escalation during a crisis. The growing prominence of nuclear weapons in Pakistan's national security strategy casts a shadow of nuclear use over any potential military strategy India might consider to strike this balance. However, augmenting its nuclear options with tactical nuclear weapons is unlikely to bolster Indian deterrence in convincing ways.

Deterrence and Escalation in South Asia

- India continues to develop offensive conventional military options to respond to future terrorist attacks emanating from Pakistan, but these options do not mesh well with India's restrained nuclear doctrine and arsenal.
- Pakistan's adoption of tactical nuclear weapons lowers the threshold for nuclear use, further complicating India's conventional and nuclear options to deter and, if conflict cannot be avoided, defeat its neighbor.
- Some Indian and American strategists advocate India's development of tactical nuclear weapons to counter Pakistan's. This could give India sufficient perceived advantage in an escalating conflict to motivate Pakistan to stop cross-border terrorism.
- The prospect of employing limited nuclear options raises unresolvable questions about whether nuclear war can be limited and about India's capabilities to acquire and manage forces to prosecute limited nuclear war.

Implications for Indian Strategy

India's existing and projected nuclear capabilities are sufficient to deter Pakistan from starting a conventional war. The risk of war arises primarily from terrorism emanating from Pakistan. If India does not intend to put military boots on Pakistani soil in response to a terrorist attack, which could trigger Pakistani nuclear use, then India has no need for tactical nuclear weapons.

India's current nuclear capabilities do not give it credible options for limited use. India would need significant investments in military hardware, software, and an array of enabling capabilities to make employment of limited nuclear options feasible and credible.

Indian tactical nuclear weapons are unlikely to motivate Pakistan to demobilize groups that attack India. There is little basis for confidence that additional nuclear capability can resolve this challenge.

Indian tactical nuclear weapons may increase the likelihood that a future conflict on Pakistani territory will go nuclear. Use-or-lose pressures on Pakistani military commanders would grow if India acquired these weapons, making unintended escalation likelier.

If India opts to develop limited nuclear options, policymakers should refrain from announcing a capability before it exists. There is a tendency in India to announce or publicly discuss operational concepts or weapons systems before they exist. Doing so would prompt Pakistan to develop new countermeasures.

Introduction

Would changes in India's nuclear doctrine, force posture, or capabilities enhance its deterrence of threats from Pakistan? Without a more flexible nuclear capability and doctrine to better manage escalation risks, can India's efforts to deter cross-border terrorism and other hostile acts with punitive conventional military options be effective? Should India develop tactical-nuclear-weapon capabilities and an associated limited-nuclear-options strategy to counter those of Pakistan?

Since the early 2000s, Indian strategists have wrestled with these questions in addressing the challenges of motivating Pakistan to demobilize anti-India terrorist groups and, relatedly, managing the potential for conflict escalation during a crisis. The shadow of nuclear use hangs over any potential military strategy India might consider—whether limited conventional ground options, precision airstrikes, or covert operations. While using nuclear weapons is an option of last recourse, the growing prominence of nuclear weapons in Pakistan's national security strategy suggests an increased probability of nuclear use earlier in a conflict. Although Pakistan and some other countries with nuclear weapons (such as the United States) maintain first-use nuclear policies, it is generally understood that a surprise disarming first strike is highly improbable, including in South Asia. Instead, use of nuclear weapons is more likely to result from escalation of conventional conflict, inadvertent targeting of nuclear weapons, or accidental or unauthorized launch.

But in South Asia, questions about the unitariness of the Pakistani state and its association with groups that have conducted attacks in India create a unique circumstance—the linkage between subconventional aggression emanating from Pakistan and Pakistan's stated threat of nuclear escalation to deter Indian responses—not well explored in classic deterrence theory.¹ Simply put, Western deterrence theorists never contemplated a nuclear-armed adversary that tolerated or employed subconventional violence by proxy on the adversary's homeland. Indian and Pakistani nuclear planners are charting new territory. As the late Indian strategic thinker K. Subrahmanyam observed, “There is not much, if any at all, literature on the game of deterrence among the second- and third-rung nuclear nations under such conditions of uncertainty. So we have to think for ourselves.”²

India, with its commitment to no first use of nuclear weapons, has not utilized nuclear weapons to substitute for or complement other forms of force or

The shadow of nuclear use hangs over any potential military strategy India might consider—whether limited conventional ground options, precision airstrikes, or covert operations.

coercion to motivate desired changes of behavior by Pakistan. Nevertheless, rapid improvement in nuclear capabilities by Pakistan and gradual nuclear modernization by China have changed India's national security environment in ways that compound deterrence challenges. India has maintained since 1998 a three-pillar nuclear policy of credible minimum deterrence, no first use, and massive retaliation in case India is attacked first with nuclear weapons. This approach to nuclear deterrence is, in the words of former Indian foreign secretary Shyam Saran, "appropriate to the current geopolitical environment, is aligned with [India's] existing and projected levels of technological capabilities and affordability and most importantly, is reflective of India's domestic realities and its value system."³ However, some experts and former military officials in India, echoed by Western analysts, have begun to question whether India should alter its approach to nuclear deterrence to better fit its current and future strategic environment.

The aim here is to analyze the implications of an Indian decision to augment its nuclear options. Nuclear weapons are not a direct substitute for conventional military capabilities or covert operations. Rather, they can be seen as a complement to India's conventional military instruments in scenarios with escalatory potential. Neither Pakistan nor India is likely to conduct bolt-from-the-blue nuclear attacks on the other, nor will Pakistan risk initiating a major

conventional war against India. A myriad of national interests backed by mutual second-strike nuclear deterrence render such threats unrealistic in South Asia at the present time. The analytical focus is on the role of nuclear weapons in an escalating crisis, such as might begin with a major terrorist attack on India emanating from Pakistan.⁴ This analysis draws primarily on Indian debates and sources, as well as the literature and experiences of sources from outside South Asia that may illuminate the dilemmas Indian

officials and analysts confront. However, no other nuclear-armed competitors have faced challenges as complex as those that Indians and Pakistanis now face, given the potential role of terrorism as the trigger for escalation up the ladder from subconventional to conventional to nuclear conflict.

Fundamentally, as long as India does not plan to execute an offensive conventional military capability that would result in Indian troops entering Pakistani territory, tactical nuclear weapons are unlikely to bolster Indian deterrence in convincing ways. On the contrary, introducing tactical nuclear weapons raises very difficult questions about whether nuclear war can be kept limited, and may even raise risks of military confrontations resulting in nuclear use. India's existing capabilities, along with its planned investments in naval nuclear forces, provide it a credible and assured deterrence posture that is sufficient to deter Pakistan from starting a major conventional or nuclear war. However, there is no basis for confidence that Indian nuclear weapons—whether strategic or

Introducing tactical nuclear weapons raises very difficult questions about whether nuclear war can be kept limited, and may even raise risks of military confrontations resulting in nuclear use.

tactical—can significantly impact Pakistani motivations to demobilize militant groups that attack India.

An Evolving Nuclear Landscape

The shadow of nuclear deterrence has loomed over the security landscape in South Asia since well before May 1998, when India and Pakistan conducted nuclear-weapon test explosions. Scientists and strategists in both countries began writing about the atomic bomb in the 1950s in parallel to the development of their nuclear science and energy programs.⁵ Global developments were among the factors that drove India to conduct what it termed a “peaceful” nuclear test in 1974⁶—in particular India’s defeat in a border conflict with China in 1962, China’s first nuclear-weapon test in 1964, and the perceived intrusion of the United States and the Soviet Union on India’s autonomy during the 1971 war with Pakistan. Despite this test and the resulting denial of trade and assistance to India’s nuclear energy program, India’s leaders took few steps to weaponize the fissile material it produced. India did not build a nuclear arsenal or even seek to exercise nuclear deterrence against its neighbors until the mid-1980s.⁷ Instead, Indian leaders chose to emphasize quite different nuclear-related policies, including challenging the discriminatory nature of the global Nuclear Non-Proliferation Treaty (NPT) and the dangers of arms racing by the Cold War superpowers, as well as offering proposals to jump-start a nuclear disarmament process. The unusually slow pace of nuclear-weapon development, coupled with the importance given to disarmament in India’s foreign policy, speaks to the Indian elite’s enduring view of nuclear weapons as political rather than military tools.⁸

Pakistan’s nuclear-weapon program, meanwhile, was initiated following the ignominious loss of the eastern half of the country in the 1971 war with India.⁹ The sense of existential threat and insecurity since the partition of India and Pakistan in 1947, compounded by the subsequent bifurcation of Pakistan that produced Bangladesh in 1971, clearly helped motivate Pakistan to develop the bomb. For Pakistani politicians and military officers, nuclear weapons became a way to deter future conventional war with India that might threaten further territorial losses or even the survival of the state. Pakistan opted to pursue its nuclear-weapon efforts quietly, drawing on clandestine procurement of foreign technologies and equipment, and it was aided on several occasions by China. Importantly, General Muhammad Zia-ul-Haq’s 1977 coup d’état, which ushered in a lengthy period of military rule in Pakistan, placed the responsibility for and control of nuclear-weapon development in the military’s hands, an arrangement unchanged since then, despite periods of democratic rule. As a result, the roles and requirements for nuclear weapons in Pakistan’s national security policy have been defined by the military. Consequently, and in stark

contrast to India, most Pakistani officials and experts view nuclear weapons largely in terms of military capability.

Although the public record does not clearly indicate precise dates by which India and Pakistan possessed deliverable nuclear weapons, indirect deterrence signaling between the two began to emerge in the later stages of the 1986–1987 Operation Brasstacks crisis, which started when India held a major military exercise near the border.¹⁰ A crisis in Kashmir in 1990 saw more direct, albeit ambiguous, nuclear signaling, with references to the mutual possession of nuclear weapons made by senior military officers in both countries. These signals, and the potential that the situation might turn confrontational and escalate to nuclear use, spurred the United States to intervene to defuse the crisis.¹¹

These early experiences with nuclear-shadowed crises appear to have reinforced the very different views held by the policy elite in each country about the utility and practice of nuclear deterrence. In India, the events underscored that nuclear weapons were not primary instruments of India's defense policy,

Early experiences with nuclear-shadowed crises appear to have reinforced the very different views in India and Pakistan about the utility and practice of nuclear deterrence.

and that the possession of nuclear weapons by both states made potential escalation very dangerous. In Pakistan, these crises affirmed that nuclear threats had what nuclear scholar Vipin Narang calls “catalytic” value—as a means for attracting the attention of outside powers, namely the United States, who would then intercede to calm tensions and, Pakistani strategists believed, validate the legitimacy of Pakistan's grievances against India.¹² Pakistani strategists may have concluded after the 1990 Kashmir crisis

that possession of nuclear weapons would allow Pakistan to give more direct support to proxy groups such as Lashkar-e-Taiba that attack India, insofar as the risk of escalation could dissuade India from retaliating in a militarily significant way.¹³ These attitudes persist, despite the maturation of nuclear technologies and gradual stockpiling of nuclear weapons by both states.

The 1998 nuclear tests not only brought the nuclear situation in South Asia more into the open but also forced India and Pakistan to grapple with the need to formulate and enunciate policies on nuclear deterrence that would reassure the international community that both states would be responsible stewards of nuclear weapons and materials. They faced enormous international pressure following the tests, including through United Nations (UN) Security Council Resolution 1172, which urged India and Pakistan “to exercise maximum restraint,” “to resume the dialogue between them on all outstanding issues,” and “to stop their nuclear weapon development programmes.”¹⁴ Although this resolution was roundly criticized in both countries, international concerns did seem to factor into their decisionmaking and posturing following the nuclear tests. Namely, both sides emphasized restraint as a central principle in their respective emerging nuclear doctrines.

Indeed, for a time it seemed that nuclear weapons could stabilize the subcontinent. The then prime ministers, Nawaz Sharif of Pakistan and Atal Bihari

Vajpayee of India, met first in New York in September 1998 and then in Lahore in February 1999 and announced a series of nuclear-related confidence-building measures. This progress was quickly halted, however, by the Kargil conflict between India and Pakistan in spring 1999.¹⁵ Notably, the overt possession of nuclear weapons by both sides did not deter Pakistan from undertaking the Kargil operation or India from responding and escalating the level of violence with the use of airpower. However, it is clear from New Delhi's policy deliberations at the time that concerns about the potential for nuclear escalation and India's desire to be seen as a responsible nuclear power did constrain India's response.¹⁶

Following the Kargil conflict, as Indian officials and experts contemplated developing a nuclear doctrine, an overriding concern was "to establish India's role as a responsible nuclear-armed state that is willing to pursue confidence-building measures . . . in its region," former Indian nuclear envoy Rakesh Sood explained in 2014.¹⁷ Accordingly, in August 1999 when the Indian government released a report prepared by the National Security Advisory Board (NSAB) on the parameters for India's nuclear policy, it prefaced doctrinal pronouncements with a reiteration of prior Indian positions on the NPT, disarmament, and nonproliferation. The NSAB report stressed that "India's primary objective is to achieve economic, political, social, scientific and technological development within a peaceful and democratic framework."¹⁸ It then described the three major pillars of Indian nuclear policy: credible minimum deterrence; no first use of nuclear weapons; and "punitive retaliation" to inflict "unacceptable" damage in response to a nuclear attack on India. The report clarified that "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." It further indicated that India would develop a triad of nuclear forces and would organize these forces and command-and-control systems "for very high survivability against surprise attacks and for rapid punitive response." The unofficial status of this document—a report from a group of civilian expert advisers to the government—obscured whether it reflected India's official policy, but the ideas contained in the report were closely aligned with those stated by government officials on several occasions.¹⁹

In January 2003, just three months after the conclusion of the 2001–2002 crisis, in which India massed half a million troops on the international border with Pakistan in Operation Parakram, the Indian Cabinet Committee on Security released a short statement that made India's doctrine official. It reiterated most of the major points of the 1999 draft doctrine but altered two of the pillars in important ways. The no-first-use policy was caveated, so that India might retaliate to a nuclear attack not just on Indian territory but also "on Indian forces anywhere." And "punitive retaliation" was reconfigured as "massive" retaliation.²⁰ These changes leave much to interpretation; their significance and how they figure in the current Indian discourse will be addressed later.²¹

Since India's doctrine established that nuclear weapons would be used only to deter a nuclear attack, Indian strategists searched for non-nuclear options to

deter, dissuade, or compel Pakistan to cease supporting or harboring groups that attack India. Operation Parakram was in some ways effective in extracting concessions from Pakistani leaders: to agree to outlaw Lashkar-e-Taiba and cease supporting militant infiltration in Kashmir.²² But this slow, massive mobilization came at a very heavy price and frustrated Indian military leaders and security analysts who felt that the eschewal of punitive military action weakened India's deterrence and compellence of Pakistan.

The putative Cold Start doctrine—an Indian Army plan to transform the military to be able to mobilize rapidly and execute punitive combined forces thrusts into Pakistani territory—offered a visible example of the Indian Army's search for more effective means to coerce Pakistan, drawing on the lessons of Operation Parakram.²³ But the essential problem in India's effort to develop military options—to put conventional rungs on the escalation ladder below the nuclear threshold—is that Pakistan's nuclear strategy and capabilities are intended to deter exactly such options. The more it seems that India is contemplating robust and timely conventional military operations, the more Pakistani military leaders seek to raise the salience of first use of nuclear weapons to deter such operations. While India was wrestling with and ultimately opting not to execute a doctrine like Cold Start from 2002 through the 2008 Mumbai crisis, Pakistan was developing new nuclear-capable ballistic and cruise missiles whose purpose was clearly enunciated when Pakistani officials began to talk in 2011 of exercising “full-spectrum” deterrence.²⁴

In Pakistan's parlance, a full-spectrum policy entails the ability to deter threats at the tactical, operational, and strategic levels. Short-range nuclear delivery vehicles integrated with Pakistan's military command structure and coupled with the full-spectrum declaratory language are intended to give this concept sufficient credibility to deter India from exercising military options at any of these levels of conflict. In a crisis, Pakistan presumably would deploy tactical nuclear weapons on the battlefield to make this threat, and attendant escalation risk, a real possibility. One newer missile system—the mobile, 60-kilometer-range (about 40-mile-range), multiple-tube-launched Nasr—is advertised by Pakistani officials specifically for this purpose, and more pointedly as an answer to India's Cold Start concept.²⁵ If deterrence fails, Nasr missiles could be used to target Indian tank battalions in a confrontation, perhaps on Pakistani soil. Employment of limited nuclear options in this manner necessarily lowers the threshold for nuclear use, while simultaneously increasing the potential for nuclear retaliation and escalation. These risks are meant both to deter India and to play on the international community's fears of nuclear war in South Asia.²⁶

Some Indian analysts doubt Pakistan's technical capabilities to conduct full-spectrum nuclear operations and dismiss the threat to do so as a bluff to generate alarm, confound a slow-moving Indian policy process, and catalyze outside intervention.²⁷ Looking back at the period of crisis and conflict since 1990, however, many analysts assess that Pakistan's nuclear posture has

effectively deterred India from undertaking conventional military responses or otherwise escalating militarized crises. Vipin Narang finds, for instance, that “Pakistan has been able to uniquely and directly achieve deterrent success against India.”²⁸ This is quite a strong conclusion and probably overstates the specific role of Pakistan’s nuclear posture in deterrence, while undervaluing the cautious approach of India’s civilian leaders, who have tended to eschew risks of escalation that might threaten other governing priorities, particularly economic growth.

However, Indians recognize that nuclear weapons will not deter Pakistan and terrorists from perpetrating small-scale violence against India. The late P. R. Chari, one of India’s eminent thinkers on nuclear strategy, asserted for example that

nuclear weapons cannot provide any defense against the subconventional threats to India’s national security from extremist elements within its own territory or, especially, against those who receive moral and material assistance from across the border. . . .

Nuclear deterrence can only provide security against the use of nuclear weapons or a major conventional attack. . . . In other words, nuclear deterrence cannot accomplish any vital national security goals other than preventing an adversary from using nuclear weapons.²⁹

Indian foreign policy experts and officials tend to share the view that the sole purpose of India’s nuclear weapons should be to deter nuclear aggression.³⁰ But for others, Pakistan’s current nuclear posture amounts to what Shyam Saran terms “nuclear blackmail,” and thus India’s nuclear weapons ought to be postured to counter it.³¹ One central figure in former prime minister Manmohan Singh’s government summed up the situation this way in a 2014 interview:

The new debate over nuclear policy has started because tactical nuclear weapons are being developed and deployed in Pakistan, so how do we respond? Pakistan is turning to Cold War tenets that were proved untenable before. Why should we follow them? The mainstream view here has been remarkably consistent. The military may want more options and symmetry—the usual macho sentiment—but this can be swiftly put aside.³²

As this view makes clear, the debate about India’s doctrine is in many ways a larger contest about foreign policy and nuclear strategy. For forty years, India’s nuclear weapons have served primarily domestic and foreign policy objectives of projecting India as a major technological power. Deterrence has been more an abstract concept and a secondary objective, rather than a military tool, especially insofar as military officers and planners have been deliberately excluded from decisions about nuclear policy, doctrine, and force posture. It is therefore not a coincidence that many of the more strident voices in India’s nuclear debate are retired military officers. They contend that much is wrong

with India's nuclear policy and argue that corrections to doctrine, posture, and capabilities can provide India greater leverage to change Pakistan's calculus.

Nuclear Debates

Many of the current debates among Indian experts began well before the nuclear tests in 1998 and the release of the NSAB doctrine report in 1999.³³ But this issue gained political prominence during the 2014 Indian general election for several reasons. Among these, India's civilian and military leaders had not found feasible military options to punish Pakistan following the 2008 attacks by Lashkar-e-Taiba in Mumbai. India appeared to be falling behind Pakistan in both quantity and quality of nuclear weapons and delivery vehicles, as Pakistan introduced the Nasr missile and announced its posture of full-spectrum deterrence. And Indian military officers expressed frustration at the slow pace and lack of prioritization accorded management and control of Indian nuclear forces. These factors led former foreign minister Jaswant Singh, for example, to assert in 2011 that the nuclear policy he had helped put in place after the 1998 tests was "very greatly in need of revision because the situation that warranted the enunciation of the policy of 'no-first-use' or 'non-use against non-nuclear weapons,' 'credible deterrence with minimum force,' etc. has long been overtaken by events. You cannot continue to sit in yesterday's policy. We need to re-address it."³⁴ Picking up this argument, the drafters of the 2014 Bharatiya Janata Party (BJP) election manifesto charged that the "strategic gains acquired by India during the Atal Bihari Vajpayee regime on the nuclear programme have been frittered away by the Congress [government of Manmohan Singh]."³⁵

These factors, with impetus added by the BJP election manifesto, have spurred thinking about how changes in Indian nuclear doctrine and capabilities might better motivate the Pakistani security establishment to demobilize militant groups that attack India. (Officially, Pakistan denies support as well as culpability for the actions of these groups.) Interest in altering India's nuclear policy comes generally from a perception that, in the pointed words of retired Indian Air Marshal Brijesh Jayal, it is "good in theory, but not credible in practice."³⁶ Responding to this sense of inadequacy, Indian National Security Adviser Ajit Doval stressed during an October 2014 speech that India will have "an effective deterrence capability which is credible."³⁷

Yet, this is clearly not a boundless debate. There are limits to what even those who argue for more options are willing to entertain. As one former head of Indian Strategic Forces Command indicated in a 2014 interview, speaking of the U.S. effort to develop limited nuclear options in the 1960s and 1970s, "Nowhere has it worked. [Former defense secretary Robert] McNamara repudiated it. There is no realistic model for it. It has arms race potential."³⁸ Thus, the room for potential changes in Indian nuclear policy seems relatively narrow

at this juncture. But in order to weigh possible future options, it is necessary to consider arguments about India's current nuclear policy and capabilities. The three streams of argument that are most pertinent have to do with India's no-first-use (NFU) policy, massive retaliation, and nuclear inferiority.

No First Use

Consistent with what Rakesh Sood calls the "moralpolitik" that drove India's nuclear-related foreign policy from the 1960s, as well as the conviction that nuclear weapons are political tools not intended to be used in a military conflict, no first use of nuclear weapons has been an enduring feature of India's nuclear strategy.³⁹ The 1999 and 2003 doctrinal statements reiterated the NFU policy, though both also introduced caveats. Fealty to no first use remains strong among Indian politicians and strategists. Then prime ministerial candidate Narendra Modi, for example, in early 2014 declared it a "reflection of our cultural inheritance."⁴⁰ Still, long-standing reservations also exist about the credibility and relevance of India's NFU policy to its strategic environment.

One scenario in particular seems to concern Indian strategists: if Pakistani leaders opted to cross the nuclear threshold and use nuclear weapons against Indian armored forces entering Pakistani territory, Pakistani leaders would also face the risk that this initial use might spark an Indian nuclear response—as specified by India's doctrine. This possibility might encourage Pakistan's leadership to seek to limit damage from a possible Indian retaliatory nuclear attack by simultaneously launching a large strike against India's nuclear arsenal, thereby degrading India's capability to retaliate massively. According to this scenario, India's NFU policy could give Pakistani leaders confidence that they could deter or defeat a conventional military campaign by India in retaliation to a terrorist attack. The possibility that India would face significant devastation on its own territory, without the capability to respond in ways that threaten unacceptable damage, would degrade the credibility of Indian deterrence.

This seems to be a major concern, for example, of former Indian strategic forces commander Lieutenant General B. S. Nagal, who asserts, "NFU implies probable large scale destruction in [India]." He extends the logic further:

NFU policy cannot conduct a first strike on the adversary's counterforce targets, thus allowing the adversary full capability to attrite [India's] capability. In the current environment of mobile systems on land and [ballistic missile submarines] at sea, the probability of destruction of the adversary strategic assets will be extremely low or negligible in a second strike, this therefore limits [India's] retaliatory nuclear strikes to counter value targets, once again a moral dilemma.⁴¹

Conceivably, India could address this issue by introducing additional ambiguity into its declaratory policy, beyond the existing caveat that permits use

Fealty to no first use remains strong among Indian politicians and strategists.

of nuclear weapons in retaliation for an attack on Indian forces anywhere. If Pakistani leaders had reason to doubt that India would be bound to no first use (which some of them already are inclined to doubt), they would be less certain that India would not try to preempt or disarm Pakistan before it could launch a large countercapability nuclear strike. This would enhance the perceived credibility of India's deterrence against a first strike, while also reducing the possibility that a large portion of India's nuclear assets might be destroyed in a major counterforce attack. For these reasons, P. R. Chari concluded in 2014 that "adoption of a deliberately vague policy in regard to nuclear retaliation by India, instead of the certitude of a no-first-use declaration, might have better served India's overall strategic ends."⁴²

Massive Retaliation

It is not clear what drove Indian officials to change the terminology from "punitive" to "massive" retaliation between the 1999 and 2003 doctrinal statements. The timing of the 2003 statement, coming on the heels of the 2001–2002 crisis and Operation Parakram, may indicate frustration and simply a desire for tough public posturing.⁴³ Whereas punitive suggests proportionality and flexibility in the scale of a nuclear counterattack, massive is far less nuanced and intended to leave no doubt that any nuclear attack will invite widespread and perhaps total destruction. As one participant in a November 2014 policy seminar in New Delhi averred, "If you say proportionate response, that invites war-fighting. Massive retaliation is better; they will be deterred."⁴⁴

One justification for the massive retaliation policy, offered by Shyam Saran in 2013, rests on the conviction that there is no distinction between strategic and tactical nuclear use: "Any nuclear exchange, once initiated, would swiftly and inexorably escalate to the strategic level."⁴⁵ Because the sole purpose of India's nuclear-weapon posture is to deter use of nuclear weapons against India, as opposed to lesser contingencies, India can treat all nuclear threats equally. This should deter Pakistani first use even if it is against Indian troops on Pakistani territory. As another participant at the New Delhi seminar put it, "We have no doubt they can do residual damage to India, but the possibility that we would hit them massively will deter them."⁴⁶

For proponents of this policy, massive retaliation is an important bulwark against sliding into contemplation of limited nuclear war or even war-fighting. It is a necessary condition for preserving the political nature of India's deterrence.

But just as there are potential issues of credibility with no first use, massive retaliation also invites skepticism.

Retired Admiral Raja Menon, for instance, asserts that "the ideational systems that will ensure the 'massive' retaliation promised in the doctrine are being increasingly questioned by scholars and analysts worldwide."⁴⁷ Chari similarly found massive retaliation, to include countervalue targeting, "an unrealistic certitude because, ethically, punishing large numbers of noncombatants

contravenes the laws of war. Besides, threatening massive retaliation against any level of nuclear attack, which would inevitably trigger assured nuclear annihilation in a binary adversarial situation, is hardly a credible option.”⁴⁸ Manoj Joshi, a leading Indian strategic affairs journalist, adds that some in India do not “believe that if Pakistan uses a singular nuclear detonation for signalling purposes, a massive retaliatory response is likely or, indeed, in India’s security interest.”⁴⁹ If the choice before Indian decisionmakers is all or nothing, the threshold for an order to execute massive retaliation will be quite high, intensifying dilemmas in responding, for example, to a demonstration nuclear blast by Pakistan or confined detonations on the battlefield in Pakistan. Graduated responses would in theory lower the political threshold for ordering nuclear retaliation and could—if escalation could be managed—prevent major damage that would result from a large nuclear exchange.

Were Pakistan to use nuclear weapons first in a limited way, the resolve required of India’s civilian and political leaders to follow through on the commitment to massive retaliation would be harshly tested. It is not surprising, therefore, that the political credibility of massive retaliation invites skepticism, as well as worry. Indian nuclear expert Manpreet Sethi argues, for instance, that India should “focus on enhancing the credibility of its nuclear deterrence. Pakistan does not doubt India’s capability, but its political will in mounting retaliation. . . . The doubt in the mind of the adversary appears to be whether India with a strategic culture of military restraint would find it prudent, and more importantly, morally acceptable to inflict damage (and risk more on itself) in response to a threat that is not itself mortal.”⁵⁰ Nagal also describes the political commitment problem that currently exists for India: “It is absolutely certain, resolved, definite, unambiguous and assured that the political leadership will take correct decisions in the face of nuclear attacks.”⁵¹ It is not clear whether he is seeking to reassure himself that India’s political leadership would follow through with massive retaliation or, more subtly, that he is highlighting the improbability that India’s leaders would make such a decision. Given these doubts about massive retaliation, many Indian experts, former officials, and retired military officers unsurprisingly urge shifting to an assured retaliation posture that does not depend on such a high political threshold—for example, a return to the prior, punitive response formulation contained in the 1999 NSAB report.

Many Indian experts, former officials, and retired military officers unsurprisingly urge shifting to an assured retaliation posture that does not depend on such a high political threshold.

Nuclear Inferiority

Pakistan’s development of the Nasr ballistic missile and the Ra’ad and Babur cruise missiles provides it with several full-spectrum deterrence delivery options—assuming it has also invested in enabling capabilities, command and control, and operational concepts that permit their use in counterforce

roles—capabilities that Pakistan may not have perfected yet.⁵² In recent years, Pakistan has quadrupled its plutonium production capability, adding to the facilities it possesses to enrich uranium for nuclear weapons. Estimates from 2015 of Indian and Pakistani fissile material production capability suggested that Pakistan may be able to make four or more nuclear weapons for each one that India can make, provided India does not also expand its fissile material production capacity or utilize reactors that otherwise generate electricity for the power grid.⁵³

Recently, awareness has grown in India that it has fallen behind Pakistan in nuclear capability. For instance, in a 2011 speech before the Lok Sabha, Jaswant Singh warned, “Pakistan is already in possession of about 100-110 nuclear warheads that are deliverable whereas I know that India has 50 to 60. I do not know why we are keeping these facts as hidden. Why are we not having an open debate about this matter?”⁵⁴ If India remains primarily concerned about the minimum in its policy of credible minimum deterrence, then whether or not Pakistan has twice as many nuclear weapons as India need not matter. But if it is more concerned with the credibility of this policy, then relative capabilities are important.⁵⁵ This is especially true in the strategic situation in which India’s immediate objective is to create conditions for winning an escalatory contest of conventional forces in response to a subconventional attack emanating from Pakistan.

Since 1998, and really since the 1980s, India has been content to build its nuclear arsenal slowly.⁵⁶ In 1999, the NSAB report indicated that India would pursue a triad of delivery vehicles. Air-delivered bombs were the first option India possessed. Since then it has inducted several variants of the Prithvi and Agni nuclear-capable ballistic missiles into its arsenal, such that it is now able to reach Beijing with nuclear weapons. The sea leg of its triad has been slowest to mature. In late 2014, India initiated sea trials of its first indigenously constructed (with substantial Russian assistance) nuclear-powered submarine, the INS *Arihant*, which was declared ready for service in early 2016.⁵⁷ India plans to construct two additional boats in this class before building a larger submarine more suited for lengthy deterrence patrols and capable of carrying missiles with longer ranges.⁵⁸ India also has been developing short- and medium-range nuclear sea-launched ballistic missiles to be deployed on its submarines.⁵⁹ Notwithstanding these developments, India still remains years away from a fully operational sea leg of its triad that could give the desired assured second-strike capability.⁶⁰

Two other issues have exacerbated the concerns that emerge from the combination of Pakistan’s evolving nuclear superiority and the languid development of India’s nuclear arsenal. The first is that some quarters in India are skeptical that the thermonuclear device reportedly tested in May 1998 actually performed as claimed by the scientists who conducted the test. Weapons with high yields are meant to provide the backbone of India’s massive retaliation posture. Controversy erupted in September 2009 when K. Santhanam, a senior scientist

from India's Defense Research and Development Organization (DRDO) in charge of instrumentation during the 1998 nuclear tests, claimed that the thermonuclear test "fizzled."⁶¹ Government agencies and a number of other scientists involved in the tests rebutted Santhanam's claims, but apparently there was sufficient concern that the prime minister's office ordered a secret committee to investigate.⁶² Further questioning the viability of this design, Santhanam asserted "that even after 11 years the [thermonuclear] device has not been weaponised by [the Bhabha Atomic Research Center] while the 25 kiloton fission device has been fully weaponised and operationally deployed on multiple weapon platforms. It would be farcical to use a 3500-km range Agni-3 missile with a 25 kiloton fission warhead as the core of our [credible minimum deterrent]. Only a 150 – 350 kiloton if not megaton [thermonuclear] bomb can do so which we do not have."⁶³ While yields at the lower end of Santhanam's postulated range could be achieved by boosted-fission weapons as distinct from thermonuclear ones, the concerns about the political credibility of India's nuclear doctrine are now matched by doubts about the technical credibility of India's nuclear weapons.⁶⁴

The second issue is the consistent lackluster performance of India's DRDO, which has a documented record of overpromising and underdelivering on the development of major weapons systems. In a book on India's military modernization, for example, Stephen Cohen and Sunil Dasgupta concluded in 2010 that the "DRDO has not delivered a single major weapon system to the armed forces in five decades of existence."⁶⁵ Press releases from the DRDO following missile test launches almost always claim perfect performance, but there has been no independent public audit of the organization to examine whether these claims are true. Skepticism abounds, particularly among military officers. International security scholar Gaurav Kampani noted in 2014 that the military and the DRDO "have clashed over whether the testing of components and subsystems in test facilities is a robust proxy for complete system tests under realistic launch conditions. Only recently has the Strategic Forces Command . . . the Indian military agency responsible for nuclear operations, begun the process of randomly selecting missiles from the existing inventory and test-firing them independently."⁶⁶ It seems reasonable to wonder whether an agency that lacks the full trust of its military customers will be able to deliver on the high-technology systems needed for a nuclear posture more demanding than massive retaliation.⁶⁷

India not only is apparently behind in the quantity of nuclear weapons but also appears to be qualitatively behind Pakistan when it comes to nuclear missiles. There are doubts that India's nuclear scientific enterprise is capable of producing more advanced and accurate nuclear weapons without a major overhaul. As Indian strategists consider ways to strengthen deterrence with Pakistan, clearly the credibility of nuclear capabilities must be foremost among the issues to address.

The Appeal of Escalation Dominance

Behind these issues lies a deceptively tricky question: How can India make its nuclear doctrine and posture more credible in ways that would buttress India's overall deterrence of Pakistani subconventional violence? If the basic issue is, as Vipin Narang asserts, that Pakistan's asymmetric escalation posture provides dominant deterrence compared to India's assured retaliation posture,⁶⁸ then one way India could enhance deterrence is by making its nuclear posture more like Pakistan's.

Western strategic literature uses an arcane term for the challenge that derives from deterrence: escalation dominance. In the words of a contemporary RAND study, escalation dominance is “a condition in which a combatant has the ability to escalate a conflict in ways that will be disadvantageous or costly to the adversary while the adversary cannot do the same in return, either because it has no escalation option or because the available options would not improve the adversary's situation.”⁶⁹ This terminology gained prominence during the 1960s as U.S. nuclear strategists contemplated fighting a war against the Soviet Union under conditions of relative nuclear parity. It is a useful concept for weighing the conditions that might contribute to deterrence. The simplistic view is that “success through escalation dominance depended on a favorable asymmetry of capabilities,” Lawrence Freedman explains.⁷⁰ Classic deterrence strategy would suggest that Pakistan holds such an advantage in its apparent willingness and capability to escalate up the ladder.

But as with many theories of nuclear strategy, the concept does not permit absolute conclusions and instead defaults to uncertain psychology on critical points. After developing a highly detailed typology of 44 rungs on an escalation ladder in his 1965 treatise *On Escalation*, for instance, Herman Kahn admitted that an important variable affecting escalation dominance “is each side's relative fear of eruption [of violence]. That side which has least to lose by eruption, or fears eruption the least, will automatically have an element of escalation dominance.”⁷¹ Contemporary psychological research also demonstrates the exceeding difficulty of accurately predicting how opponents perceive each other's relative stakes in a given escalation scenario.⁷²

Reviewing the record of conflicts and crises in South Asia since 1990 through a prism of escalation dominance indicates that the threat of any conflict becoming nuclear has had a dampening effect on Indian strategy and decisionmaking, even though nuclear deterrence has prevented major conventional conflict.⁷³ The possibility of escalation drove India to limit the geographic scope of its airstrikes during the 1999 Kargil crisis. It was also a major element of the decision calculus that led India to mobilize forces but not cross the border during the 2001–2002 crisis, and to limit responses to economic and diplomatic means following the attacks in Mumbai in 2008. None of the military options at India's disposal in these confrontations could have been used in ways that would clearly avoid further escalation and thereby ensure

that India would prevent unacceptable harm to its overall strategic interests. By threatening use of nuclear weapons in response to effective Indian conventional military operations, and by accepting a greater risk of escalation accordingly, Pakistan has apparently prevented India from dominating the escalation ladder in South Asia. This despite India's possession—in the minds of many analysts—of superior conventional military capability.⁷⁴

Pakistan's acquisition of short-range nuclear weapons that it asserts can be used on the battlefield has compounded India's deterrence dilemmas in ways that many analysts in both countries assess has served Pakistan's interest. These Pakistani capabilities further frustrate India's efforts to put conventional rungs on the escalation ladder below the nuclear threshold. Now, any potent kinetic option India evaluates must contend with the possibility that it could result in escalation to nuclear use by Pakistan at a relatively low threshold. Many Indian and Pakistani strategists believe that India's current nuclear deterrence capabilities and doctrine are ineffective in this situation.

If Indian policymakers were to accept this framing of the problem—that they need to find the means to address Pakistan's capacity to deny India's escalation dominance—then one obvious solution is to build more flexibility and symmetry into India's nuclear force posture. Indian deterrence could be strengthened by developing operational concepts and capabilities to add nuclear rungs to the escalation ladder, rather than continuing to pursue only conventional escalation options that risk triggering Pakistani nuclear retaliation. As Indian defense expert Ali Ahmed writes in favor of this proposition, “Being able to respond at an equally low escalatory rung has the advantage of permitting early conflict termination; retaining the moral high ground, important for political point scoring; and maintaining dominance at the same level of conflict. Escalation dominance in favor of India will encourage rationality in any Pakistani counter.”⁷⁵

During the 1950s and 1960s, U.S. strategists similarly recognized that the all-or-nothing nature of massive retaliation was no longer credible in deterring lower-order threats. The United States and its North Atlantic Treaty Organization (NATO) allies spent much of the 1960s and 1970s considering a range of nuclear strategies to deter Soviet aggression. From this deliberation emerged the official NATO doctrine of flexible response, the guiding principle of which was to acquire multiple options, both conventional and nuclear, to respond to the range of contingencies that might arise. Flexible response in U.S. policy is often associated with Robert McNamara, secretary of defense from 1961 to 1968, who emphasized the role of conventional forces in NATO strategy and questioned the utility of tactical nuclear weapons and limited nuclear war. European countries in NATO, fearing that this emphasis on conventional forces would make conflict more likely, pushed for a greater

Some Indians argue that deterrence could be strengthened by developing concepts and capabilities to add nuclear rungs to the escalation ladder, rather than continuing to pursue conventional escalation options.

focus on nuclear options.⁷⁶ Ultimately, NATO did not undertake the posited buildup of conventional forces that was called for to raise the nuclear threshold.

In 1974, Richard Nixon's administration adopted a policy that focused more heavily on limited nuclear options to "enable the United States to conduct selected nuclear operations, in concert with conventional forces, which protect vital U.S. interests and limit enemy capabilities to continue aggression. In addition, these options should enable the United States to communicate to the enemy a determination to resist aggression, coupled with a desire to exercise restraint."⁷⁷ The United States deployed tactical nuclear weapons in Europe, as well as in East Asia, in order to implement this policy and to extend deterrence to its allies. (The United States still deploys such weapons in Europe.)

Notwithstanding U.S. efforts to address the major challenges presented by these concepts, the findings from multiple war games suggested that tactical nuclear weapons were incredibly difficult to integrate with maneuver warfare, raised thorny command-and-control issues, did not ensure victory to the party that used them first, and would result in millions of civilian and military casualties.⁷⁸ The debate about the correct approach to deterrence continued through the end of the Cold War and persists even today.⁷⁹

Some U.S. scholars advocate that India adopt the logic of limited nuclear options to change the deterrence equation with Pakistan and assert escalation dominance. For example, security scholar Evan Montgomery and former undersecretary of defense Eric Edelman argue that India should follow Pakistan's lead and acquire limited nuclear capabilities that would allow it to target Pakistani military assets. They suggest that doing so

could potentially deter nuclear use in the event of a limited conventional conflict. That is, by holding out the threat of a symmetrical and proportional response, [India] would avoid the 'all or nothing' nuclear retaliation dilemma it now seems to face. . . . Confronting an opponent with its own battlefield nuclear weapons, Islamabad could not reasonably conclude that limited nuclear strikes against invading ground forces would stop an invasion without triggering a nuclear reprisal.⁸⁰

Were India to adopt this approach and evolve its doctrine and nuclear posture to execute it, the deterrence balance between the two states could shift. Pakistan, according to this line of argument, would lose confidence that it could dominate India in the escalatory process between conventional war and nuclear use. India's threat to retaliate in kind against limited Pakistani nuclear use on the battlefield would be more credible than massive retaliation, meaning that Pakistan would have greater concern that its own nuclear first use would result in a nuclear reprisal. This would in effect force Pakistan to raise its nuclear threshold. Thus, according to this logic, the adoption of limited nuclear options could reopen space for Indian conventional military operations against Pakistan.

If this logic operated in practice, limited nuclear options could give India greater leverage to deter Pakistan's tolerance or embrace of proxy groups that attack India. Montgomery and Edelman explain:

As a result [of developing limited nuclear counterforce options], the threat of an Indian conventional assault in response to a major terrorist attack would become far more credible, and Pakistan would no longer be able to justify its support for militant proxies as a low-risk method of imposing costs on India. Under these conditions, it is even possible that Pakistan might be compelled to rein in militant groups rather than simply cut ties with them. . . . Should India achieve escalation dominance by posing credible conventional and nuclear retaliatory threats, therefore, Pakistan might actively seek to prevent militant groups from launching attacks on their own to avoid being held hostage by their actions.⁸¹

This logic is theoretically persuasive insofar as it has potential to break Pakistan's linkage of subconventional warfare with nuclear deterrence. Symmetry of nuclear force posture and counterforce capabilities could allow India to punish Pakistan for future terror attacks in ways that are currently very difficult to contemplate, if not infeasible. Given that Pakistani leaders would have to worry about Indian reprisals for attacks that were not necessarily sponsored or desired by the Pakistani state, Islamabad would have greater incentive to demobilize groups that threaten to conduct such attacks.

In practice, there are a host of challenges to carrying out this concept, as Indian officials and commentators recognize. No one has real-world experience in conducting battlefield nuclear warfare and controlling escalation. (Proponents would say that this historical fact validates the effectiveness of this form of nuclear deterrence.) If it were to proceed with limited nuclear options, India would face heavy financial, technological, and perhaps political-ideological burdens. Moreover, it would need to develop the requisite force posture and, perhaps, associated nuclear warheads and precision delivery systems, as well as the suite of enabling capabilities and command-and-control systems required for countercapability targeting, beyond those sufficient for massive retaliation.

Capabilities to Fight a Nuclear War

For limited nuclear options to be credible, the strategy must be paired with an operationalized nuclear force that has the capability to carry out strikes against military targets. A theoretical possibility of Indian limited nuclear options, absent real military capability, is not sufficient to deter Pakistan and gain escalation dominance.

Damage Limitation

A central tenet of nuclear war-fighting, and indeed escalation dominance, is damage limitation. Damage limitation takes two forms: defensive capabilities and actions to reduce the damage the opponent can inflict through nuclear attacks, and offensive capabilities and actions to destroy the opponent's nuclear forces before they can be used. The defensive component of damage limitation includes capabilities such as antiballistic missile systems, as well as much broader civil defenses. Building bomb shelters, hardening critical infrastructure, and holding duck-and-cover exercises are manifestations of such defenses designed to enhance survivability in the face of a nuclear attack.

Defensive damage limitation is a challenge for India. India possesses a significant land mass, a large population, distributed resources, and multiple centers of commerce. In theory, and probably in reality, it could survive a feasible Pakistani nuclear attack today, under a minimal definition of survival. But even if India could limit damage on its own territory, the prevailing winds for much of the year would carry radioactive contamination from nuclear detonations in Pakistan over large swaths of India including its agricultural belt and major population centers.⁸² Furthermore, building up civil defenses sufficient to reconstitute governance after a nuclear attack is, needless to say, an exceedingly expensive proposition. Attempting to prepare a population for the possibility of nuclear attack is also a major political challenge, especially in a democracy. In an economically developing, a geographically diverse, and a politically fractious country such as India, the probability that a government could prioritize civil defense over other requirements is quite low. As Nagal admits, "In India there is not an iota of work on public awareness or construction of nuclear defence shelters for the public, no education of civil servants or bureaucrats, and our disaster management is knee jerk and extremely limited in scope."⁸³

Another important component of a defensive damage limitation strategy is a ballistic missile defense (BMD) system to intercept incoming enemy nuclear missiles. If a decision to threaten or even to launch limited nuclear options is girded by the confidence of a missile defense capability, then the defense must work as advertised. India's DRDO has been developing a missile defense system based on the Prithvi missile with an advertised capability to intercept missiles with a 2,000-kilometer (roughly 1,200-mile) range. DRDO officials indicate that the first phase of testing of this system is nearing completion, and it could be deployed—to protect either cities or Indian command and control—in the near future.⁸⁴ Astoundingly, prior to a test failure in 2015, the DRDO claimed a 99.8 percent probability of hitting incoming missiles.⁸⁵ But there is considerable skepticism in India's strategic community that the DRDO can deliver on its BMD promise. Defense journalists Pravin Sawhney and Ghazala Wahab, for example, conclude that the "DRDO is woefully inadequate in all BMD subsystems as well as interceptors with acceptable assurance."⁸⁶

Given the DRDO's track record and the skepticism of Indian analysts, it is fair to assume that unless India receives considerable external assistance, it probably is a decade or more away from being able to field a limited missile defense system. Even then, the efficacy of such a system and the ease with which it could be defeated by simple countermeasures or saturation with ballistic or cruise missiles would pose major questions about India's ability to effectively limit damage in this manner. Simply put, India is in no position as of 2016, and will not be for the foreseeable future, to implement a comprehensive defensive damage limitation strategy.

The offensive form of damage limitation is the ability to target the adversary's nuclear assets as a way to reduce the number of nuclear weapons that might be detonated on one's own territory. Currently, India's nuclear arsenal and its no-first-use policy limit contemplation of nuclear counterforce targeting under most circumstances. It is conceivable that India might use conventionally armed ballistic or cruise missiles, or other air-delivered ordnance, to target Pakistani missile launchers. However, Pakistani air defenses and the country's efforts to disperse and protect its nuclear forces make this an enormous technological and operational challenge.⁸⁷ Of course, Pakistani strategists have thought through this possibility. One retired senior Pakistani military officer with considerable experience in nuclear matters made this assessment in a 2014 interview:

An Indian Air Force attack on Nasr is a hypothetical that won't happen. Nasr would not be exposed early, before land operations began. So the idea that they could do preemptive or early air strike against it is just wrong. The Indians won't have a chance to do counterforce air strikes before the war is on. . . . I am confident that they can't take out more than 15–20 percent of our land and air force nuclear capabilities. There will be a balance of at least 50 percent to hit back at them.⁸⁸

Tellingly, this officer had clearly contemplated what counterforce options are present for Pakistan. "India is a flat country," he offered. "There are a few mountains in the middle of the country, but it is basically flat. A flat country has difficulty hiding weapons. We have a lot of mountains."⁸⁹ What he did not add is that Pakistan also has a diversity of nuclear delivery systems and an expanding nuclear arsenal that permits, at least, contemplation of a nuclear counterforce strike, with sufficient reserves for an assured second-strike capability.

Capability Requirements

If India were to develop limited nuclear options with a view toward a counterforce capability, it would need to make major adjustments to at least two facets of its current nuclear practice. One change would involve the militarization of India's nuclear strategy and decisionmaking, which would be a revolutionary shift in how India plans and executes its national security policy.⁹⁰ The second

Simply put, India is in no position as of 2016, and will not be for the foreseeable future, to implement a comprehensive defensive damage limitation strategy.

change would be the procurement of a suite of military hardware and software upgrades that would provide it with the capabilities to carry out precise, time-sensitive nuclear strikes on Pakistani mobile missiles, which pose incredible targeting difficulties.

India's gradual development of its nuclear arsenal has left it facing what may be an emerging gap in nuclear capabilities vis-à-vis Pakistan. If India chose to redress this gap and to develop credible limited nuclear options for counterforce targeting, the Indian leadership would need to direct considerable attention both to the bureaucratic problems that have plagued India's military modernization and to the fragmented complex that produces various components of India's nuclear-weapon systems. Principally, this would require instilling a new culture of performance and coordination, rather than the policy paralysis, secrecy, and compartmentalization that has characterized India's weaponization efforts since the 1980s.⁹¹ Some organizational changes—the formation of a Strategic Forces Command and an interagency nuclear planning advisory group in the prime minister's office—have already enhanced centralized decisionmaking. But to address performance deficits, India's leaders would need to strengthen oversight and to conduct independent technical audits of organizations such as the Department of Atomic Energy and the DRDO. Perhaps more critically, new linkages would need to be forged between the Strategic Forces Command and the Integrated Defense Staff in order to develop operational concepts for carrying out limited counterforce operations in a crowded theater of war.⁹² This would include working through command-and-control procedures to maintain positive launch authority through the Nuclear Command Authority (NCA) centralized in the prime minister's office, rather than delegating launch authority to military commanders in the field.⁹³ These software system requirements are just as important as nuclear hardware in signaling credibility, yet tend to receive far less attention. In India and elsewhere, it is tempting for participants in policy debates to focus on hardware—which in principle can simply be purchased—rather than on software and associated critical infrastructure protection that requires reforming institutions and standard operating procedures.

That said, the hardware requirements for credible limited nuclear options are daunting. The need to be able to identify, target, and strike conventional military forces and mobile nuclear assets in a short time period underscores these challenges. It would be tempting for the Indian bureaucracy to try to circumvent these broader requirements by fitting a small warhead on an existing short-range delivery system and declaring that to be a sufficient capability. But absent a strategy that considers the implications for escalation, as well as adoption of operational concepts that make execution of limited nuclear options credible, a rudimentary capability alone will not produce escalation dominance. Adoption of anything short of the full capabilities described below would raise dangers by allowing India's Nuclear Command Authority to avoid thinking through the challenges of controlling escalation and fighting nuclear

war, as well as degrade the credibility and posited deterrence value of limited nuclear options.

First, fissile material requirements for counterforce targeting can be sizable, given the need to cover a very large set of military targets in addition to cities. Recognizing concerns about escalation and a desire to limit nuclear damage, the target set could exceed 100 locations. Considering the need for some level of redundancy in targeting, India would potentially have to treble its current stockpile of nuclear weapons.⁹⁴ Growth in the arsenal is limited by relatively modest plutonium production from the Dhruva reactor, which is sufficient to add perhaps five weapons per year to the arsenal.⁹⁵ (This assumes India would utilize smaller, plutonium-based nuclear warheads given size and weight restrictions for tactical delivery systems.) Thus, to develop limited nuclear options in the short term, India would need additional plutonium production pathways. One option would be to utilize one or more of its larger, unsafeguarded nuclear power reactors. Another future option would be to separate plutonium from the blanket of the prototype fast breeder reactor under construction.⁹⁶ Finally, India has announced plans to build a Dhruva-2 reactor, which may yield greater plutonium output.⁹⁷ Any of these options could, with varying degrees of time and cost, satisfy larger plutonium requirements.

A second requirement is nuclear-capable delivery systems with sufficient mobility, readiness, and accuracy to be effective for counterforce missions. India's current fleet of Prithvi and Agni missiles can carry heavy payloads of around 1,000 kilograms, but they are not sufficiently accurate for targeting the array of Pakistani nuclear and conventional military assets, especially mobile missiles and associated enabling platforms. The Prithvis also utilize liquid fuel, making them less well suited to a battlefield role. Instead, these missiles are better suited for targeting cities for massive retaliation. Existing, albeit older-generation, nuclear-capable aircraft may provide an alternative option, but Indian planners would worry about the ability of these aircraft to penetrate Pakistani air defenses. These systems today do not provide India with a high-confidence capability, if accompanied by changes in posture and doctrine, to achieve some manner of escalation dominance. India probably would do better to develop new short- and medium-range ballistic and cruise missiles geared toward tactical counterforce operations.

India has begun to develop more accurate cruise and ballistic missiles. One of these, the 150-kilometer-range (about 100-mile-range) Prahaar, is advertised as a tactical, battlefield weapon and touted by the DRDO as having "high manoeuvrability, very high acceleration and excellent impact accuracy."⁹⁸ The DRDO also claims that the missile can carry "different types of warheads," which is interpreted in Pakistan as evidence that it may have a nuclear role.⁹⁹ Indeed, many Pakistanis believe that Prahaar was developed as India's answer to the

Considering the need for some level of redundancy in counterforce targeting, India would potentially have to treble its current stockpile of nuclear weapons.

Nasr.¹⁰⁰ However, at 42 centimeters in diameter and with a payload of just 200 kilograms, the missile is exceedingly slim and light and may not be able to carry any of India's existing nuclear warheads. Notwithstanding Pakistani speculation about a nuclear mission for Prahaar, in India it is widely understood to be a conventional missile with no plans for a nuclear-capable version.

India has two cruise missile systems under development. The BrahMos, co-developed with Russia, is a short-range (300–500 kilometers, or about 200–300 miles) supersonic missile that has land-attack and anti-ship variants capable of carrying payloads of 200–300 kilograms. With a diameter of 67 centimeters, it is considerably larger than the Prahaar, and thus it could better accommodate a nuclear payload. However, the BrahMos is intended for commercial sale as a conventionally armed missile and, like the Prahaar, has been inducted into India's conventional force structure, not the strategic forces. Another domestically developed cruise missile, the Nirbhay, reportedly can carry heavier payloads up to 450 kilograms to a range of 1,000 kilometers. There is speculation that it may have a nuclear role, but some Indian analysts assert that since it uses Russian-made engines, India is not permitted to use it to carry nuclear weapons.¹⁰¹ (The same apparently is true of the BrahMos due to restrictions posed by the Missile Technology Control Regime, of which Russia is a member.) To resolve this situation, India would need to develop an indigenous propulsion system for cruise missiles, and news reports from 2015 suggested that an indigenous engine is under development.¹⁰²

A third requirement for tactical nuclear weapons, given India's potential delivery options, is a miniaturized nuclear warhead that could fit in small missiles with diameters ranging from 42 to 67 centimeters. Because India's Prithvi and Agni missiles all have diameters of a meter or more and can carry 1,000-kilogram payloads, it seems reasonable to guess that these characteristics describe India's standard nuclear fission design, purportedly a 25-kiloton warhead.¹⁰³ The Sagarika submarine-launched ballistic missile (and the related, land-based Shourya ballistic missile) is reported to have a diameter of 75 centimeters, suggesting that India has one warhead designed to fit these missiles. But shrinking a warhead of this size and weight an additional 40 percent would be a major engineering feat. (It is worth recalling that India claims to have tested in 1998 an improved fission device with a designed 12-kiloton yield, which some speculate had a warhead weight of just 220 kilograms,¹⁰⁴ as well as three subkiloton experimental devices whose yields might be more appropriate for tactical, counterforce missions.) Miniaturization on this scale is not impossible, of course. The U.S. W54 warhead, for example, weighed approximately 22 kilograms and had a diameter of some 27 centimeters. However, having conducted so few full-scale nuclear tests, India could not have very high confidence in the reliability of such a small weapon, which would add considerable risk to its employment of limited nuclear options.

Fourth and finally, mastering operation of the command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) and

information fusion requirements for nuclear counterforce targeting, especially against mobile assets, is exceedingly difficult. One way to understand the enormity of this challenge is to consider the steps and systems involved from targeting to detonation. Assuming India might seek to destroy Nasr missile batteries with ballistic or cruise missiles in response to a Pakistani nuclear strike against Indian armored battalions, India would need continuous, real-time visual coverage from drones or satellites, as well as other signals intelligence, in order to identify and discriminate Nasr missiles from other military systems. Once the missiles were identified, information would need to be communicated securely through the Nuclear Command Authority to the Strategic Forces Command for targeting. The NCA would also want to ensure that Indian conventional forces were not in the vicinity so that it could diminish chances of fratricide. This would require constant communications through the Integrated Defense Staff. Additionally, the NCA would need to consider meteorological data to ensure that prevailing winds would not blow radioactive fallout to Indian population centers or agricultural areas. In the interim, it would have placed Indian nuclear forces on alert and dispersed them to the field, making them vulnerable to a broader Pakistani counterforce attack. If Pakistan observed or was concerned that India might be readying to use nuclear weapons, Pakistani commanders, rather than losing their nuclear weapons, might instead opt to use them. This suggests that India would need to perform the above steps in a very short time period, with airtight communications and low visibility.

Little is publicly known about the systems India has in place to fulfill these requirements. As Nagal observes, “Since a large part of the C4ISR is confidential in nature, doubts will always be raised on the efficacy of the systems in place.”¹⁰⁵ Interviews from 2013 and 2014 with current and former senior Indian officials suggested that not all of these capabilities currently exist. For instance, a recently retired high-ranking air force officer indicated in an interview, “We still have a long way to go to get to the point where we can react quickly with precision. We are not in a position to react quickly now. You need constant intelligence with high accuracy, which we don’t have.”¹⁰⁶ India will need to double its current fleet of four intelligence, surveillance, and reconnaissance satellites, this officer added.

Two additional matters regarding the capability requirements for limited nuclear options deserve mention, but will not be discussed in greater detail. The first is cost. Until now, India’s nuclear-weapon program has been relatively inexpensive, as it has not relied on a massive dedicated production complex with attendant long-life-cycle costs. Instead, for fissile material and delivery vehicles, India largely has depended on multipurpose facilities and technology research and development programs to fulfill nuclear-weapon requirements. Production of the capabilities described here, even if carried out on a relatively small scale, would necessitate financial outlays considerably greater than what India has spent to date. The second matter is security. Protecting a relatively small nuclear complex against internal and external threats is a major challenge,

Indian decisionmakers would be wise to give special attention to the potential risks of declaring new policies before the capabilities exist to implement them.

and there continue to be widespread doubts about the measures and practices India has in place. That challenge becomes much harder when smaller, mobile nuclear missiles kept at higher levels of alert are added to an arsenal, with associated increases in the number of personnel required to safeguard and operate them. Neither of these matters is trivial; both must be considered before a decision is made to adopt limited nuclear options.

These challenges should also be contemplated prior to adopting or asserting a policy of limited nuclear options. In doing so, Indian decisionmakers would be wise to give special attention to the potential risks of declaring new policies before the capabilities exist to implement them. To announce a policy not backed up by credible capability would invite Pakistani countermeasures that would be self-defeating for India or, worse, disastrous in the case of a miscalculation in a future crisis. But it would also be risky to develop some capability to employ limited nuclear options without working through the strategic and tactical implications in a formal way.

What Happens After a Nuclear Strike?

Any answer to the question of whether nuclear conflict can remain limited ultimately comes down to belief. This is the case because nuclear strategy is based on assumptions about human behavior that may or may not hold if a nuclear weapon were actually used during a conflict. Many of these assumptions—such as rational decisionmaking by unitary actors, consistent preferences, and perfect information and communications—derive from the game-theoretic modeling conducted by Western strategists during the Cold War. But there is no empirical evidence about how states, and leaders of states, would actually behave during such a conflict to prove the validity of these assumptions. Indeed, much of what has been learned about the neuroscience and psychology of decisionmaking since the classics of nuclear theory were published should induce considerable caution about these assumptions.¹⁰⁷ Experience from the U.S.-Soviet context, including the Cuban Missile Crisis and subsequent efforts at deterrence signaling, indicates that neat theories often are not supported by real-world evidence. Robert Jervis, whose 1980s work on the psychology of deterrence remains the standard in the field, assessed that no scholar has made a persuasive argument that nuclear war would be kept limited.¹⁰⁸

Consider the options available to India if deterrence failed and it suffered a small-scale nuclear first strike by Pakistan, such as during a Cold Start-style operation, and had developed capabilities and a force posture for tactical use of nuclear weapons. In addition to the options to back down or retaliate massively with nuclear weapons, India could press a conventional assault, relying on the real or perceived possibility that it might conduct nuclear strikes on Pakistani

military assets to deter a further nuclear attack. Or it could opt for a proportionate nuclear strike against Pakistani targets on the battlefield or against military targets further from the battle zone, such as supply lines, storage depots, or airfields. Exercising either of these options most likely would result in casualties—including Indian—much greater than those suffered in the initial triggering terrorist event. And Pakistan’s counterresponse would remain unpredictable. But would the mere possession of these options be sufficient to compel Pakistan to end its tolerance of militants that attack India? The answer depends again on belief. In this instance, assessment might turn on how credible these options appear to Pakistan, and what one believes about how Pakistani leaders would respond if they concluded that India would choose either to sustain a conventional campaign or to employ tactical nuclear weapons.

In case India pressed ahead with a conventional advance, would Pakistan’s military leaders capitulate and seek to terminate the conflict after having already used nuclear weapons once without effect? Or would they double down and escalate further in the belief that India’s leaders are more risk averse and have more to lose? Given that Pakistanis tend to think of nuclear weapons in military terms, one suspects that if a first nuclear use intended for signaling failed to deter India, Pakistan would worry that its deterrent had been eroded.¹⁰⁹ Pakistani military leaders, having propounded a narrative that nuclear weapons would prevent war and deter existential threats, would face very strong pressures to escalate further. These pressures might result from a desire to demonstrate resolve and restore credibility of deterrent threats or to enact vengeance, or they might merely be based on incorrect assumptions about the results of further escalation, all regardless of whether India possessed tactical nuclear weapons or not.

If India chose to respond with nuclear weapons on the battlefield, it is entirely possible Pakistani military leaders might misinterpret a supposedly limited Indian nuclear attack on Pakistani territory as the first salvo in a total war seeking elimination of the Pakistani state or its army. (Of course, Indian strategists who argue that massive retaliation is credible against Pakistan make a similar assumption in reverse: Pakistani leaders would perceive that even their own limited use of nuclear weapons could be interpreted in India as an all-out attack, thereby triggering massive retaliation by India. Thus, the Indian argument goes, Pakistani leaders would not actually implement their first-use threat.) Given that Pakistan’s nuclear weapons could be integrated with its regular army corps on the battlefield, or deployed at airbases that also have conventional assets, even a conventional Indian attack—let alone a nuclear one—on those facilities could be interpreted by Pakistan as nuclear preemption.¹¹⁰ In that case, might Pakistan face a “use or lose” situation and opt to escalate with nuclear strikes on targets in India to limit further nuclear damage? What would India do at that point, assuming

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it retained second-strike nuclear forces? If conflict terminated at any of these points, would India be better off or more politically satisfied than it was prior to the escalation?

The “what happens next” question is at the heart of most Indian critical scholarship on limited nuclear conflict and has been an effective defense for Indian civilian leaders who push back against the urging of some military officers and hawkish analysts to develop limited nuclear options. Shyam Saran, for example, argues that India should reject “the notion that a nuclear war could be fought and won or that a limited nuclear war is at all credible.”¹¹¹ Some former military leaders appear to share this thinking. Retired Admiral Verghese Koithara warns that “whatever weight India might choose for its first retaliatory strike it should think carefully what that strike must seek to achieve. Revenge seeking and venting rage can have no place in this decision matrix. The primary objective at that point should be to stop nuclear strikes immediately.”¹¹² But others prefer the possible deterrence gains that might come from limited options. Ali Ahmed, for one, argues that “a nuclear-weapons employment strategy of commensurate response, at least for early, lower order nuclear first use, is preferable. This would deter first use since such a response is guaranteed by self-deterrence caused by the fear of receiving unacceptable damage.”¹¹³ Some Indian hawks prefer to go further, to the logical end of war-fighting. The Indian scholar Bharat Karnad, for instance, argues that “while deterrence is a mind-game, to nevertheless believe that New Delhi will be so psychologically bridled by the prospect of the loss of a few Indian cities as to not seek the logical end-state, full-fledged nuclear retaliation, is to discount the internal political dynamic that will emerge once a nuclear first strike is absorbed and, in any case, is too big a risk for Pakistani strategists to court.”¹¹⁴

These calculations are complicated by the role that China might play if a conflict were to turn nuclear and how Indian decisionmakers perceive China's interests in the region. As one former senior Indian civilian official queried in a 2013 interview, “How will a nuclear exchange, often posited between India and Pakistan, impact on China, and would India be prudent not to factor that into its nuclear deterrence calculations?” More specifically, would China come to Pakistan's defense in an escalating crisis, either by opening a second front to a conventional war or by threatening nuclear attack if India retaliated with nuclear weapons against Pakistan? The authors' view is that China is unlikely to intervene with its own nuclear forces, especially if India had not initiated the use of nuclear weapons in the conflict. However, as China pursues major infrastructure projects in Pakistan, and thousands of Chinese nationals reside there and could become casualties of Indian nuclear weapons, Beijing's stakes in a potential Indo-Pakistani nuclear conflict will grow significantly. Would China be more likely to restrain Pakistan, to coerce India, both, or neither? “It is because of this complexity,” the same official concluded, “that notions of flexible response and counterforce targeting, which appeared to have a certain

logic in a binary U.S.-Soviet context, lose their relevance in the multidimensional threat scenario which prevails in our region.”¹¹⁵

Would the Pakistani Military Rather Lose Than Use?

The view that proportionate or graduated nuclear responses permit nuclear conflicts to remain limited implies that states have an ability to control or manage escalation. But escalation control cannot be determined by a single state, rather it is the product of interactions between states. It requires all parties to a conflict to deliberately restrain their employment of military capabilities. In his classic work *Strategy and the Missile Age*, the American strategist Bernard Brodie concluded, “It takes only one to start a total war, but it takes two to keep a war limited. . . . The major question is: How large can a war get and still remain limited? . . . It is obvious that the larger the conflict, the more pressure there must be for abandoning limitations.”¹¹⁶

With the exception of the 1971 war, which was anomalous in many ways, none of the wars fought between India and Pakistan has escalated significantly in scale and time. In each of the conflicts and crises since partition, the two antagonists have observed important limits. Of the 1965 and 1971 wars, for instance, P. R. Chari wrote in 2003 that both sides sought to control escalation by “excluding population centers as targets for air attack [that] was largely informed by an awareness of their mutual vulnerabilities. Neither India nor Pakistan could have defended their cities and retained the ‘war wastage reserves’ needed to prosecute the war. These circumstances have not changed, nor have the perceptions of the two military leaderships altered.”¹¹⁷ Other self-imposed limitations are similarly notable. For example, during none of the confrontations has India abrogated the Indus Waters Treaty, which governs water sharing between the two countries, and disrupted Pakistan’s main source of water. Even the regular shelling along the Line of Control in Kashmir has a typical pattern of exchange that avoids upward pressures to escalate violence, although Narendra Modi’s government has changed this pattern by conducting disproportionate responses and advertising them. Only twice in the last twenty years has India escalated a confrontation in important ways that surprised Pakistan: by utilizing airpower to target Pakistani positions in Kargil in 1999, and by expanding the scale and geographical scope of cross-border shelling along the working boundary in Kashmir in fall 2014. Yet, neither of these escalations provoked a Pakistani conventional counterescalation, suggesting that both sides desired to keep the conflict at certain levels of violence and contained in Kashmir, rather than spilling onto the plains in Punjab.

How might the mutual restraint necessary to contain a conflict work if both parties are postured to employ limited nuclear options? Would historical limits on locations or scope of conflict continue to be observed, especially when

India faces considerable uncertainty about Pakistan's nuclear redlines? In most respects, these questions are unanswerable. Brodie's observation in 1959 still holds true: "When we describe limited war today as requiring deliberate non-use of a gigantically powerful military instrument, one that remains ready at hand to be used, we are differentiating modern limited war from anything that has happened in the past."¹¹⁸ Chari similarly concluded that in South Asia, "There is no definite reply to these questions, which perplexes the strategic community and governments alike."¹¹⁹ Thus, the certainty that mutual restraint will stay below the nuclear threshold is essentially an untested assumption about escalation dominance, like many other concepts of nuclear deterrence.

The gains and losses experienced in the conduct of conflict itself can change opponents' willingness to expand the means they use, as well as their objectives. Regular exchange of artillery across the Line of Control is an example of mutual limits on the means of warfare. But take a different example, such as an Indian Cold Start operation with the objective of gaining and holding Pakistani territory—there are no explicit limits on the means India might undertake to achieve this territorial objective if Pakistan successfully stymied India's initial thrusts. Even if Indian leaders knew their objectives were limited to a certain geographical depth, Pakistan's leaders might not perceive this, and in any case, their objective would be to deter and/or deny India this territory.

Once launched, India would face great domestic pressure to achieve its objective; terminating the conflict short of it would be considered a defeat. Alternatively, if India easily achieved its initial objective, its political leaders and/or generals might also be tempted to expand their aims to seek greater bargaining leverage.

Meanwhile, if Pakistan's conventional military means were insufficient to deny victory to India, the military leadership would suffer great reputational damage. According to retired Lieutenant General V. R. Raghavan, former

Indian director general of military operations, the problem is, "How deep would be deep enough for India to obtain its objectives, and how deep would be too much for Pakistan, is unclear and will always remain so."¹²⁰

India's possession of limited nuclear options seems unlikely to deter Pakistan from using nuclear weapons first in circumstances that Pakistani leaders would perceive as existential defeat for the Pakistani military, even if India's objectives were in fact limited. Neil Joeck, a veteran U.S. government analyst of South Asia, notes that "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."¹²¹ It is not obvious how India's pursuit of escalation dominance through limited nuclear options would avoid this problem, especially insofar as asymmetry in first-use provisions of each side's doctrines precludes agreement between the parties on

India's possession of limited nuclear options seems unlikely to deter Pakistan from using nuclear weapons first in circumstances that Pakistani leaders would perceive as existential defeat for the Pakistani military.

mutual nuclear restraint. Responding to this dilemma in a 2014 interview, one former senior Indian official concluded, “There is an air of unreality in thinking about limited nuclear war, which is why it is dangerous to think that this is feasible. You can’t make escalation rational—it requires perfect knowledge, perfect communications, et cetera.”¹²²

Fortunately, there has yet to be a confrontation in South Asia that has seriously tested the mutual restraint that has facilitated escalation control. But crisis simulations involving Indian and Pakistani military officials demonstrate the significant escalatory pressures that could arise in a conflict. The conveners of a March 2013 simulation, for instance, found that

what began as a limited war escalated quickly to a full-scale war. . . . Military necessity on both sides led to extensive mobilizations and horizontal escalation. By the end of the third move, Pakistan was preparing to release warheads to its Strategic Forces Commands, readying nuclear missile launchers for possible battlefield deployment, and conducting nuclear signaling through missile tests and public statements. The exercise concluded at this point when neither side was able to terminate the war on its terms.¹²³

Indian strategists acknowledge the concerns about escalation and war termination that were brought out in these simulated crises. Retired Admiral Vijay Shankar, former commander of Indian strategic forces, asserts that “the distinct absence of escalatory control negates any notional gains that limited nuclear options bestow.”¹²⁴ Verghese Koithara similarly concludes that “the possibility of deterrence failure can never be wholly discounted. . . . The logic of escalation, which makes each country want to shift the context to a more advantageous plane, could eventually push the contestants over the nuclear brink. This is the reason why a nuclear strategy must necessarily deal with the issues of war termination and post-war management.”¹²⁵

Conclusion

The advent of nuclear deterrence between India and Pakistan has reinforced India’s tradition of restraint in the conduct of warfare. Understandable frustration over the 2001 attack on the Indian parliament and then the 2008 attack in Mumbai has prompted many in the Indian security establishment to seek new options and capabilities to punish and compel Pakistan through robust conventional military retaliation to future terrorist attacks. To make conventional retaliation to terrorism credible, however, requires overcoming the risks that Pakistan would initiate the use of nuclear weapons to deter and/or defeat effective Indian conventional operations. A singularly experienced policymaker and adviser in New Delhi put the challenge this way in a 2014 interview: “Our nuclear situation is still ambiguous, seventeen years after the tests. We don’t have strategic doctrine of any kind. But twice we came close to wider wars with escalatory potential—in 1999 and 2001–2002. If you are going to have the bomb,

it imposes upon you a duty to say how you will manage the clear and present danger of conflict escalating to when you might be faced with using it.”¹²⁶ This paper highlights the numerous challenges that inhere in this objective.

India's current nuclear doctrine and posture are fundamentally sufficient as long as Indian leaders do not authorize the Indian Army to make major thrusts into Pakistani territory or the air force to conduct major missile or bombing missions against the Pakistani heartland in response to a terrorist attack. With this premise it is reasonable to conclude that Pakistan will have no occasion

to use nuclear weapons against India. India's current posture of massive retaliation is sufficient to deter Pakistan from initiating major conventional warfare on Indian territory and from conducting large-scale nuclear attacks on the Indian homeland, as long as India's nuclear forces and command and control can survive a Pakistani nuclear first strike. Yet, its effectiveness in deterring subconventional proxy attacks is unconvincing.

If, however, Indian leaders want to promote policies and capabilities to conduct robust conventional military operations on Pakistani territory, then India may need to increase its capabilities and plans to conduct limited nuclear operations against Pakistani conventional and military forces.

Indian leaders would need to resolve the disjuncture between a limited offensive conventional military doctrine and a defensive nuclear doctrine in order to prepare for the probability that conventional warfare escalates to nuclear use. Ballistic missile defenses that were tested to the point of being extremely reliable in realistic conditions could help obviate this requirement, but the experiences of the United States and others should raise doubts that India could successfully and affordably deploy such defenses against the growing array of delivery systems Pakistan is acquiring. Similarly, India could seek to employ a limited-nuclear-options strategy as a way to achieve escalation dominance, but there is no basis for confidence that it would attain this objective any better than India's existing capability. Parsimonious arguments for limited nuclear options simply do not stand up to the very challenging doctrinal, force policy, and capability questions that follow.

Despite this assessment, if India does decide to move toward development of limited nuclear counterforce options, it is imperative to avoid two mistakes that have been common in past Indian policy and practice. The first is to make premature announcements of capability. There is an unfortunate tendency in India, verging on standard operating procedure, to announce or publicly discuss operational concepts or weapons systems before they actually exist. This was arguably the case with the ill-fated Cold Start doctrine, and is true of many of the strategic capabilities tested and touted by the DRDO. Whatever changes India does or does not make to its nuclear policy and capabilities in the years ahead, including pursuing limited nuclear options, it should seek to avoid this strategic mistake. Premature assertion of capabilities and plans only

India could seek to employ a limited-nuclear-options strategy as a way to achieve escalation dominance, but there is no basis for confidence that it would attain this objective any better than India's existing capability.

serves to feed Pakistan's worst-case analysis and results in countervailing capabilities that further disadvantage India. In the intervening period before possible development and military induction of tactical nuclear weapons—which would necessarily be many years—the Indian government would do well to avoid doing or saying things that give the impression it has either the capability or the intent to use limited nuclear options.

The second mistake is to default to half measures. It is entirely plausible, based on the history of other states with nuclear weapons, that the DRDO might develop a nuclear version of the Prahaar that would be delivered to the military before there is any attendant process for working through the circumstances under which the system might be used and what it would mean for escalation control. Many Pakistani analysts believe the Prahaar is intended to be just such a system, and the appearance of a nuclear Prahaar on the battlefield could exacerbate the use-or-lose tension and command-and-control vulnerabilities in ways that increase the potential for accidents, miscalculation, and inadvertent escalation. In many ways, this situation could be more dangerous for India than a formal decision to patiently adapt force posture and capabilities in parallel.

Regarding India's debate on nuclear doctrine, a threat of punitive retaliation may be more credible than massive retaliation, though it does not obviate questions of proportionality and escalation control. The picture may be a bit clearer regarding India's no-first-use policy, which is very much integral to India's image as a responsible nuclear state. Even with a change of view on limited nuclear options and the acquisition of more versatile weapon systems, India faces no need to use nuclear weapons first. To declare otherwise would sacrifice many of the political, moral, and strategic advantages India has gained by sustaining no first use. It is worth noting that China, despite the international community's concerns about change in its nuclear doctrine, continues to retain a no-first-use policy, and India presumably would not want to attenuate that.

Contemporary U.S. discussions about the deterrent value of new nuclear capabilities underscore that this problem is not exclusive to India. Advocates in the United States of a new, nuclear-capable cruise missile assert that it will counter evolving Russian and Chinese capabilities and provide necessary flexibility to threaten or execute limited nuclear strikes.¹²⁷ Opponents, including former secretary of defense William Perry and former assistant secretary of defense Andy Weber, argue that the weapon will be inherently destabilizing and, more fundamentally, that it will be a "grave mistake" to engage in tactical nuclear warfare.¹²⁸ As in India, perceptions vary widely as to the value of tactical nuclear weapons for achieving escalation dominance. However, it is notable that well-respected officials such as Perry and Weber emphasize the escalatory risks of deploying and, potentially, employing such capabilities.

India may adjust its nuclear policy as its capabilities evolve and the deterrence environment changes, but the answers to India's strategic challenge from Pakistan are unlikely to be found at this level.

Though there may be reasons that India would adjust its nuclear policy as its capabilities evolve and the deterrence environment changes, the answers to India's strategic challenge from Pakistan are unlikely to be found at this level. As B. S. Nagal concludes, "To prevent proxy war/sub conventional conflicts calls for different strategy . . . linking our nuclear policy to the balance of the war spectrum does not fit India's strategic thought, it is fraught with dangers and misadventures."¹²⁹ Given the asymmetric stakes involved in a potential conflict and the divergent beliefs about nuclear weapons, a confrontation's escalation to nuclear use cannot be ruled out. For, as Vijay Shankar observes, "Deterrence in essence is a mind game that does not brook any other logic than total escalation when confronted by a nuclear strike. Notions of counter force strikes, flexible response and limited nuclear options do not make sense in the face of total escalation. India's incentive to keep below the nuclear threshold is as pressing as it is for Pakistan. This is deterrence at play."¹³⁰

Notes

- 1 George Perkovich, “The Non-Unitary Model and Deterrence Stability in South Asia,” Stimson Center, November 13, 2012; and Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin’s Press, 1981).
- 2 K. Subrahmanyam, “Thinking Through the Unthinkable,” *Indian Express*, September 15, 2009, <http://archive.indianexpress.com/news/thinking-through-the-unthinkable/517179/>.
- 3 Shyam Saran, “Is India’s Nuclear Deterrent Credible?” transcript of speech at India Habitat Center, New Delhi, April 24, 2013, available at *Arms Control Wonk* (blog), <http://www.armscontrolwonk.com/files/2013/05/Final-Is-Indias-Nuclear-Deterrent-Credible-rev1-2-1-3.pdf>.
- 4 Risks of crisis escalation might also arise from a situation akin to the 1987 Brasstacks crisis, in which military exercises led to an inadvertent increase in tensions with the potential for eruption of violence.
- 5 For a collection of statements and speeches by Indian strategists, see J. K. Jain, *Nuclear India* (New Delhi: Radiant Publishers, 1974), 3–102.
- 6 “Statement by the Indian Atomic Energy Commission on Nuclear Explosion, May 18, 1974,” *Documents on Disarmament, 1974* (Washington D.C.: US Arms Control and Disarmament Agency).
- 7 George Perkovich, *India’s Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 1999); Raj Chengappa, *Weapons of Peace: The Secret Story of India’s Quest to Be a Nuclear Power* (New Delhi: Harper Collins, 2000); and Gaurav Kampani, “New Delhi’s Long Nuclear Journey: How Secrecy and Institutional Roadblocks Delayed India’s Weaponization,” *International Security* 38, no. 4 (Spring 2014).
- 8 Rajesh Rajagopalan, “India’s Nuclear Policy” (paper for the International Symposium on Security Affairs, National Institute for Defense Studies, Japan, November 18, 2009); and Ashley Tellis, *India’s Emerging Nuclear Posture: Between Recessed Deterrence and Ready Arsenal* (Santa Monica, CA: RAND Corporation, 2001), 261–9.
- 9 Feroz Khan, *Eating Grass: The Making of the Pakistani Bomb* (Stanford, CA: Stanford University Press, 2012).
- 10 Some in Pakistan perceived this operation as preparation for war. Pakistan mobilized part of its army in response, escalating tensions. See discussion in P. R. Chari, Pervaiz Iqbal Cheema, and Stephen P. Cohen, *Four Crises and a Peace Process: American Engagement in South Asia* (Washington, DC: Brookings Institution Press, 2007); and P. R. Chari, “Nuclear Signaling in South Asia: Revisiting A. Q. Khan’s 1987 Threat,” Carnegie Endowment for International Peace, November 14, 2013, <http://carnegieendowment.org/2013/11/14/nuclear-signaling-in-south-asia-revisiting-a.q.-khan-s-1987-threat>.
- 11 In late 1989, an insurgency movement in Kashmir gained steam, aided by Pakistan. India moved additional military forces into the region and threatened hot pursuit of terrorists crossing into Indian territory. In the early months of 1990, the heightened

- tensions raised concerns, especially in Washington, of a conflict that could lead to nuclear use. See Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, 80–117.
- 12 Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, NJ: Princeton University Press, 2014), 15–17.
 - 13 Pakistan probably would have supported separatist groups in Kashmir regardless of its possession of nuclear weapons, but the nuclearization of South Asian deterrence at that time would have enhanced its confidence.
 - 14 United Nations Security Council, “Security Council Condemns Nuclear Tests by India and Pakistan,” press release, June 6, 1998, <http://www.un.org/press/en/1998/sc6528.doc.htm>.
 - 15 The Kargil conflict involved a two-month-long clash between Indian and Pakistani forces on the Indian side of the Line of Control, which ended after India escalated with a sizeable air-ground campaign to oust Pakistani forces. See Peter R. Lavoy, *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict* (Cambridge: Cambridge University Press, 2009).
 - 16 See discussion in Narang, *Nuclear Strategy in the Modern Era*, 267–73. See also Lavoy, *Asymmetric Warfare in South Asia*; and Benjamin Lambeth, *Airpower at 18,000': The Indian Air Force in the Kargil War* (Washington, DC: Carnegie Endowment for International Peace, September 20, 2012).
 - 17 Rakesh Sood, “Should India Revise Its Nuclear Doctrine?” Center for Nuclear Non-Proliferation and Disarmament, Policy Brief no. 18, December 2014.
 - 18 National Security Advisory Board, “Draft Report of National Security Advisory Board on Indian Nuclear Doctrine,” Indian Ministry of External Affairs, August 17, 1999, <http://mea.gov.in/in-focus-article.htm?18916/Draft+Report+of+National+Security+Advisory+Board+on+Indian+Nuclear+Doctrine>.
 - 19 Rajagopalan, “India’s Nuclear Policy,” 99.
 - 20 Prime Minister’s Office, “Cabinet Committee on Security Reviews Progress in Operationalizing India’s Nuclear Doctrine,” press release, January 4, 2003, <http://pib.nic.in/archieve/lreleng/lyr2003/rjan2003/04012003/r040120033.html>.
 - 21 There was a third addition to the scope of the doctrine released in 2003: that India would retain the option to use nuclear weapons to respond to a chemical or biological attack. This change is less germane to the discussion here, but further muddles the doctrine. See Scott D. Sagan, “The Evolution of Pakistani and Indian Nuclear Doctrine,” in *Inside Nuclear South Asia*, ed. Scott D. Sagan (Stanford, CA: Stanford University Press, 2009).
 - 22 India launched Operation Parakram in response to a December 2001 attack on the Indian Parliament building in New Delhi. Pakistan subsequently initiated a countermobilization, but the 2001–2002 crisis ended without a cross-border war ten months after it began, as outside powers brokered the aforementioned concessions from Pakistan. Polly Nayak and Michael Krepon, “U.S. Crisis Management in South Asia’s Twin Peaks Crisis,” in *The India-Pakistan Military Standoff: Crisis and Escalation in South Asia*, ed. Zachary S. Davis (New York: Palgrave Macmillan, 2011), 163.
 - 23 Walter C. Ladwig III, “A Cold Start for Hot Wars? The Indian Army’s New Limited War Doctrine,” *International Security* 32, no. 3 (Winter 2007–2008): 164; and Gurmeet Kanwal, “India’s Cold Start Doctrine and Strategic Stability,” Institute for Defense Studies and Analyses, June 1, 2010, http://www.idsa.in/idsacomments/IndiasColdStartDoctrineandStrategicStability_gkanwal_010610.
 - 24 The test of the short-range Nasr missile in April 2011 was described as adding to deterrence “at all levels of the threat spectrum.” See Inter-Services Public Relations, “Press Release,” April 19, 2011, https://www.ispr.gov.pk/front/main.asp?o=t-press_release&cid=1721&search=1. In an October 21, 2011, discussion at the Stimson Center, Zamir Akram, Pakistan’s ambassador to the Conference on Disarmament in Geneva, offered the term “full-spectrum” to describe Pakistan’s deterrence posture.

- 25 Khalid Kidwai, “A Conversation With Gen. Khalid Kidwai” (remarks at the Carnegie International Nuclear Policy Conference 2015, Washington, DC, March 23, 2015), <http://carnegieendowment.org/files/03-230315carnegieKIDWAI.pdf>; “Tactical Nukes to Counter India’s Cold Start Doctrine: Aizaz,” *Express Tribune*, October 21, 2015, <http://tribune.com.pk/story/976543/tactical-nukes-to-counter-indias-cold-start-doctrine-aizaz/>.
- 26 Kidwai, “A Conversation With Gen. Khalid Kidwai”; Mansoor Ahmed, “Proactive Operations and Massive Retaliation: Whither Deterrence Stability?,” *South Asian Voices*, September 11, 2013, <http://southasianvoices.org/proactive-operations-and-massive-retaliation-whither-deterrence-stability/>; and Manpreet Sethi, “Counter Pak Nuke Tactics,” *New Indian Express*, July 24, 2014, <http://www.newindianexpress.com/columns/Counter-Pak-Nuke-Tactics/2014/07/24/article2345369.ece>.
- 27 Sood, “Should India Revise Its Nuclear Doctrine?” See also Sushant Singh, “Nukes Are Not for War,” *Indian Express*, October 29, 2015.
- 28 Narang, *Nuclear Strategy in the Modern Era*, 281.
- 29 P. R. Chari, “India’s Nuclear Doctrine: Stirrings of Change,” Carnegie Endowment for International Peace, June 4, 2014, <http://carnegieendowment.org/2014/06/04/india-s-nuclear-doctrine-stirrings-of-change>.
- 30 Singh, “Nukes Are Not for War.”
- 31 Saran, “Is India’s Nuclear Deterrent Credible?”
- 32 Interview with official in Manmohan Singh’s administration, New Delhi, April 26, 2014.
- 33 Neil Joeck, *Maintaining Nuclear Stability in South Asia*, International Institute for Strategic Studies, Adelphi Paper no. 312 (Oxford: Oxford University Press, 1997); and Gurmeet Kanwal, “Does India Need Tactical Nuclear Weapons?” *Strategic Analysis* 24, no. 2 (2000): 247–64.
- 34 “Revise ‘No-First-Use’ N-Policy: Jaswant,” *Indian Express*, March 16, 2011.
- 35 The 2014 BJP election manifesto is available on the party’s homepage, at: http://www.bjp.org/images/pdf_2014/full_manifesto_english_07.04.2014.pdf. It is worth noting that discussion of the nuclear program falls on page 39 of the 42-page document, which is indicative of the general lack of importance given nuclear issues relative to domestic and economic priorities in Indian politics and, arguably, governance.
- 36 Brijesh D. Jayal, “The Indian Nuclear Doctrine,” *Tribune* (Chandigarh), November 16, 2008, <http://www.tribuneindia.com/2008/20081116/edit.htm#1>. For good reviews of the Indian nuclear debate in 2013–2014, see Chari, “India’s Nuclear Doctrine,” Manoj Joshi, “The Credibility of India’s Nuclear Deterrent,” and Shasank Joshi, “An Evolving Indian Nuclear Doctrine?,” both in *Deterrence Instability and Nuclear Weapons in South Asia*, eds. Michael Krepon et al. (Washington, DC: Stimson Center, 2015).
- 37 Ajit Doval, “Opening Keynote” (address at the sixth Munich Security Conference Core Group Meeting, New Delhi, October 21, 2014), https://www.securityconference.de/en/media-search/s_video/opening-keynote-by-national-security-advisor-doval/s_filter/video/. See also Abhijit Iyer-Mitra, “Era of Effective Deterrence,” *Pioneer*, October 31, 2014, <http://www.dailypioneer.com/columnists/oped/era-of-effective-deterrence.html>.
- 38 Interview with former Indian strategic forces commander, New Delhi, November 14, 2014.
- 39 Sood, “Should India Revise Its Nuclear Doctrine?”
- 40 Aditya Kalra, Doug Busvine, and Sanjeev Miglani, “Modi Says Committed to No First Use of Nuclear Weapons,” Reuters, April 16, 2014.
- 41 B. S. Nagal, “Checks and Balances,” *FORCE*, June 2014.
- 42 Chari, “India’s Nuclear Doctrine.”
- 43 Rajagopalan, “India’s Nuclear Policy,” 100.
- 44 Seminar at Institute of Peace and Conflict Studies, held under the Chatham House Rule, New Delhi, November 11, 2014.

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