Posturing for Peace?

Pakistan's Nuclear Postures and South Asian Stability

Vipin Narang

On November 26, 2008, terrorists from Lashkar-e-Taiba—a group historically supported by the Pakistani state—launched a daring sea assault from Karachi, Pakistan, and laid siege to India's economic hub, Mumbai, crippling the city for three days and taking at least 163 lives. The world sat on edge as yet another crisis between South Asia's two nuclear-armed states erupted with the looming risk of armed conflict. But India's response was restrained; it did not mobilize its military forces to retaliate against either Pakistan or Lashkar camps operating there. A former Indian chief of Army Staff, Gen. Shankar Roychowdhury, bluntly stated that Pakistan's threat of nuclear use deterred India from seriously considering conventional military strikes.[1] Yet, India's nuclear weapons capability failed to deter subconventional attacks in Mumbai and Delhi, as well as Pakistan's conventional aggression in the 1999 Kargil War. Why are these two neighbors able to achieve such different levels of deterrence with their nuclear weapons capabilities? Do differences in how these states operationalize their nuclear capabilities—their nuclear postures—have differential effects on dispute dynamics?

In this article I examine these questions both theoretically and empirically, with specific analysis of the South Asian case. Theoretically, I identify various regional power nuclear postures—catalytic, assured retaliation, and asymmetric escalation—and hypothesize that they may have different deterrence effects. In South Asia all three postures have been adopted and have interacted with each other, making the India-Pakistan dyad an excellent candidate for probing the differential effects of regional power nuclear postures. Unlike India, which has maintained an assured retaliation nuclear posture, Pakistan shifted from a catalytic nuclear posture to an asymmetric escalation posture following India's May 1998 nuclear tests. This shift allows me to isolate the ef-

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1. "Pakistan's Nuclear Weapons Deterred India," *Hindu*, March 10, 2009.

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fects of nuclear posture in an India-Pakistan enduring dispute that has many fixed effects over time.

I analyze every India-Pakistan militarized crisis since 1986 and find that the asymmetric escalation posture has been uniquely "deterrence optimal" for Pakistan, directly deterring Indian conventional military power on multiple occasions. But the adoption of this particular posture—not just the acquisition of nuclear weapons—has enabled Pakistan to more aggressively pursue long-standing, limited revisionist objectives against India (the strategy of bleeding India by a "thousand cuts"), with little fear of significant retaliation. Much of the security literature on South Asia, most notably advanced by Sumit Ganguly and Paul Kapur,[2] has focused on whether the mere introduction of nuclear weapons on the subcontinent has induced stability or instability over the past ten years. Examination of the nuclear postures adopted by India and Pakistan, however, yields a more fine-grained understanding of how particular operationalizations of nuclear capabilities generate different conflict dynamics, setting scope conditions for when instability may be more or less acute.[3] The theoretical contribution of these findings is that, in South Asia and perhaps beyond, nuclear postures matter; they systematically produce differential deterrence and stability effects.

The command and control pressures that Pakistan faces to make its asymmetric escalation posture credible, however, are disturbing. Pakistan confronts an ominous deterrence/management trade-off, what Scott Sagan terms the "vulnerability/invulnerability paradox"[4]: Pakistan believes that to directly deter its more powerful nuclear neighbor, India, it has no choice but to adopt a credible first-use nuclear posture that sacrifices a substantial degree of assertive and centralized control over its nuclear assets, especially in crisis situations. I analyze the implications of these arrangements and the scenarios under which the security of Pakistan's nuclear assets could be particularly vulnerable, both currently and as India and Pakistan continue to evolve their nuclear and conventional postures.

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2. Sumit Ganguly and S. Paul Kapur, eds., *Nuclear Proliferation in South Asia: Crisis Behavior and the Bomb* (New York: Routledge, 2009); S. Paul Kapur, "Ten Years of Instability in a Nuclear South Asia," *International Security,* Vol. 33, No. 2 (Fall 2008), pp. 71–94; S. Paul Kapur, "India and Pakistan's Unstable Peace: Why Nuclear South Asia Is Not Like Cold War Europe," *International Security,* Vol. 30, No. 2 (Fall 2005), pp. 127–152; S. Paul Kapur, *Dangerous Deterrent: Nuclear Weapons Proliferation and Conflict in South Asia* (Stanford, Calif.: Stanford University Press, 2007); Sumit Ganguly, "Nuclear Stability in South Asia," *International Security,* Vol. 33, No. 2 (Fall 2008), pp. 45–70; and Scott D. Sagan, "The Perils of Proliferation in South Asia," *Asian Survey,* Vol. 41, No. 6 (November/December 2001), pp. 1064–1086.

3. See the volume by Ganguly and Kapur, *Nuclear Proliferation in South Asia.*

4. Scott D. Sagan, "Introduction: Inside Nuclear South Asia," in Sagan, ed., *Inside Nuclear South Asia* (Stanford, Calif.: Stanford University Press, 2009), pp. 15–16.

To many scholars and practitioners, the world's grimmest security concerns converge in Pakistan. Pakistan has supported the Taliban, against which the Pakistan Army is fighting a de facto civil war; it supports cross-border terrorism in India, provoking periodic crises in South Asia; and, of course, it has a growing nuclear arsenal. In addition to the risk of inadvertent nuclear use by the Pakistan Army, the arsenal could be vulnerable to malicious elements within the state, whose acquisition of nuclear material or weapons could be catastrophic for regional and international security. Pakistan's designation as one of the United States' "major non-NATO" allies cannot obscure concerns in Washington that Pakistan may be the world's worst security nightmare. Given this nexus of instability, a sober analysis of the pressures and compulsions of the Pakistani nuclear weapons program is of critical importance to South Asian and international security.

The article proceeds as follows. I first lay out a rationale and a typology for studying regional power nuclear postures, and why South Asia's nuclear powers are a particularly good test for probing the differential deterrent effects of nuclear postures. The next sections trace the variation in deterrence dynamics during South Asia's nuclearized period, when Pakistan adopted a catalytic posture and then an asymmetric escalation posture against India's persistent assured retaliation posture. I then analyze the command and control pressures Pakistan faces to make its asymmetric escalation posture credible, and the associated risks to the security of the arsenal both presently and as India moves toward a limited war conventional posture, known as Cold Start, to redress what India perceives to be an inability to respond to Pakistan-backed conventional and subconventional aggression. The conclusions of this study for South Asian and international security are bleak.

Regional Power Nuclear Postures

Most of the proliferation literature focuses on the acquisition of nuclear weapons, viewing the ability to assemble a single functional nuclear weapon as the critical threshold in a state's ability to deter conflict.[5] The mere acquisition of nuclear devices, however, neither constitutes an operational nuclear arsenal nor produces a uniform deterrent effect.[6] It is the incorporation of some num-

5. See Ganguly and Kapur, *Nuclear Proliferation in South Asia;* Kapur, "Ten Years of Instability in a Nuclear South Asia"; Kapur, "India and Pakistan's Unstable Peace"; Kapur, *Dangerous Deterrent;* Ganguly, "Nuclear Stability in South Asia"; and Sagan, "The Perils of Proliferation in South Asia." For a discussion of the quantitative literature's approach, see Alexander H. Montgomery and Scott D. Sagan, "The Perils of Predicting Proliferation," *Journal of Conflict Resolution,* Vol. 53, No. 2 (April 2009), pp. 302–328, especially pp. 307–310.

6. See, for example, Keir Lieber and Daryl Press, "How Much Is Enough? Nuclear Deterrence

ber and type of nuclear warheads and delivery vehicles into a state's overall military structure and the rules and procedures governing how those weapons are deployed, when and under what conditions they might be used, against what targets, and who has the authority to make those decisions that broadly constitute a state's nuclear posture and that generate a specific deterrent effect. Thus, a key missing variable in the proliferation literature is a state's nuclear posture. In this article I use the term "nuclear posture" to refer to the capabilities, deployment patterns, and command and control procedures a state uses to manage and operationalize its nuclear weapons capability.

Nuclear posture is best thought of as a state's operational, rather than declaratory, nuclear doctrine; it is a state's operational doctrine, or nuclear posture, that generates deterrent power against an opponent—states care more about what an adversary does with nuclear weapons than what it says about them. As such, differences in nuclear posture can generate variation in a state's ability to deter different types and levels of conflict, as well as induce tradeoffs with respect to securely managing its nuclear arsenal.[7] In the Cold War, the United States and the Soviet Union evolved nuclear postures to eventually establish some degree of dynamic stability between them, and various postures had differential deterrent effects.[8] Similarly, regional nuclear powers[9]—which face systemic and domestic constraints different from those of the superpowers—have adopted varied, but identifiable, nuclear postures across a spectrum of capabilities, management procedures, and levels of transparency, with each having different deterrent effects. I identify three distinct types of regional power nuclear postures: a catalytic posture, an assured retaliation posture, and an asymmetric escalation posture.

CATALYTIC POSTURE

A catalytic nuclear posture relies on an ambiguous nuclear capability aimed at "catalyzing" third-party—often U.S.—military or diplomatic assistance to defend the state by threatening to unsheathe its nuclear weapons and escalate a conflict should assistance not be forthcoming.[10] Critically, it depends on there

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Then and Now," paper presented at the annual conference of the American Political Science Association, Toronto, Canada, September 3, 2009.

7. See, for example, Peter D. Feaver, "Command and Control in Emerging Nuclear Nations," *International Security*, Vol. 17, No. 3 (Winter 1992/93), pp. 160–187.

8. This literature is vast. See, for example, Lawrence Freedman, *The Evolution of Nuclear Strategy*, 2d ed. (London: Macmillan, 1989). See also Lieber and Press, "How Much Is Enough?"

9. This refers to nonsuperpower nuclear states with independent nuclear weapons forces (e.g., China, France, India, Israel, Pakistan, and South Africa).

10. This term was used to describe South Africa's nuclear posture. See Terence McNamee, "The Afrikaner Bomb: Nuclear Proliferation and Rollback in South Africa," in Avner Cohen and McNamee, *Why Do States Want Nuclear Weapons? The Cases of Israel and South Africa* (Oslo: Norwegian Institute for Defence Studies, 2005), p. 14.

being at least one third party whose interests in the region's stability are sufficiently high that it could potentially be compelled to intercede to effect de-escalation; this posture is therefore generally an option available only to regional powers, given that it requires the availability of a more powerful patron (e.g., a superpower). This posture tends to emphasize centralized control and thus does not integrate nuclear weapons into a state's military doctrine—in fact, it relies on high levels of ambiguity surrounding the state's capabilities and conditions of use—but uses them in a political gamble to accelerate third-party assistance by raising their potential use as a last resort should the state's vital interests be threatened. Execution of the catalytic posture requires only a limited number of nuclear weapons that may or may not be fully assembled or even fully functional, because even a small risk of use may be sufficient to trigger third-party intercession. The key feature of this posture is that the deterrent signal is not sent directly to the envisioned opponent (as required in "existential deterrence"[11]), but rather to a third party in an attempt to induce its intervention. The attempt to draw in a third party is thus the defining feature of a catalytic posture, regardless of whether that attempt succeeds. Given that third-party intervention is indirect and probabilistic, the catalytic posture may not have a strong deterrent effect on adversaries, because they may calculate that they can achieve limited conventional war aims before nuclear weapons are operationalized and before third-party intervention occurs, or without triggering intervention altogether.

As an illustration, Israel adopted and executed a catalytic posture during the 1973 Yom Kippur War. Three days into the war, as Egyptian and Syrian forces threatened Israel's survival, Israel conducted operational checks on delivery vehicles in a manner easily detectible only to U.S. intelligence to signal that it was contemplating unsheathing its opaque nuclear weapons capability. The goal was to galvanize the U.S. government into rearming Israel with conventional weapons to enable it to defend itself and into pressuring the Soviet Union to rein in its Egyptian and Syrian clients.[12] The key differentiating fea-

11. This term, first coined by McGeorge Bundy, posits that the "mere existence of nuclear forces," even ambiguous or nonweaponized, should induce caution in adversaries and deter aggression. See Marc Trachtenberg, "The Influence of Nuclear Weapons in the Cuban Missile Crisis," *International Security,* Vol. 10, No. 1 (Summer 1985), p. 139. Existential deterrence would be suboptimal for regional powers because of the potentially weak direct deterrent effect of ambiguous forces, particularly if the option is available to use those capabilities to catalyze third-party intervention to augment conventional deterrence or effect de-escalation. Empirically, I find that regional powers have operationalized ambiguous capabilities as a catalytic posture.

12. Avner Cohen, "The Last Nuclear Moment," *New York Times,* October 3, 2003; Hermann Eilts quoted in Janice G. Stein, "The Failures of Deterrence and Intelligence," transcript of roundtable discussion, reprinted in Richard B. Parker, ed., *The October War: A Retrospective* (Gainesville: University of Florida Press, 2001), p. 121; and Avner Cohen, "Nuclear Arms in Crisis under Secrecy: Is-

ture of this posture is that Israel directed its nuclear signal at the United States, not at Egypt or Syria; indeed, Israel's nuclear capabilities failed to deter their initial assaults and subsequent escalation. South Africa also adopted a catalytic posture during the 1980s.[13]

Assured Retaliation Posture

The assured retaliation posture seeks to directly deter nuclear attack and coercion. To do so, it moves up the spectrum of capabilities and deployment procedures, and is distinguished by the development of survivable second-strike forces that target an opponent's key strategic centers. There must be full transparency about the state's capabilities, so that the intended opponent has no doubt about the former's ability to retaliate with nuclear forces following a first strike,[14] but deployment patterns can be ambiguous to enhance survivability. Indeed, survivability can be achieved by a variety of stewardship procedures (e.g., component separation and dispersion) or technical means (e.g., sea-based systems) that render it virtually impossible for opponents to be confident of achieving a disarming first strike, thereby plausibly assuring a retaliatory capability. Stewardship procedures that enhance survivability also enable a state with an assured retaliation posture to maximize assertive and centralized political control over its nuclear assets, because retaliation needs simply to be assured, not necessarily immediate.

Because of the character of its capabilities and the potential delay in deploying and retaliating with nuclear forces, however, the assured retaliation posture may be incapable of deterring conventional attacks, which requires immediate release of pre-delegated nuclear weapons in a tactical theater. Particularly against a nuclear adversary, the assured retaliation posture may not deter limited—perhaps even intense—conventional conflicts because of the perceived high-level stability induced by mutual nuclearization (the so-called stability/instability paradox).[15] An assured retaliation posture may therefore be appropriate for states with sufficient territorial or conventional force advantages against their primary adversaries, which thus need only deter threats

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rael and the Lessons of the 1967 and 1973 Wars," in Peter R. Lavoy, Scott D. Sagan, and James J. Wirtz, eds., *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons* (Ithaca, N.Y.: Cornell University Press, 2000), p. 118.

13. Peter Liberman, "The Rise and Fall of the South African Bomb," *International Security,* Vol. 26, No. 2 (Fall 2001), pp. 45–86.

14. Targeting would have to be primarily countervalue, because the deployment procedures and associated delivery capabilities preclude rapid tactical or hard counterforce use. The aim is not assured destruction or massive retaliation, but assured retaliation. Pre-delegation may occur to survive a decapitation attempt, but not for warfighting purposes.

15. This concept was first identified in Glenn H. Snyder, "The Balance of Power and the Balance of Terror," in Paul Seabury, ed., *Balance of Power* (San Francisco, Calif.: Chandler, 1965), pp. 185–201.

and attacks strictly at the nuclear level. China and India have adopted assured retaliation postures (what they sometimes refer to as "credible minimum deterrence"), each relying on a small but secure and survivable nuclear force arrayed for an assured retaliatory strike against their primary opponents' strategic and/or soft counterforce targets.[16]

asymmetric escalation posture

Whereas the assured retaliation posture is oriented for a nuclear second strike, the asymmetric escalation posture is geared for the rapid (and asymmetric) first use of nuclear weapons against conventional attacks to deter their outbreak, operationalizing nuclear weapons as usable warfighting instruments. A state with this posture must therefore have sufficient tactical and potentially survivable second-strike strategic weapons to absorb potential retaliation. Although peacetime deployments can be centralized, to credibly deter conventional attacks, an asymmetric escalator must have the ability to disperse and deploy assets extremely quickly and to enable their release on the battlefield through pre-delegative procedures to military end users in the event of a crisis; it is thus the most aggressive option available to nuclear states. To credibly threaten first use, this posture must be largely transparent about capabilities, deployment patterns, and conditions of use.

The asymmetric escalation posture may have the most significant deterrent effect at all levels of conflict intensity, given the costly signal of credibly threatening early first use of nuclear weapons against even conventional attacks. The trade-off, however, is that the credibility requirements of this posture can generate severe command and control pressures that increase the risk of inadvertent use of nuclear weapons. Thus, states that select asymmetric escalation postures are often those that face extremely binding security constraints and therefore have little choice. For example, during the Cold War, NATO and French forces faced a conventionally superior, nuclear-armed proximate threat in the Soviet Union and adopted deterrent postures that threatened the first use of nuclear weapons against Soviet forces and strategic targets should they

16. On India, see, for example, Ashley J. Tellis, *India's Emerging Nuclear Posture: Between Recessed Deterrent and Ready Arsenal* (Santa Monica, Calif.: RAND, 2001); George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 1999); and Jasjit Singh, ed., *Nuclear India* (New Delhi: Institute for Defence Studies and Analyses, 1998). On China, see, for example, Evan S. Medeiros, "Minding the Gap: Assessing the Trajectory of the Second Artillery," in Roy Kamphausen and Andrew Scobell, eds., *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military* (Carlisle, Pa.: Strategic Studies Institute, U.S. Army War College, September 2007), chap. 4; John Wilson Lewis and Xue Litai, *China Builds the Bomb* (Stanford, Calif.: Stanford University Press, 1988); and John Wilson Lewis and Xue Litai, *Imagined Enemies: China Prepares for Uncertain War* (Stanford, Calif.: Stanford University Press, 2006).

Table 1. Characteristics of Regional Power Nuclear Postures

	Catalytic	Assured Retaliation	Asymmetric Escalation
Goal	Third-party compellence (deterrence)	Deter nuclear use and coercion	Deter conventional conflict and nuclear use
Capabilities	Ability to assemble a handful of nuclear weapons	Survivable second-strike forces	First-use capabilities
Management	Recessed and opaque	Assertive civilian control (e.g., de-mated or de-alerted forces)	Delegative (assets and authority integrated into military forces and doctrine)
Level of transparency	Ambiguous capability and deployment	Unambiguous capability; ambiguous deployment	Unambiguous capability and deployment
Empirical examples	Israel I South Africa Pakistan I	China India Israel II	France Pakistan II

NOTE: According to my coding, Israel began shifting from a catalytic to an assured retaliation posture after the 1991 Persian Gulf War, and Pakistan shifted from a catalytic to an asymmetric escalation posture in 1998.

breach Western Europe.[17] The character of the asymmetric escalation posture can vary (e.g., massive retaliation vs. flexible response), but the key feature is the enabling of a credible, asymmetric first use of nuclear weapons against conventional aggression to deter its outbreak; in addition, however, this posture can enable a state with revisionist preferences to aggress by using it as a shield behind which to attack.

SUMMARY OF NUCLEAR POSTURES

Table 1 summarizes the three nuclear postures and their characteristics. The catalytic, assured retaliation, and asymmetric escalation postures reflect states' choices about how to operationalize their nuclear weapons capabilities. Although a theory of why states select a particular posture is beyond the scope of this article,[18] it is important to observe that nuclear posture is not simply a deterministic function of available technical capacity; China, India, and Israel have all had the capability to adopt larger, more aggressive nuclear postures,

17. See, for example, David S. Yost, *France's Deterrent Posture and Security in Europe,* Part 1: *Capabilities and Doctrine,* Adelphi Papers, No. 194 (London: International Institute for Strategic Studies, 1984/1985).

18. For a fuller theory, see Vipin Narang, "Posturing for Peace? The Sources and Deterrence Consequences of Regional Power Nuclear Postures," Ph.D. dissertation, Harvard University, forthcoming.

but they have chosen not to do so. Nuclear posture is the product of several variables, and not necessarily linear progressions that all states evolve through as their technologies improve.

Why Study Nuclear Postures in South Asia?

The catalytic, assured retaliation, and asymmetric escalation postures cover the substantive empirical variation in South Asia's two major powers. Critically, all three have been adopted during the region's nuclear period, whose de facto beginning occurred in the late 1980s, when India and Pakistan are believed to have weaponized their nuclear capabilities.[19] This enduring rivalry dyad is an excellent candidate for studying the differential deterrence dynamics of nuclear postures because Pakistan switched postures in 1998, after the subcontinent went overtly nuclear. The persistence of many fixed effects—namely, India's and Pakistan's conventional power balance, Pakistan's limited revisionist intentions toward India, and regime type[20]—allows me to isolate the nuclear posture variable and test the effects of Pakistan's shift in posture.

India's nuclear posture has been constant throughout South Asia's de facto and overt nuclear periods. Facing no existential conventional threat and privileging strong centralized civilian control over its nuclear assets, India has adopted an assured—if delayed—retaliation posture, de-mating and dispersing its nuclear components across civilian agencies (only delivery vehicles are stewarded by the military) to enhance their survivability and to establish a credible capability to retaliate against a nuclear strike.[21] Although India tested a nuclear device in 1974 and had a rudimentary retaliatory capability deliverable by aircraft, it fully operationalized an assured retaliation posture under Rajiv Gandhi only in the late 1980s, when it perfected weapons designs and developed nuclear-capable missile systems; even though the May 1998 nuclear tests enhanced its credibility, India has continued to maintain an assured retaliation posture. India's capabilities and stewardship procedures generate a recessed nuclear posture that credibly abides by a no-first-use policy, but promises certain retaliation should nuclear weapons be used against

19. My analysis is not sensitive to variation in when scholars date the beginning of South Asia's de facto nuclear period (e.g., 1986 vs. 1989).
20. I treat Pakistan as a de facto praetorian state in this period, when the military exercised either direct or "guardian" rule throughout and was the primary decisionmaker with respect to security affairs. See Ayesha Siddiqa-Agha, *Military Inc: Inside Pakistan's Military Economy* (London: Pluto, 2007).
21. See Tellis, *India's Emerging Nuclear Posture;* Perkovich, *India's Nuclear Bomb;* and Singh, *Nuclear India.*

India.[22] This posture currently relies on both nuclear-capable aircraft and Prithvi and Agni ballistic missiles primarily to deter nuclear use against India's major cities.[23]

Pakistan initially adopted a catalytic posture involving ambiguous nuclear capabilities, exploiting U.S. patronage and interests in Afghanistan in the late 1980s to compel U.S. intervention to defuse crises with India. After May 1998, however, Pakistan faced a severe security situation: India continued to pose a perceived existential threat but was now an overt nuclear power, and the United States was no longer a reliable third-party patron. As a result, Pakistan believed that it had little choice but to test its nuclear weapons and adopt an asymmetric escalation posture that fully integrated nuclear weapons into its military forces to credibly and directly deter Indian conventional attacks. This shift allows me to probe the differential deterrence effects of regional power nuclear postures in South Asia; I analyze every India-Pakistan militarized crisis under the shadow of nuclear weapons (since 1986),[24] so as not to induce selection bias, to determine whether there is any variation in deterrence dynamics—that is, how and why the crises de-escalated—as a function of nuclear posture.

The Development of Pakistan's Nuclear Weapons Capability

Pakistan's march toward nuclearization was triggered by its decisive defeat in the 1971 war against India. Before 1971 India and Pakistan had fought two conventional wars to relative stalemates; in both cases, Pakistan could claim that it had not yet lost a war to its conventionally superior neighbor. The 1971 war shattered these pretensions. Pakistan was dismembered, with the new state of Bangladesh created from its eastern flank. The genesis of Pakistan's nuclear weapons program gives insight into Islamabad's ultimate aim: to avoid massive conventional defeat at the hands of the Indians as in 1971. Sumit Ganguly and Devin Hagerty note that the "core aim of Pakistan's nuclear weapons program is to prevent a repetition of 1971 . . . to deter an Indian

22. India's official 2003 nuclear doctrine expanded the 1999 draft doctrine to include clauses threatening nuclear retaliation for chemical or biological attacks, and for nuclear use on Indian forces anywhere, but these were simply modeled on U.S. doctrine and are not believed to be credible. See K. Subrahmanyam, "No First Use: An Indian View," *Survival,* Vol. 51, No. 5 (October/November 2009), p. 35.

23. K. Subrahmanyam and V.S. Arunachalam, "Deterrence and Explosive Yield," *Hindu,* September 20, 2009.

24. As defined by the International Crisis Behavior Dataset, ver. 9.0, Center for International Development and Conflict Management, University of Maryland, 2009.

attack that might reduce Pakistan's size even further, or perhaps even put the country out of existence entirely."[25]

Pakistan thus officially embarked on a quest for nuclear weapons in January 1972, under President Zulfikar Ali Bhutto, initially choosing the uranium enrichment pathway for reasons of expediency.[26] By 1981 U.S. intelligence had concluded that Pakistan's uranium enrichment facility, Kahuta, was operational and seeking to "develop a nuclear explosives capability" and that Pakistan had made advances in developing the trigger package.[27] By 1983 Pakistan was receiving considerable weapons-design assistance from China, likely including a hard blueprint for a missile-mateable uranium fission design that China tested in 1966 (CHIC-4).[28] These designs would have significantly accelerated Pakistan's march toward nuclearization, as Pakistani scientists could conduct cold tests—testing the physics package without fissile material—with near certainty that a fully assembled device would work when enough uranium had been enriched to weapons-grade level. When confronted by the United States about operations at Kahuta, President Muhammad Zia-ul-Haq claimed that Kahuta "can't be a nuclear installation. Maybe it is a goat shed."[29] Given how critical Pakistan was for U.S. covert operations in Afghanistan, however, there was a limit to how far the United States would pressure Pakistan about its nuclear weapons program.

By late 1986 the "goat shed" at Kahuta had enriched enough uranium to put Pakistan, perhaps literally, "two screwdiver turns" away from a fully assembled nuclear weapon.[30] In March 1987 Zia publicly declared that Pakistan was a nuclear-capable state, saying: "You can write today that Pakistan can build a bomb whenever it wishes. Once you have acquired the technology, which Pakistan has, you can do whatever you like."[31] It is unclear how far ad-

25. Sumit Ganguly and Devin T. Hagerty, *Fearful Symmetry: India-Pakistan Crises in the Shadow of Nuclear Weapons* (Seattle: University of Washington Press, 2005), p. 123.
26. George Perkovich, "Could Anything Be Done to Stop Them? Lessons from Pakistan's Proliferating Past," in Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries beyond War* (Carlisle, Pa.: Strategic Studies Institute, U.S. Army War College, 2008), pp. 59–84; and Samina Ahmed, "Pakistan's Nuclear Weapons Program: Turning Points and Nuclear Choices," *International Security,* Vol. 23, No. 4 (Spring 1999), pp. 178–204. Pakistan never abandoned the plutonium pathway, which will be critical as Pakistan modernizes and miniaturizes its warheads with better yield-to-weight ratios, which are more suitable for missile delivery. See Farhan Bokhari and Trefor Moss, "Pakistan Strikes Deal for Chinese Nuclear Reactors," *Jane's Defence Weekly,* October 21, 2008.
27. Jeffrey T. Richelson, *Spying on the Bomb: American Nuclear Intelligence from Nazi Germany to Iran and North Korea* (New York: W.W. Norton, 2007), p. 342.
28. Ibid.; and Thomas C. Reed and Danny B. Stillman, *The Nuclear Express: A Political History of the Bomb and Its Proliferation* (Minneapolis, Minn.: Zenith, 2009), pp. 249–250.
29. Quoted in Richelson, *Spying on the Bomb,* p. 342.
30. U.S. intelligence official quoted in Bob Woodward, "Pakistan Reported Near Atom Arms Production; Acquisition of Weapon Could Halt U.S. Aid," *Washington Post,* November 4, 1986.
31. Quoted in William R. Doerner and Ross H. Munro, "Pakistan Knocking at the Nuclear Door," *Time,* March 30, 1987, http://www.time.com/time/magazine/article/0,9171,963894,00.html.

vanced the pit-fabrication capability was or how long it would take Pakistan to fully assemble a nuclear weapon from a decision to do so, but by the end of 1987, the United States had concluded that "Pakistan had produced enough fissionable weapons-grade uranium for four to six atomic bombs."[32] U.S. Congressman Stephen Solarz quipped that Pakistan had "the nuclear equivalent of a Saturday night special. It may not be technically elegant, but it's capable of doing the job."[33] By the mid-to-late 1980s, then, both India and Pakistan were de facto nuclear weapons states, even though the latter had not tested.

Pakistan's Catalytic Nuclear Posture, 1986–98

India adopted an assured retaliation posture in South Asia's de facto nuclear period. If required, its nuclear-capable aircraft could retaliate against Pakistan's strategic centers following a nuclear strike. Most scholars treat Pakistan as a closet nuclear state that relied on existential deterrence during this period, a posture that depends on the capability to assemble nuclear devices to directly deter aggression.[34] Pakistan, however, employed its ambiguous, recessed nuclear capability—nuclear assets were not in military custody—in a fashion distinctly different from that suggested by existential deterrence. It adopted a catalytic posture whose primary signal was to the United States, not necessarily India, to attempt to catalyze Washington's intervention on Pakistan's behalf in a crisis with its larger neighbor. Although there were no full-scale conflicts between India and Pakistan in this period, the reason India did not engage in conventional operations against Pakistani provocations was not because Delhi was deterred by Pakistan's putative nuclear capabilities, but rather because the United States intervened to defuse crises before that point was reached.

Some scholars, notably P.R. Chari, Pervaiz Cheema, and Stephen Cohen, have identified the critical role that the United States played in resolving the India-Pakistan crises during this time.[35] The evidence additionally suggests, however, that U.S. intervention was partly catalyzed by a deliberate Pakistani nuclear posture that sent specific signals that the Pakistanis knew would not only be detected by, but would alarm, Washington—and not necessarily Delhi.

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32. Hendrick Smith, "A Bomb Ticks in Pakistan," *New York Times Magazine,* March 6, 1988.
33. Quoted in ibid.
34. See, for example, Ganguly and Kapur, *Nuclear Proliferation in South Asia;* Ganguly and Hagerty, *Fearful Symmetry;* and Kapur, *Dangerous Deterrent.*
35. P.R. Chari, Pervaiz Iqbal Cheema, and Stephen Cohen, *Four Crises and a Peace Process: American Engagement in South Asia* (Washington, D.C.: Brookings Institution Press, 2007).

These signals thus exploited U.S. incentives to prevent escalation because of Pakistan's centrality in the war in Afghanistan. Pakistan had the necessary capability—an ambiguous but credibly functional nuclear capability—and the availability of a highly incentivized U.S. patron that enabled it to successfully implement a catalytic posture.

The selection of a catalytic posture defies structural realist and organizational expectations that an army-led Pakistan, which perceived an existential threat from a conventionally superior India, would explicitly test and incorporate nuclear weapons into its military doctrine to directly deter India. Instead, Pakistan relied on recessed capabilities and exploited the interests and patronage of the United States to indirectly deter conflict with India, thereby avoiding provoking India into going overtly nuclear itself. The gamble, however, was that if the United States failed to intervene on Pakistan's behalf, India might not be deterred from escalating disputes. Evidence for Pakistan employing a catalytic posture during this period is found in the two India-Pakistan crises that erupted: the 1986–87 Brasstacks crisis and, more strongly, the 1990 Kashmir compound crisis. In both cases, the United States interceded diplomatically. Had it not intervened, however, evidence suggests that India would not have been deterred from striking Pakistan with conventional military power.

THE 1986–87 BRASSTACKS CRISIS

The 1986–87 Brasstacks crisis took place while Pakistan was on the cusp of achieving a nuclear weapons capability. By November 1986 U.S. intelligence had judged that both Pakistan and India were effectively nuclear-capable—but not legally nuclear-weapons—states.[36] The Brasstacks crisis was not a direct nuclear crisis between India and Pakistan, but rather one in which the United States had a keen interest in preventing any escalation that might cause Pakistan to cross certain thresholds in its nuclear weapons program (e.g., fully assembling warheads). Had those thresholds been crossed, the United States would have no longer been able to certify Pakistan as a nonnuclear weapons state; for domestic legal reasons, it would have then been forced to sanction Pakistan, thereby jeopardizing Pakistan's critical role in the Afghanistan war. Thus, faced with Pakistani nuclear saber rattling, the United States mobilized to defuse Brasstacks before Pakistan came close to crossing key nuclear weapons lines.

The Brasstacks crisis began with Indian military exercises and quickly spi-

36. Woodward, "Pakistan Reported Near Atom Arms Production."

raled into a militarized crisis.[37] In the mid-1980s, India was battling a fierce Sikh separatist movement in the strategically key border state of Punjab. Pakistan provided substantial material support to the Khalistani militants in the hopes of tying down and weakening India's army in a protracted domestic counterinsurgency campaign. The definitive study of the crisis argues that India's prime minister, Rajiv Gandhi, along with Chief of Army Staff Gen. K. Sundarji, were piqued by Pakistan's meddling and were undeterred, believing that "a military exercise aimed at Pakistan's own weak point—the province of Sindh—would be a fitting riposte to Pakistan and a threat (with echoes of 1971) that there might be more to come."[38]

Brasstacks was a large-scale, live-fire exercise that amassed almost 250,000 Indian troops—including mobile RAPID divisions[39]—and simulated combined arms operations in the most likely theater for an India-Pakistan conventional war. The exercise's proximity to Sindh concerned Pakistan, because a deep Indian thrust at that particular point could sever the links between North and South Pakistan.[40] In response, in January 1987 Pakistan moved its two strike corps, I and II Corps, along the border, positioning them for a potential pincer move against northern and southern Punjab. The crisis peaked on January 23, when India placed defensive deployments in Punjab with Operation Trident to block a possible Pakistani offensive and began making noises about preventive military strikes, particularly on Pakistan's Kahuta nuclear facility.[41] Pakistan also feared that India was preparing for an offensive in its now-exposed Sindh region. In a January 28 interview with a journalist for the *London Times*, Abdul Qadeer (A.Q.) Khan, who headed the Kahuta facility, threatened, "Nobody can undo Pakistan or take us for granted. . . . [L]et it be clear that we shall use the bomb if our existence is threatened."[42] At this point, under U.S. pressure and through "cricket diplomacy," both states took rapid

37. See, for example, Kanti P. Bajpai, P.R. Chari, Pervaiz Iqbal Cheema, Stephen P. Cohen, and Sumit Ganguly, *Brasstacks and Beyond: Perception and Management of Crisis in South Asia* (Delhi: Manohar, 1995); Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, chap. 3; Ganguly and Hagerty, *Fearful Symmetry*, chap. 4; and Kapur, *Dangerous Deterrent*, chap. 4.
38. Bajpai et al., *Brasstacks and Beyond*, p. 23.
39. Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, p. 44.
40. The Indian military evidently did not believe the exercise would cause alarm. Ibid., pp. 48–49.
41. Perkovich, *India's Nuclear Bomb*, p. 13.
42. Quoted in Bajpai et al., *Brasstacks and Beyond*, p. 39. The interview was with journalist Kuldip Nayar of the *London Times* and, although the piece was not published for several weeks, Nayar reportedly passed the threat on to relevant Indian and U.S. officials in Delhi. Khan made a similar threat in 1984. Gordon Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity, and the Rise and Fall of the A.Q. Khan Network* (Oxford: Oxford University Press, 2006), p. 47. The Kargil Review Committee Report also claims that a private nuclear threat was conveyed from the Pakistani minister of state for foreign affairs to Indian ambassador S.K. Singh around the same date as the Khan interview, but this also did not seem to deter Indian leaders in any way.

action to de-escalate the crisis. By February 19, both armies had withdrawn from the border, and India subsequently continued with Phase IV of the Brasstacks exercises as scheduled a month later.

There is little evidence that Brasstacks represented a direct nuclear crisis between India and Pakistan, and no evidence that India feared a Pakistani nuclear attack.[43] Instead, evidence suggests that U.S. concern—perhaps prompted by Khan's repeated threats over the years—that "Pakistan would move across several redlines that had been mutually agreed upon" mobilized U.S. intervention, to keep Pakistan an open conduit for U.S. matériel to Afghanistan.[44] Chari, Cheema, and Cohen argue that U.S. officials acted because of acute worries "about changes in Pakistan's nuclear status that would lead to termination of American military sales and other forms of aid, directly endangering the war effort in Afghanistan."[45] Thus, the United States had an overriding incentive to dampen the crisis before Pakistan felt sufficiently threatened by Indian moves, particularly a possible preventive strike on the Kahuta facility, to cross certain nuclear thresholds. Indeed, after Pakistan began mobilizing its forces—even though the prospect of armed conflict was still low—the United States, led by Ambassador John Gunther Dean in New Delhi, made a concerted effort to accelerate the defusing of the crisis. Although the role of the United States was limited, Pakistan was aware of U.S. fears of the advancing Pakistani nuclear program and its incentive to ensure an orderly end to the crisis. This is a relatively soft example of the catalytic posture in action, but the general pattern is strongly confirmed by the 1990 compound crisis over Kashmir.

THE 1990 COMPOUND CRISIS

The most explicit example of Pakistan's employment of its catalytic posture is the 1990 compound crisis over Kashmir, where Pakistan deliberately signaled to the United States—and not directly to India—that it was preparing to use its nuclear capabilities, thereby triggering U.S. intervention to restrain Indian escalation. By 1990 India was believed to have readied "at least two dozen nuclear weapons for quick assembly and potential dispersal to air bases for delivery by aircraft for retaliatory attacks against Pakistan," and Pakistan was similarly believed to be nuclear-weapons capable.[46] Neither side, however, had established a sufficient ballistic missile capability to deliver nuclear

43. John H. Gill, "Brasstacks: Prudently Pessimistic," in Ganguly and Kapur, *Nuclear Proliferation in South Asia*, chap. 3.
44. Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, pp. 74–75.
45. Ibid., p. 75.
46. K. Subrahmanyam, referenced in Perkovich, p. 293.

devices, so both India and Pakistan would have had to rely on aircraft for delivery.[47]

In this context, India and Pakistan again nearly came to blows over the insurgency in Kashmir in the winter and spring of 1990. As in Punjab, and consistent with its long-standing revisionist preferences on the issue, Pakistan aggressively supported and supplied Kashmiri militant groups operating in Indian territory.[48] In response, India deployed infantry units in Punjab and Kashmir to protect transportation and communications lines. Pakistan, in turn, deployed its II Corps across Punjab's southern border with Rajasthan and placed elements of the I Corps across Punjab's northern border with Kashmir.[49] These deployments followed Pakistan's largest-ever military exercise, which tested a new "offensive defense doctrine" that planned "to take the war into India, launching a sizeable offensive on Indian territory," according to Pakistani Chief of Staff Gen. Aslam Beg.[50] Pakistan believed that India was counterescalating when the Indian Army conducted armored unit exercises in the Rajasthani desert precisely where the Brasstacks exercises had taken place—though neither India nor the United States claims that this was anything more than a routine exercise. By late March the crisis seemed to be barreling toward armed conflict, with hundreds of thousands of forces arrayed against each other across the Kashmir Line of Control (LoC) and the international border. Although both the Indian and Pakistani armies were careful not to move their strike corps elements too close to the border, political leaders in both countries continued to escalate their war of words.[51]

At the end of May, the United States dispatched Deputy National Security Adviser Robert Gates to the region to de-escalate the crisis. Gates notes that "the analogy I used at the time was that the environment reminded me of something out of August 1914."[52] He leaned on India to withdraw troops from the border and de-escalate the crisis, warning that any potential conflict "might go nuclear," though the Indians discounted that warning as American hysteria.[53] Nevertheless, the Gates mission and intense efforts by the U.S. embassies in Delhi and Islamabad succeeded in opening lines of direct communication between India and Pakistan, ultimately resulting in both states crawling away from potential conflict.

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47. Chari, Cheema, and Cohen, *Four Crises and a Peace Process,* p. 101. See also Devin T. Hagerty, "Nuclear Deterrence in South Asia: The 1990 Indo-Pakistani Crisis," *International Security,* Vol. 20, No. 3 (Winter 1995/96), pp. 79–114.
48. Ambassador Robert Oakley, quoted in Ganguly and Hagerty, *Fearful Symmetry,* p. 88.
49. See Indian Army Chief of Staff Gen. V.N. Sharma, quoted in ibid., p. 90.
50. Quoted in ibid., p. 91.
51. Ibid., pp. 94–96; and Chari, Cheema, and Cohen, *Four Crises and a Peace Process,* pp. 94–95.
52. Quoted in Ganguly and Hagerty, *Fearful Symmetry,* p. 97.
53. Ibid., p. 98.

The key issue for the catalytic posture is whether Pakistan made any deliberate nuclear movements that prompted U.S. intervention as a mechanism to pull India from its borders. There were certainly alarmist assessments in the United States, notably and controversially catalogued by Seymour Hersh, who quotes former Deputy Director of Central Intelligence Richard Kerr as saying the crisis was "as close as we've come to a nuclear exchange. It was far more frightening than the Cuban missile crisis."[54] What generated such fears in Washington, but not in Delhi? Evidence suggests that Pakistan may have intentionally signaled, in a fashion detectable to the United States but not to India, that it was prepared to escalate the crisis, possibly to the nuclear level. As Hersh reports, "Sometime in the early spring of 1990, intelligence that was described as a hundred percent reliable—perhaps an NSA [National Security Agency] intercept—reached Washington with the ominous news that General Beg had authorized the technicians at Kahuta to put together nuclear weapons. Such intelligence, of 'smoking gun' significance, was too precise to be ignored or shunted aside."[55] In addition, U.S. intelligence reportedly spotted the evacuation of the Kahuta facility in May, perhaps in anticipation of a retaliatory strike, and observed activity between a suspected nuclear storage facility and Sargodha Air Base outside Lahore, where Pakistan's nuclear-rigged F-16s were believed to be located.[56] Despite questions about whether an F-16 could deliver a Pakistani nuclear weapon, there were worries that a Pakistani C-130 could nevertheless drop a nuclear weapon out its back door.[57] Ambassador Robert Oakley revealed that the United States "never had any *hard* indications that any nuclear warheads had been delivered to an airbase. [But] you could *guess* that."[58]

The circumstantial intelligence detected in Washington—Delhi did not have the means to detect it, and Pakistan knew this—seemed to catalyze U.S. intervention in the crisis. Although Hersh's details have been questioned by scholars and participants in the crisis, there is substantial corroborating evidence that Pakistan either did—or pretended to—mobilize its nuclear assets, thereby compelling the United States to intervene in the crisis.[59] Chari, Cheema, and Cohen note that whether Pakistan "fak[ed] nuclear delivery preparations . . .

54. Seymour M. Hersh, "On the Nuclear Edge," *New Yorker,* March 29, 1993, http://www.newyorker.com/archive/1993/03/29/1993_03_29_056_TNY_CARDS_000363214?currentPage?all.
55. Ibid.
56. Ibid.
57. William E. Burrows and Robert Windrem, *Critical Mass: The Dangerous Race for Superweapons in a Fragmenting World* (New York: Simon and Schuster, 1994), p. 82.
58. Robert B. Oakley, quoted in interview with Hersh, "On the Nuclear Edge." Oakley has conceded that there were enough indications of unusual nuclear-related activity in Pakistan to trigger U.S. concern.
59. Michael Krepon and Mishi Faruqee, eds., "Conflict Prevention and Confidence-Building Measures in South Asia: The 1990 Crisis," Occasional Paper, No. 17 (Washington, D.C.: Henry L.

[to] spur the United States into action" or actually put nuclear assets on alert, there was credible intelligence that General Beg had ordered some movement with respect to nuclear weapons.[60] William Burrows and Robert Windrem conclude that Pakistan may have engaged in a "colossal bluff of the sort Israel had concocted in 1973," because the "data collected by U.S. intelligence systems, far from being ambiguous, were almost unbelievably explicit."[61] Indeed, Oakley and Col. Don Jones concede that U.S. intelligence observed large crates being moved to airfields on trucks, with Oakley only somewhat jokingly saying that "on top of each crate it said, 'Pakistan nuclear devices.'"[62] The nature of this intelligence and signaling lends strong support to the hypothesis that Pakistan deliberately attempted to trigger U.S. intervention in the crisis to prevent armed conflict that would have risked nuclear escalation.

These signals were evidently not picked up by the Indian government, which, according to George Perkovich, was not "worrying explicitly about a nuclear threat from Pakistan. The Indians did not know of the activity detected by American intelligence and Gates did not tell them about it," and thus Pakistan's nuclear capability was not viewed as "an acute threat at this moment."[63] India was therefore not deterred in 1990 by Pakistan's catalytic nuclear posture, but instead, it was partly restrained from escalation by Washington's intervention.[64] Thus, during South Asia's de facto nuclear period, Islamabad did not rely on existential deterrence; indeed, there is little evidence that India was deterred from conventional escalation by Pakistan's nuclear capabilities. Rather, Pakistan exploited U.S. interests in the region's stability to impel the United States to intervene on its behalf when its interference in India triggered periodic crises.

Pakistan's Asymmetric Escalation Nuclear Posture since 1998

The loss of the United States as Pakistan's benefactor after the Afghanistan war correlated with two trends. First, Pakistan's pursuit of revisionist preferences in India temporarily stabilized, perhaps partly because it would have been risky to aggressively support subconventional attacks against India with-

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Stimson Center, April 1994), pp. 45–46. See also Chari, Cheema, and Cohen, *Four Crises and a Peace Process,* pp. 103–108.

60. Chari, Cheema, and Cohen, *Four Crises and a Peace Process,* p. 106.

61. Burrows and Windrem, *Critical Mass,* p. 85.

62. Oakley, quoted in Krepon and Faruqee, "Conflict Prevention and Confidence-Building Measures in South Asia," p. 18.

63. Perkovich, *India's Nuclear Bomb,* p. 310. See also K. Subrahmanyam, "Indian Nuclear Policy—1964–98 (A Personal Recollection)," in Singh, *Nuclear India,* p. 45.

64. Karthika Sasikumar, "Crisis and Opportunity: The 1990 Nuclear Crisis in South Asia," in Ganguly and Kapur, *Nuclear Proliferation in South Asia,* pp. 76–99, especially p. 89.

out a U.S. patron; there were thus no major militarized crises between 1990 and 1998. Second, although Pakistan did not switch nuclear postures in this period, it was forced to seek capabilities—particularly dual-use ballistic missiles—to prepare for a potential shift. With the Bharatiya Janata Party's (BJP's) tests of India's nuclear weapons capability on May 11 and 13, 1998, however, Pakistan found itself bound by some of the most severe security constraints in the international system: alone, facing a conventional existential threat that was now overtly nuclear. Pakistan had little choice but to follow suit on May 28 and 30, testing six uranium fission devices; three were of subkiloton yield, which generally suggests significant sophistication if they indeed went critical. These tests demonstrated the functionality and reliability of Pakistan's nuclear designs. Afterward, Pakistan shifted to an asymmetric escalation posture that fully integrated nuclear weapons into its military forces and doctrine, credibly threatening the first use of nuclear weapons against Indian conventional forces in the event they breached Pakistan's territorial integrity.[65]

The exogenous shock of India's nuclear tests triggered Pakistan's switch to an asymmetric escalation posture. Pakistan did not shift earlier because, without the political cover imparted by an Indian nuclear test, Pakistan could not test its own nuclear weapons, and was thus unable to credibly threaten the first use of lower-yield nuclear weapons in a tactical environment.[66] Given that Pakistan's ballistic missile capabilities were thin even in 1998, Pakistan may have even preferred to allow its warhead and delivery technology to mature before moving to an asymmetric escalation posture. India's tests in May 1998, however, left Pakistan with little option but to abandon its catalytic posture in favor of a posture that sought to directly deter nuclear India's conventional military power.

Contours of Pakistan's Asymmetric Escalation Posture

The Pakistan Army has tried to compensate for its conventional inferiority by relying on high-quality matériel and operating on interior lines of communication, but these features prevent India from overrunning Pakistan only in a relatively short conflict. In a longer conventional conflict, India's overwhelming aggregate quantitative and qualitative advantage could be decisive.[67] As such, the most credible nuclear posture Pakistan can adopt to deter conventional war against a nuclear India is to asymmetrically escalate a conflict by threaten-

65. See Aga Shahi, Zulfiqar Khan, and Abdul Sattar, "Securing Nuclear Peace," *News International,* October 5, 1999, reprinted in P.R. Chari, Sonika Gupta, and Arpit Rajan, eds., *Nuclear Stability in Southern Asia* (Delhi: Manohar, 2003), pp. 189–194; and Smruti S. Pattanaik, "Pakistan's Nuclear Strategy," *Strategic Analysis,* Vol. 27, No. 1 (January–March 2003), p. 13.
66. Ahmed, "Pakistan's Nuclear Weapons Program," pp. 194–196.
67. Gill, "Brasstacks," pp. 44–45.

ing first use of nuclear weapons on advancing Indian forces once they cross the border onto Pakistani soil—through deterrence by denial.[68] This posture would blunt India's conventional assault, and give India little justification for a disproportionate nuclear strike on Pakistan's strategic centers, because Pakistan would not have targeted India's cities. In this scenario, the burden of the Pakistani posture would be on first-strike capabilities in a limited theater setting, and it would not require robust second-strike forces.

Pakistan has both the capabilities and the doctrine to implement this posture. Regarding capabilities, Pakistan would require only a few fission devices deliverable by aircraft or short-range missiles, especially given that first use is envisioned under conditions in which Pakistan has the initiative and the opponent has little justification to retaliate against Pakistan's strategic centers. Pakistan was believed to have had this capability, though barely, in 1998: several dozen missile-mateable warheads of yields appropriate for tactical use (5–10 kilotons), nuclear-capable aircraft, and a small number of short- and medium-range ballistic missiles.[69] After India's nuclear tests, Pakistan arrayed whatever forces were available toward an asymmetric escalation posture, using numerical ambiguity and component dispersion to enhance their survivability and credibility.

Today Pakistan is believed to have seventy to ninety nuclear weapons, with a steady uranium enrichment capability and an increasing plutonium production and reprocessing capability.[70] This is sufficient to implement an asymmetric escalation posture that envisions the tactical first use of nuclear weapons, with enough in reserve to survive an Indian retaliatory strike. With respect to delivery vehicles, Pakistan has nuclear-capable aircraft and both operational short-range and medium-range ballistic missiles under the aegis of respective service Strategic Forces Commands, which could be used to deliver a nuclear warhead on advancing Indian forces and several major strategic targets. Pakistan's ballistic missile families range from the 85-kilometer Hatf I to the 2,500-kilometer Ghauri; the Shaheen and Ghauri are road-mobile, enhancing their survivability, and the Ghaznavi and Shaheen are solid-fuel, which reduces launch times and logistics signatures. Pakistan is also believed to have

68. In November 2008 Pakistan President Asif Ali Zardari suggested to an Indian audience that Pakistan might revise its first-use doctrine. The army made it clear, however, that Zardari had no authority to make such a revision. See Jane Perlez, "India's Suspicion of Pakistan Clouds U.S. Strategy," *New York Times,* November 27, 2008.

69. Robert Norris and Hans Kristensen, "Nuclear Notebook: Pakistani Nuclear Forces, 2009," *Bulletin of the Atomic Scientists,* Vol. 63, No. 3 (September/October 2009), pp. 82–89; and David Albright, "India and Pakistan's Fissile Material and Nuclear Weapons Inventory, End of 1998" (Washington, D.C.: Institute for Science and International Security, October 27, 1999), http://www.isis-online.org/publications/southasia/stocks1099.html. Defense Intelligence Agency estimates placed the number at twenty-five to thirty-five warheads.

70. Norris and Kristensen, "Nuclear Notebook," p. 82.

miniaturized the explosives package of the missile-mateable CHIC-4 warhead design, further increasing its efficiency;[71] in addition, as Pakistan's plutonium production capability improves to allow development of warheads with greater yield-to-weight ratios, the ballistic missile arm of its delivery capabilities will become increasingly powerful.

Pakistan describes its current nuclear doctrine as "credible minimum deterrence," but its salient features are anything but minimal and emphasize all of the characteristics of a first-use asymmetric escalation posture.[72] Several authoritative statements by the Pakistan Strategic Plans Division, which is responsible for stewarding Pakistan's nuclear assets, outline the conditions under which Pakistan envisions nuclear use. In January 2002 its director-general, Lt. Gen. Khalid Kidwai (ret.), specified the conditions of Pakistani nuclear use, emphasizing nuclear weapons' potential as warfighting instruments: "Nuclear weapons are aimed solely at India. In case that deterrence fails, they will be used if: (a) India attacks Pakistan and conquers a large part of its territory (space threshold); (b) India destroys a large part of either its land or air forces (military threshold); (c) India proceeds to the economic strangling of Pakistan (economic strangling); [or] (d) India pushes Pakistan into political destabilization or creates a large-scale internal subversion in Pakistan (domestic destabilization)."[73] The territory that would have to be conquered or the quantity of forces that would need to be depleted to reach Pakistan's redlines (or nuclear threshold) are obviously left ambiguous, but if the Pakistan Army were severely crippled or if Indian forces were to thrust into Pakistan's so-called greenbelt roughly 30–50 miles past the international border, nuclear use

71. Joby Warrick, "Smugglers Had Design for Advanced Warhead," *Washington Post*, June 15, 2008.

72. See, for example, Scott D. Sagan, "The Evolution of Pakistani and Indian Nuclear Doctrine," in Sagan, *Inside Nuclear South Asia*, pp. 219–263; Peter R. Lavoy, "Pakistan's Nuclear Doctrine," in Rafiq Dossani and Henry S. Rowen, eds., *Prospects for Peace in South Asia* (Stanford, Calif.: Stanford University Press, 2005), pp. 280–300; Zafar Iqbal Cheema, "Pakistan's Nuclear Use Doctrine and Command and Control," in Lavoy, Sagan, and Wirtz, *Planning the Unthinkable*, pp. 158–181; Peter Lavoy, "Pakistan's Nuclear Posture: Security and Survivability," presentation to the Conference on Pakistan's Nuclear Future, Nonproliferation Policy Education Center, Washington, D.C., April 28, 2006; Maj. Gen. Mahmud Ali Durrani (ret.), "Pakistan's Strategic Thinking and the Role of Nuclear Weapons," Cooperative Monitoring Center Occasional Paper, No. 37 (Albuquerque, N.Mex.: Sandia National Laboratories, 2004); International Institute for Strategic Studies (IISS), *Nuclear Black Markets: Pakistan, AQ Khan, and the Rise of Proliferation Networks* (London: IISS, 2007), chaps. 1, 5; Timothy D. Hoyt, "Pakistani Nuclear Doctrine and the Dangers of Strategic Myopia," *Asian Survey*, Vol. 41, No. 6 (November/December 2001), pp. 956–977; and Zafar Iqbal Cheema, "The Role of Nuclear Weapons in Pakistan's Defense Strategy," *Islamabad Policy Research Institute Journal*, Vol. 4, No. 2 (Summer 2004), pp. 59–80.

73. Quoted in Paolo Cotta-Ramusino and Maurizio Martellini, "Nuclear Safety, Nuclear Stability, and Nuclear Strategy in Pakistan: A Concise Report of a Visit by Landau Network Centro Volto," January 14, 2002, http://www.pugwash.org/september11/pakistan-nuclear.htm.

would probably be triggered to preserve Pakistan's existence. In practice, this suggests that Pakistan would rely on the first use of nuclear weapons once its conventional forces were significantly degraded, because the space threshold could be breached only if Pakistan's military were already overrun.

Other semi-authoritative writing on Pakistan's nuclear doctrine corroborates the relatively early redlines in Pakistani nuclear thinking. A group including several former Pakistani foreign ministers writes that the "assumption has been that if the enemy launches a general war and undertakes a piercing attack threatening to occupy large territory or communication junctions, the 'weapon of last resort' would have to be invoked."[74] Brig. Gen. Feroz Hassan Khan (ret.) adds, "The Pakistani situation is akin to NATO's position in the Cold War. There are geographic gaps and corridors similar to those that existed in Europe (such as the erstwhile 'Fulda gap') that are vulnerable to exploitation by mechanized Indian forces. . . . With its relatively smaller conventional force, and lacking adequate technical means, especially in early warning and surveillance, Pakistan relies on a more proactive nuclear defensive policy."[75] Although NATO was a status quo power in Europe and Pakistan is a more revisionist one, explicit invocation of a deterrence posture modeled on NATO's suggests that the Pakistan Army views the threshold for nuclear first use as relatively low in a conventional conflict with India—perhaps even preemptive first use.[76]

Pakistan Army writing on Pakistan's nuclear posture has also focused on how to make the enforcement of its stated redlines credible, sometimes looking to Cold War debates for inspiration. Lt. Gen. Sardar F.S. Lodi (ret.) writes that one option is to employ a graduated and calibrated response against advancing Indian conventional forces to manage war termination:

> We will use nuclear weapons if attacked by India even if the attack is with conventional weapons. . . . This would entail a stage-by-stage approach in which the nuclear threat is increased at each step to deter India from attack. The first step could be a public or private warning, the second a demonstration explosion of a small nuclear weapon on its own soil, the third step would be the use of a few nuclear weapons on its own soil against Indian attacking forces. The fourth stage would be used against critical but purely military targets in India across the border from Pakistan. Probably in thinly populated areas in the desert or semi-desert, causing least collateral damage. This may prevent

74. Shahi, Khan, and Sattar, "Securing Nuclear Peace," p. 191.
75. Feroz Hassan Khan, "Challenges to Nuclear Stability in South Asia," *Nonproliferation Review,* Vol. 10, No. 1 (Spring 2003), p. 65.
76. Zafar Iqbal Cheema has claimed that the threshold may be a preemptive strike: "A repeat of the Brasstacks exercises might compel Pakistan to consider the use of nuclear weapons." See Cheema, "Pakistan's Nuclear Use Doctrine and Command and Control," p. 177.

Indian retaliation against cities in Pakistan. Some weapon systems would be in reserve for the counter-value role. These weapons would be safe from Indian attack as some would be airborne while the ground based ones are mobile and could be moved around the country.[77]

Others, such as Brigadier General Khan (ret.), have noted that Pakistan cannot risk a graduated strategy and possible Indian retaliation, but rather must use nuclear weapons first and massively on Indian forces, and perhaps also strategic targets, to decisively blunt any attack and effect war termination.[78] Ambiguity about the method by which Pakistan might use nuclear weapons first is aimed at enhancing deterrence, but there is little doubt that, since 1998, Pakistan has arrayed nuclear weapons into an asymmetric escalation posture that envisions first use to directly deter Indian conventional power.

asymmetric escalation in action

Pakistan's asymmetric escalation nuclear posture has had a distinct deterrent effect on Indian leaders. Unlike the catalytic posture, it directly deterred large-scale Indian military action against Pakistan in the 1999 Kargil War, the 2001–02 Operation Parakram crisis, and the 2008 Mumbai attacks. Although the United States was still involved in defusing crises, evidence suggests that Pakistan's threat of early nuclear weapons use on Indian forces has had a significant inhibitory effect on India's political leadership, across both BJP and Congress governments. Indeed, given the more aggressive proclivities of the BJP toward Pakistan,[79] the fact that it was twice deterred from authorizing major conventional retaliation following Pakistani attacks suggests the powerful deterrent effect of the asymmetric escalation posture.

Details of the Kargil War are beyond the scope of this article,[80] but it is useful to note that after overt Pakistan Northern Light Infantry infiltration into

77. Lt. Gen. Sardar F.S. Lodi (ret.), "Pakistan's Nuclear Doctrine," *Defence Journal* (Pakistan), Vol. 3, No. 4 (April 1999), http://www.defencejournal.com/apr99/pak-nuclear-doctrine.htm. This idea was outlined in Lt. Col. Syed Anwar Mehdi, "Nuclear Ambivalence versus a Well-Defined Policy Involving Miximum Political Fallout," *The Citadel* (Pakistan), No. 2 (1994), pp. 55–67. See also Stephen P. Cohen, *The Pakistan Army* (Karachi: Oxford University Press, 1998), pp. 177–178.
78. Interview by author, March 19, 2009.
79. Jacques E.C. Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (Cambridge: Cambridge University Press, 2006), chap. 7; and Vipin Narang, "Pride and Prejudice and Prithvis: Strategic Weapons Behavior in South Asia," in Sagan, *Inside Nuclear South Asia,* chap. 4.
80. See, for example, Ganguly and Hagerty, *Fearful Symmetry,* chap. 7; Kapur, *Dangerous Deterrent,* chap. 6; Chari, Cheema, and Cohen, *Four Crises and a Peace Process,* chap. 5; Gen. Ved Prakash Malik, *Kargil: From Surprise to Victory* (Delhi: Harper Collins, 2006); Bruce Riedel, "American Diplomacy and 1999 Kargil Summit at Blair House" (Philadelphia: Center for Advanced Study of India, University of Pennsylvania, 2002); and Devin T. Hagerty, "The Kargil War: An Optimistic Assessment," in Ganguly and Kapur, *Nuclear Proliferation in South Asia,* pp. 100–116.

Kashmir—the most aggressive expression of Pakistani revisionism since 1990—the BJP, fearing Pakistan's now-credible nuclear threats, curtailed the Indian military's options to expel Pakistani forces and strictly prevented any operations on Pakistani soil. Although there is conflicting evidence of Pakistani nuclear activity during Kargil,[81] Pakistani Foreign Secretary Shamshad Ahmad made explicit threats that Pakistan would "not hesitate to use any weapon in [its] arsenal to defend [its] territorial integrity."[82] According to Lt. Gen. V.K. Sood (ret.) and Pravin Sawhney, Prime Minister Atal Bihari Vajpayee was "known to have seriously considered a Pakistani nuclear strike had India escalated the war."[83] India's chief of Army Staff at the time, Gen. Ved Malik, thus concedes that Pakistan's nuclear posture led India to "rule out full-scale conventional war."[84] In fact, Chari, Cheema, and Cohen write that the BJP was firm about "not enlarging the theater of operations beyond the Kargil sector or attack[ing] Pakistani forces, staging posts, and lines of communications across the LoC, despite the fact that this defied military logic and entailed the acceptance of heavier casualties. India's air force had strict orders to avoid attacking targets in Pakistan-administered Kashmir. This restraint was in marked contrast to India's response in the 1965 and 1971 conflicts, when nuclear weapons had not entered the equation and it had not displayed any inhibitions in invading Pakistan."[85] In this way, Pakistan's adoption of an asymmetric escalation posture inhibited India from significantly retaliating across the LoC or the international border after Pakistani forces infiltrated Indian territory, even though doing so might have been militarily advantageous.[86]

The BJP launched Operation Parakram following the Jaish-e-Mohammed and Lashkar-e-Taiba attack on the Indian parliament on December 13, 2001. Parakram called for the largest mobilization of Indian forces since 1971—almost 800,000 troops—with several infantry and mountain divisions de-

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81. See especially Malik's and Riedel's accounts of Pakistani activity; though some activity was detected by the Indians, because of the dual-use role of Pakistan's delivery capabilities, it is unclear whether nuclear or conventional assets were being readied. See also Ashley J. Tellis, C. Christine Fair, and Jamison Jo Medby, *Limited Conflicts under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis* (Santa Monica, Calif.: RAND, 2001), p. 56.
82. Quoted in "Any Weapon Will Be Used, Threatens Pak," *Hindu*, June 1, 1999.
83. V.K. Sood and Pravin Sawhney, *Operation Parakram: An Unfinished War* (Delhi: Sage, 2003), pp. 70–71.
84. Kapur, "Ten Years of Instability in Nuclear South Asia," p. 79; and Kapur, "India and Pakistan's Unstable Peace," p. 147. General Malik and the Indian military, in general, believe that although full-scale conventional war may no longer be possible, Pakistan's nuclear redlines are not as low as it would like the world to believe and that limited operations are possible below Pakistan's nuclear threshold.
85. Chari, Cheema, and Cohen, *Four Crises and a Peace Process*, p. 139.
86. Hagerty, "The Kargil War," pp. 110–112.

ployed across the LoC and all three strike corps deployed in the Thar Desert in Rajasthan for the first time in Indian history, prepared to thrust into Pakistan's vulnerable plains and desert sectors.[87] Facing the bulk of the Indian military arrayed against it, Pakistan believed that it had no choice but to mobilize its corresponding corps-level forces and reserves. The crisis momentarily abated—though Indian forces remained deployed—until May 2002, when Pakistani-backed terrorists again struck and killed thirty-two members of Indian Army families at Kaluchak in Jammu.

Gen. S. Padmanabhan and Prime Minister Vajpayee prepared for a decisive conventional assault on Pakistan in June—the strike corps, concentrated in the Thar, were prepared to execute deep, penetrating operations to engage and destroy Pakistan's two strike corps and seize Sindh Province, thus threatening to effectively slice Pakistan in two. Pakistan then made explicit nuclear threats, with Lt. Gen. Javed Ashraf Qazi, former director-general of the Inter-Services Intelligence (ISI), warning, "If Pakistan is being destroyed through conventional means, we will destroy them by using the nuclear option,"[88] and President Pervez Musharraf claiming that he had conveyed to Prime Minister Vajpayee that "if Indian troops moved a single step across the international border or the Line of Control, they should not expect a conventional war from Pakistan."[89] Pakistan also tested three nuclear-capable ballistic missiles in succession, sending a clear deterrent signal to Delhi.[90] The Indian strike corps remained deployed at tremendous cost to equipment and morale, awaiting Delhi's authorization until October, when Operation Parakram was officially called off and the strike corps returned to their cantonments. Indian military and strategic analysts describe Parakram as a costly and ill-conceived mobilization that "ended as an ignominious retreat after having failed to secure even its minimum objectives."[91]

Although several factors may have stopped Delhi from executing Parakram,[92] Pakistan's asymmetric escalation posture directly and powerfully shaped Indian decisions in one indisputable way: a large-scale assault along lines of the planned June offensives, the so-called Sundarji doc-

87. Sood and Sawhney, *Operation Parakram,* pp. 77–78.
88. "Pak Will Not Hesitate to Use Nuke against India," Press Trust of India, May 22, 2002.
89. Quoted in Zarar Khan, "Pakistan Was Ready to Wage Nuclear War against India, President Says," Associated Press, December 30, 2002.
90. Brigadier General Khan (ret.) also noted that Pakistan conducted nuclear exercises during Parakram. Interview by author on March 19, 2009. This may have been detected by Indian intelligence. See Shishir Gupta, "When India Came Close to War," *India Today,* December 19, 2002.
91. Praveen Swami, "Beating the Retreat," *Frontline,* Vol. 19, No. 22 (October 26, 2002), http://frontlineonnet.com/fl1922/stories/20021108007101200.htm.
92. Praveen Swami, "A War to End a War: The Causes and Outcomes of the 2001–2 India-Pakistan Crisis," in Ganguly and Kapur, *Nuclear Proliferation in South Asia,* pp. 144–161; and Kanti Bajpai,

trine,[93] nontrivially risked triggering nuclear use and was thus no longer possible. Limited war operations before Pakistan countermobilized conventional and nuclear assets were contemplated, but General Padmanabhan argued that such strikes would be "totally futile" in achieving any reasonable objectives, and the only effective response was to "smash [Pakistan]."[94] But as Lt. Gen. Sood (ret.) concedes, if India had executed the June offensives and "sever[ed] Punjab and Sindh with its conventional forces . . . Pakistan *would* use nuclear weapons in that scenario."[95] Hence, once the window for limited retaliatory options passed, senior Indian officials said that "Vajpayee feared that a full-scale military response . . . could precipitate a wider conflagration. Although Vajpayee believed that the risk of nuclear war was small, he nonetheless saw no advantage in precipitating a crisis of which it might be an outcome."[96] Ganguly and Hagerty conclude that "the fear of Pakistan's resort to a possible nuclear threat was paramount in the minds of Indian decision-makers, thereby inhibiting a resort to all-out war."[97] Pakistan's asymmetric escalation posture thus paralyzed India's leaders: the only available retaliatory option capable of achieving any practical military objectives risked provoking nuclear escalation and was therefore off the table.

India's frustration with Pakistan-backed aggression reached deafening heights after roughly a dozen Lashkar-e-Taiba militants executed a precision commando attack on Mumbai on November 26, 2008.[98] From the outset, India's Congress government, and even General Malik (ret.), conceded that its military options to retaliate against Pakistan were again limited, because any meaningful strikes risked uncontrollable escalation, possibly quickly up to the nuclear level.[99] India was therefore once more largely restrained by Pakistan's low nuclear threshold from executing retaliatory airstrikes against suspected Lashkar camps in Pakistan. Former Army Chief of Staff Roychowdhury conceded that "Pakistan's nuclear weapons deterred India from attacking that

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"To War or Not to War: The India-Pakistan Crisis of 2001–2," in Ganguly and Kapur, *Nuclear Proliferation in South Asia,* pp. 162–182.

93. Walter C. Ladwig III, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security,* Vol. 32, No. 3 (Winter 2007/08), pp. 158–190, especially pp. 159–163.

94. Quoted in Swami, "A War to End a War," p. 149.

95. Quoted in Kapur *Dangerous Deterrent,* p. 138 (emphasis in original). See also Sood and Sawhney, p. 83; and Ganguly and Hagerty, *Fearful Symmetry,* pp. 170–171.

96. Two high-level Indian officials interviewed by Praveen Swami. Swami, "A War to End a War," p. 150.

97. Ganguly and Hagerty, p. 180; also see Pravin Sawhney, "The Phony War," *Daily Pioneer,* December 19, 2002.

98. Angel Rabasa, Robert D. Blackwill, Peter Chalk, Kim Cragin, C. Christine Fair, Brian A. Jackson, Brian Michael Jenkins, Seth G. Jones, Nathaniel Shestak, and Ashley J. Tellis, "The Lessons of Mumbai," Occasional Paper (Santa Monica, Calif.: RAND, 2009).

99. Raj Chengappa and Saurabh Shukla, "Reining in the Rogue," *India Today,* December 15, 2008.

country after the Mumbai strikes . . . [and] it was due to Pakistan's possession of nuclear weapons that India stopped short of a military retaliation following the attack on Parliament in 2001."[100] In short, a former Indian chief of Army Staff—who has every incentive to minimize the inhibitory effects of Pakistan's nuclear deterrent—has admitted that, since 1998, India was at least twice deterred from conventionally retaliating against Pakistan for fear of nuclear escalation.

Since adopting an asymmetric escalation nuclear posture in 1998, Pakistan has been able to uniquely and directly achieve deterrent success against India. The three militarized crises discussed above reveal that Pakistan's asymmetric escalation posture means that major conventional war—even in retaliation—is no longer a viable option for India.[101] There is little evidence that the threat of U.S. intermediation stopped India from escalation: U.S. pressure was intensely on Pakistan—not India—to rein in militant groups, and given that India had already withstood U.S. pressure on nuclear testing in 1998, there is little to suggest that India's leaders were restrained by Washington in these cases, where Indian national interests were even more severely threatened. The more compelling explanation is that Pakistan's asymmetric escalation posture inhibited Indian leaders from executing militarily effective retaliatory options that might have otherwise been on the list of choices for fear of triggering Pakistani nuclear use—a concern not present during the catalytic phase.

Although the asymmetric escalation posture might presently seem "deterrence optimal" for Pakistan, in dynamic combination with India's more recessed assured retaliation posture, it has created a vicious cycle where elements within Pakistan feel emboldened to more aggressively seek longstanding limited revisionist aims through subconventional or terrorist attacks against India without fear of reprisal, triggering periodic crises in which India has grown increasingly frustrated—a situation Delhi is desperate to redress. These limited revisionist preferences have been constant in Pakistan for decades, but the adoption of an asymmetric escalation posture—not simply acquisition of nuclear weapons—seems to be the critical shift that erected a shield behind which such preferences have been more assertively pursued. This probe of the India-Pakistan dyad therefore suggests that nuclear postures do matter, generating different deterrent effects with critical implications for conflict dynamics and (in)stability.

100. "Pakistan's Nuclear Weapons Deterred India."
101. Chengappa and Shukla, "Reining in the Rogue."

Asymmetric Escalation and Pakistan's Command and Control

To reap direct deterrent power from its asymmetric escalation posture, Pakistan is forced to undertake command and control procedures that make the threat of nuclear first use against even limited Indian conventional attacks a credible operational posture. That is, it must undertake physical and procedural steps that allow for the rapid deployment and first use of nuclear weapons under potentially chaotic circumstances.

The most critical feature enabling this posture is that Pakistan's nuclear arsenal is strictly under military control, and nuclear weapons have been fully integrated into Pakistan's military forces and structures since 1998.[102] Even though political power was nominally transferred to a civilian government in 2008, there is no evidence that the military and the Strategic Plans Division—which has operational control over Pakistan's nuclear weapons—have relinquished control over the country's nuclear assets, and the National Command Authority (NCA) would not, in practice, be subject to civilian oversight.[103] Although various organizations, such as the Pakistan Atomic Energy Commission (PAEC), the National Defence Complex (NDC), and Khan Research Laboratories, are responsible for the production of nuclear components, the army and the air force have custody of all the necessary components for usable weapons. The delivery vehicles are stewarded by service Strategic Forces Commands, and the weapons assembly package and fissile pits that constitute a functional warhead are managed by the Strategic Plans Division (though PAEC or the NDC would likely have some additional components).[104] Thus, Pakistan's nuclear command and control architecture and decisionmaking occur within a de facto praetorian structure, institutionalized in the Joint Services Command Center, which fully integrates conventional and nuclear operations.

So although security considerations propelled Pakistan toward acquiring nuclear weapons and developing a first-use asymmetric escalation posture, it is primarily the Pakistan Army—an organization with its own preferences and pathologies—that is charged with implementing this posture and ensuring the security and safety of Pakistan's nuclear weapons. As Barry Posen and Scott Sagan have long argued, military organizations tend to favor offensive strategies and procedures that allow independence and retention of the initiative, at-

102. Ahmed, "Pakistan's Nuclear Weapons Program," p. 188.
103. Lavoy, "Pakistan's Nuclear Posture," p. 12; and Zeeshan Haider, "Pakistan's Nuclear Command Stays Unchanged: Official," Reuters, April 8, 2008.
104. This point is corroborated in author discussion with Brigadier General Khan (ret.), March 19, 2009.

tempt to minimize civilian interference, and underestimate the probability of accidents or unauthorized use.[105] Indeed, the Pakistan Army, which is regarded and views itself as highly professional, has undertaken procedures to execute and augment an already offensively oriented posture to ensure that Pakistan's nuclear weapons are usable in a crisis and will not be preemptively destroyed. As Tim Hoyt writes, "It is apparent that Pakistan's C^2 [command and control] procedures are delegative, lean heavily toward the always side of the 'always/never' divide, and probably include both devolution and possibly pre-delegation in order to ensure the use of weapons."[106] This delegative command and control structure is tinged with uncertainty in the open-source literature, but it likely includes three key features that enable rapid assembly, movement, and delivery of nuclear weapons to maintain the credibility of the asymmetric escalation posture, particularly during chaotic crisis situations against India.

First, although the Pakistan Army claims to store the bulk of its components for a deliverable nuclear asset—the pits, explosives packages, and delivery vehicles—separately from each other during peacetime to enhance security, it is believed that single or proximate military bases store all the necessary components for rapid assembly and deployment in a crisis.[107] General Kidwai has noted that nuclear weapons can be assembled, moved, and mated with delivery vehicles "very quickly,"[108] suggesting that all the components needed to assemble and deliver a functional nuclear asset are within tight proximity: "Whether separated by a yards [sic] or miles the weapons will be ready to go in no time."[109] Pakistan Army officials have further stated that "in emergency conditions . . . equipment is repositioned to allow for rapid assembly."[110] The present de-mating of assets may also result from technical features of Pakistan's weapons designs, wherein weapons technicians may prefer them

105. Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the World Wars* (Ithaca, N.Y.: Cornell University Press, 1984), chaps. 1, 2; Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, N.J.: Princeton University Press, 1993); and Scott D. Sagan, "The Evolution of Pakistani and Indian Nuclear Doctrine."
106. Hoyt, "Pakistani Nuclear Doctrine and the Dangers of Strategic Myopia," p. 966.
107. Some small number of fully assembled warheads may even be maintained for emergency deployment. But even if the entire force is kept in component form, Pakistan appears to have taken measures to ensure rapid assembly and deployment if necessary. I thank one of the anonymous reviewers for pointing out that this possibility cannot be excluded.
108. General Kidwai, quoted in Cotta-Ramusino and Martellini, "Nuclear Safety, Nuclear Stability, and Nuclear Strategy in Pakistan."
109. General Kidwai, quoted in Ron Moreau, "Pakistan's Nukes," *Newsweek,* January 26, 2008, http://www.newsweek.com/id/105604.
110. Pakistan military officials, quoted in Molly Moore and Kamran Khan, "Pakistan Moves Nuclear Weapons: Musharraf Says Arsenal Is Now Secure," *Washington Post,* November 11, 2001.

not to be stored as fully assembled warheads for stability or safety reasons.[111] But as its nuclear weapons designs and technology become more sophisticated,[112] Pakistan may feel pressure to move to a ready deterrent to enhance the credibility of its asymmetric escalation posture.

Components are believed to be stored at several military locations (the existence of six to twelve secret fixed locations has been reported), though there are presumably dummy sites to enhance security and survivability.[113] Specifically, bases proximate to—but in the rear of—sectors where Indian forces would advance are thought to store fully assemblable weapons that can be constituted and deployed rapidly in this key theater of operations. Logic dictates that Pakistan most likely stores its nuclear assets at military locations in a tight, elongated band toward the rear of Punjab and Sindh, south of Islamabad; assets too close to the Indian border (e.g., Lahore) might be susceptible to preemption or capture, while assets too far in the rear would be in the chaotic Northwest Frontier Province and Federally Administered Tribal Areas, and quite distant from likely conflict theaters.[114] These constraints narrow the likely locations of Pakistani nuclear assets to army and air force installations between 50 and 100 miles from the international border; some assets may be prepositioned closer to likely theaters, but the bulk of the assets are probably located around or behind the Indus River or its rearward tributaries (e.g., Chenab). This deployment pattern would optimize credibility and survivability.

Second, the Pakistan Army likely institutes positive control procedures, so that it can rapidly deploy these assets in the event of a crisis with India (or external threats to the integrity of Pakistan's nuclear arsenal). This may include pre-delegating some authority to end users in its chain of command to move and release nuclear weapons should communication break down, which is a realistic concern. Indeed, the so-called two-or-three-man rule that Pakistan appears to employ involves codes split at lower levels of military command;

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111. This is a challenge most new nuclear powers face. See, for example, Lewis and Litai, *China Builds the Bomb,* pp. 156–158; and David Albright and Mark Hibbs, "Pakistan's Bomb: Out of the Closet," *Bulletin of the Atomic Scientists,* Vol. 48, No. 6 (July/August 1992), pp. 38–43.

112. David Albright and Paul Brannan, "Pakistan Expanding Plutonium Separation Facility Near Rawalpindi," ISIS Imagery Brief (Washington, D.C.: Institute for Science and International Security, May 19, 2009), http://www.isis-online.org/publications/southasia/PakistanExpandingNewlabs.pdf.

113. Moore and Khan, "Pakistan Moved Nuclear Weapons"; and Kenneth N. Luongo and Brig. Gen. Naeem Salik (ret.), "Building Confidence in Pakistan's Nuclear Security," *Arms Control Today,* Vol. 37, No. 10 (December 2007), http://www.armscontrol.org/act/2007_12/Luongo.

114. Brigadier General Khan (ret.), interview by author, March 19, 2009. Khan stated that "there are no nuclear weapons in Lahore" because they would be too vulnerable to Indian seizure.

codes and warheads are also believed to be colocated. Maj. Gen. Mahmud Durrani (ret.) claims that, "for example, at an air force base the code may be divided between the base commander and the unit commander. In the army, the code may be divided between the group commander and the unit commander. This rule also applies to a launch site. The only exception is a single pilot who will receive the full code during flight."[115] It may also be that physical demating stewardship procedures give rise to the two-or-three-man rule: separate units may have custody of respective components, and all parties' consent would be required to assemble a functional weapon. In short, it appears that lower-level officers may be ceded some authority, particularly as a crisis unfolds, to assemble and release Pakistani nuclear weapons should circumstances demand it.

Third, there may be few negative controls designed to inhibit the release of Pakistan's nuclear weapons. Although stated procedures nominally call for the NCA to authorize each step—assembly, mating, movement, and release of nuclear weapons—there may be few safeguards that physically prevent lower-level officers from taking each step without authorization if they deem it necessary, as a hedge if the NCA is out of reach or decapitated. Brigadier General Khan (ret.) concedes that "[a] theater commander would probably [be able to] take matters into his own hands. . . . Should a trade-off be required, battle effectiveness of the nuclear force will trump centralized control."[116] For an army persistently concerned with its lack of strategic depth, the absence of robust negative controls may be designed to physically enable quick release of nuclear weapons in the event of a surprise Indian attack or NCA decapitation.

More specifically, because of the emphasis on rapid assembly, deployment, and potential use under chaotic conditions, it is unlikely that Pakistan wants to develop or deploy robust digital Permissive Action Link (PAL) capabilities designed to prevent unauthorized or accidental use.[117] In 2002 Kidwai claimed that Pakistan's nuclear weapons did not have PALs, instead relying on procedural negative controls and component separation to ensure safety.[118] But in 2004 Samar Mubarakmand, one of Pakistan's top nuclear scientists, incredibly

115. Durrani, "Pakistan's Strategic Thinking and the Role of Nuclear Weapons," p. 33.
116. Feroz Hassan Khan, "Nuclear Command and Control in South Asia during Peace, Crisis, and War," *Contemporary South Asia,* Vol. 14, No. 2 (June 2005), p. 169.
117. The United States has chosen not to transfer modern PAL technology to Pakistan, and Pakistan would likely never accept such technology for fear of "kill switches" that might enable the United States to neutralize Pakistan's nuclear weapons.
118. Cotta-Ramusino and Martellini, "Nuclear Safety, Nuclear Stability, and Nuclear Strategy in Pakistan."

declared that Pakistan had fully embedded PALs into its nuclear weapons at the manufacturing stage, rendering unauthorized or accidental use impossible.[119] Kidwai now insists that Pakistan employs "'Pak-PALs,' a domestic version of the American system" composed of a twelve-digit alphanumeric code.[120]

Does Pakistan employ PALs, and if so, what strength would be consistent with its known capabilities and posture? Given Pakistan's disassembled maintenance procedures and the compulsions of its asymmetric escalation posture, all publicly available evidence suggests that "Pak-PALs" are likely weak, bypassable controls that allow for rapid assembly and release of nuclear weapons if necessary. First, it is unclear what a PAL for a disassembled warhead might look like, because modern PALs are integral to the design of, and digitally integrated into, fully assembled nuclear weapons with limited-try features. Older U.S. PALs consisted of heavy-duty combination or electromechanical locks (Category A/B) on some warhead component; these are the safeguards that Pakistan is most likely to use given the technical state of its arsenal.[121] These rudimentary PALs could perform a variety of functions, such as locking one or more subcomponents of the disassembled warhead, physically blocking the fusing space or warhead assembly, or preventing the arming circuit from closing. All, however, "could theoretically be bypassed."[122] Thus, if Pakistan does maintain warheads in a disassembled state, it is unlikely to have weapons equipped with fully embedded modern PALs; it most likely employs only weak negative controls on some warhead subcomponent(s), circumventable by design for swift assembly.

Second, the credibility of Pakistan's asymmetric escalation posture depends

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119. Samar Mubarakmand, Interview, "Capital Talk Special," *Geo-TV,* May 3, 2004, http://www.pakdef.info/forum/showthread.php?t=9214.

120. David E. Sanger, "Obama's Worst Pakistan Nightmare," *New York Times Magazine,* January 11, 2009, p. 32; and Kidwai, quoted in Moreau, "Pakistan's Nukes." Kidwai is sufficiently vague to allow for several possibilities. For example, three components of a weapon could be secured by four-digit codes, so all twelve digits would be necessary to assemble a fully functional weapon, or one critical component (i.e., the pit) could be secured by a twelve-digit code.

121. Ashley J. Tellis, "U.S.-Pakistan Relations: Assassination, Instability, and the Future of U.S. Policy," testimony before the Middle East and South Asia Subcommittee of the House Foreign Affairs Committee, Federal News Service, 110th Cong., 2d sess., January 16, 2008. For a primer on PAL technology, see Peter Stein and Peter Feaver, "Assuring Control of Nuclear Weapons: The Evolution of Permissive Action Links," CSIA Occasional Paper, No. 2 (Cambridge, Mass.: Belfer Center for Science and International Affairs, Harvard Kennedy School, 1987); and Donald R. Cotter, "Peacetime Operations: Safety and Security," in Ashton B. Carter, John D. Steinbruner, and Charles A. Zraket, eds., *Managing Nuclear Operations* (Washington, D.C.: Brookings Institution Press, 1987) pp. 46–51.

122. Cotter, "Peacetime Operations," p. 49.

on theater commanders' ability to quickly release nuclear weapons in potentially chaotic circumstances, when communication with the NCA might be impossible. Brigadier General Khan (ret.) writes that Pakistan's "negative control technology provides only a marginal degree of safety if the troops managing a particular weapon are determined to act before they are destroyed."[123] A weak, bypassable PAL that would not definitively prohibit commanders from releasing nuclear weapons without authorization is thus also most consistent with the credibility requirements of Pakistan's posture. It is therefore likely that Pakistan's negative controls are lax enough to allow a technical team on a base or in theater to jury-rig a nuclear weapon for use even without appropriate authorization from the NCA.

To make its asymmetric escalation posture credible, Pakistan seems to be augmenting positive control over its nuclear weapons by developing weak negative controls, or removing them altogether, so that officers have the physical ability to assemble and release nuclear weapons should they deem it necessary, regardless of whether they are vested with the authority to do so. Brigadier General Khan (ret.) concedes that "although the chain of command is clearly spelled out under all military contingencies, in the event of a command breakdown, a theater commander, seeing the opponent's forces marching into his area of responsibility, would be hard-pressed to stand by and take no action."[124] This suggests that the Pakistan military, for both security and organizational reasons, heavily favors the "always" side of the always/never divide in its implementation of the asymmetric escalation posture. Whatever negative controls exist to ensure the security and safety of Pakistan's arsenal during peacetime, they are likely circumventable, by design, for deterrence purposes in a crisis or conflict situation with India.

Challenges for Pakistan's Nuclear Posture

States that select asymmetric escalation nuclear postures face a grim trade-off in which the pressure for a rapidly usable nuclear capability to establish credible deterrence generates nontrivial risks of accidental or unauthorized use. As such, the deterrent power that Pakistan reaps from its asymmetric escalation posture comes at a price to its own—as well as to regional and international—security, both presently and in the future, as India seeks to develop conventional military options to redress its perceived inability to retaliate against Pakistani-backed subconventional and terrorist attacks.

123. Khan, "Challenges to Nuclear Stability in South Asia," p. 68.
124. Ibid., pp. 67–68.

To prevent accidents and unauthorized use of nuclear weapons, Pakistan relies on several layers of safeguards.[125] The Personnel and Human Reliability Programs (PRP/HRP) are designed to thwart internal threats to the arsenal. Meanwhile secrecy and robust perimeter security around nuclear installations are designed to thwart external threats to assets.[126] The reliability programs include a rigorous screening program involving extensive background checks, tight controls on contact and travel, and psychological screening to ensure the stability and loyalty of 10,000-plus officers and scientists who have access to Pakistani nuclear assets. With so many people involved and with the assets dispersed over dozens of locations, these programs are critical to the security and safety of Pakistan's nuclear weapons program.

The perimeter security system is designed to prevent external actors from gaining unauthorized access to Pakistan's nuclear assets; it relies on a multilayer-personnel approach overseen by an officer with the rank of major-general.[127] The system includes layers of personnel security—though perhaps not highly visible physical security signatures—around nuclear facilities and storage locations: counterintelligence teams coordinated with the ISI at the outermost layer, enhanced physical security measures surrounding the installations themselves, and specially trained army units guarding the innermost layer.[128] This arrangement is believed to be robust enough to thwart likely external armed threats to Pakistan's nuclear assets during peacetime, particularly given the defensive advantage imparted by highly secret fixed locations. Although alarmist assessments of the external threat to Pakistan's nuclear assets exist,[129] both Director of Central Intelligence Leon Panetta and Chair of the Joint Chiefs Adm. Michael Mullen claim that Pakistan's nuclear assets are generally secure during static peacetime conditions.[130]

CURRENT CHALLENGES

Despite these precautions, there are real risks and points of vulnerability in the current Pakistani configuration, during both peacetime and crises, which make

125. See Christopher O. Clary, "Thinking about Pakistan's Nuclear Security in Peacetime, Crisis, and War," Unpublished Working Paper (Delhi: Institute for Defence Analysis, 2009).
126. There is a lot of uncertainty in the open-source literature about these programs' design-basis threat (i.e., the composition of threats they are designed to withstand).
127. Luongo and Salik, "Building Confidence in Pakistan's Nuclear Security"; and Lavoy, "Pakistan's Nuclear Doctrine," pp. 14–15.
128. Luongo and Salik, "Building Confidence in Pakistan's Nuclear Security."
129. See, for example, Sanger, "Obama's Worst Pakistan Nightmare"; and Bruce Riedel, "Pakistan and the Bomb," *Wall Street Journal*, May 30, 2009.
130. Leon Panetta, quoted in Michael R. Blood, "Panetta: Location of All Pakistan Nukes Not Known," Associated Press, May 18, 2009; and Mike Mullen, quoted in Lolita C. Baldor, "Mullen Says He Believes Pakistan Nukes Are Secure," Associated Press, May 4, 2009.

the risk of theft and unauthorized or accidental use of nuclear weapons higher than in other states. During peacetime, there are two critical risks to the security of Pakistan's nuclear assets. The first is that an insider threat could bypass the PRP/HRP, which, as Secretary of Defense Robert Gates points out, is never "entirely reliable" in any state.[131] Given long-term demographic changes in army recruitment patterns and the scientific establishment,[132] and possible links therein to more radical elements within Pakistan and potentially internationally, it is no small chore to manage a reliability program consisting of thousands of people. It is particularly daunting because it may require only one knowledgeable insider to pass location and movement information to extremists, or two to three to secure a fully functional nuclear asset or divert fissile material. Even leaving aside the A.Q. Khan exports, there have been several cases of suspicious contact between high-level nuclear establishment officials and the Taliban and al-Qaida, notably the Umma Tameer-e-Nau network in 2001.[133] As a small but possibly increasing proportion of Pakistanis may be radicalizing, these programs are charged with the difficult task of separating those who are "merely pious and those with tendencies towards religious extremism," particularly given that a failure rate of even 0.01 percent could have disastrous consequences.[134]

The second risk emerges during transportation of nuclear components. As Pakistan's nuclear arsenal expands to enhance the credibility of its asymmetric escalation posture, the number of nuclear assets that must be securely moved—over poor infrastructure, increasing the risk of accidents—will necessarily increase. Although Pakistan seems to be investing in transportation security, there is always a higher risk of accidents or theft in transport—whether to bases from fabrication facilities or from bases to deployment sites—than in fixed locations.[135] To reduce movement signatures, Pakistan claims that it transports most of its nuclear material clandestinely or through extensive tunnel networks, not in heavily armed visible convoys. Such procedures may minimize the risk of targeted hijacking, but they increase the probability that an attack facilitated by an insider with foreknowledge of the trans-

131. Quoted in Sanger, "Obama's Worst Pakistan Nightmare."
132. In 1995 the Pakistan Army thwarted a coup attempt by forty officers, led by Maj. Gen. Zahirul Islam Abbasi, with alleged links to Islamic fundamentalist groups. John F. Burns, "Pakistan Arrests 40 Officers, Islamic Militant Tie Suspected," *New York Times*, October 17, 1995. See also Shuja Nawaz, *Crossed Swords: Pakistan, Its Army, and the Wars Within* (Karachi: Oxford University Press, 2008), pp. 570–577.
133. IISS, *Nuclear Black Markets*, chap. 5, especially p. 107. Although it was prior to the development of a robust personnel reliability program, Sultan Bashiruddin Mahmood, a former director of nuclear power at PAEC, and Abdul Majid, a PINSTECH nuclear fuels expert, were arrested in 2001 for their known links to and continued meetings with the Taliban and al-Qaida leadership.
134. Ibid., p. 113
135. Luongo and Salik, "Building Confidence in Pakistan's Nuclear Security."

port, acting either alone or in concert with extremist organizations, will be successful.[136]

In a crisis, the security of Pakistan's nuclear arsenal might deteriorate as Pakistan moves to a higher state of nuclear readiness and is forced to deploy nuclear assets or disperse them to secure locations if the arsenal itself is believed to be under threat, as it did within the forty-eight hours after the terrorist attacks of September 11, 2001, when it feared that the United States might invade the country.[137] In such a scenario, the loss of centralized control introduced by quick dispersion or deployment could generate serious risk of theft, or unauthorized accidental use. Once an order has been given to move assets out of fixed locations, there may be pressure to remove physical impediments to the release of nuclear weapons, particularly if warheads are assembled before movement for technical or procedural reasons. Especially if the NCA has authorized the movement of nuclear weapons in a crisis, Pakistan's acute fear that it will find itself in a "use them or lose them" situation will likely lead to significant pre-delegation of assets and authority to end users. Thus, the emphasis on positive control may shift so severely in a crisis that the insecurity of nuclear assets and risk of unintentional release of nuclear weapons may rise sharply, posing the single greatest challenge to the safety of Pakistan's nuclear assets.

The bias in a professional army tends toward the belief that officers will not undertake unauthorized action involving nuclear assets under any contingency. This bias limits the Pakistan Army's willingness to introduce physical impediments to nuclear movement or use that might undermine the credibility of its asymmetric escalation posture. This creates scenarios of vulnerability—particularly in a chaotic crisis or conflict environment when assets are being moved—in which nuclear components or weapons could be susceptible to theft or inadvertent use, even by authorized personnel. This is the essence of the vulnerability/invulnerability paradox. So long as the army stewards Pakistan's nuclear assets in an asymmetric escalation posture, however, these organizational pathologies heavily privileging the "always" side of the always/never dilemma will persist, as will the associated risks.

FUTURE CHALLENGES

Pakistan's asymmetric escalation posture will be further challenged by its dynamic interaction with India's conventional and nuclear postures. In particu-

136. Rolf Mowatt-Larssen, "Nuclear Security in Pakistan: Reducing the Risks of Nuclear." See also Feroz Hassan Khan, "Nuclear Security in Pakistan: Separating Myth from Reality," *Arms Control Today*, Vol. 39, No. 6 (July/August 2009), pp. 12–20.
137. Moore and Khan, "Pakistan Moves Nuclear Weapons."

lar, India's assured retaliation nuclear posture has failed to deter limited Pakistani revisionist aggression at various levels of intensity, while its traditional conventional retaliatory options are blunted by Pakistan's asymmetric escalation posture. As such, after Operation Parakram, India began developing a conventional military doctrine and posture designed to provide rapidly executable, limited war retaliatory options that it believes will not breach Pakistan's nuclear redlines. This shift might have dangerous consequences for the subcontinent. To maintain the deterrent credibility of its asymmetric escalation nuclear posture against surprise Indian offensives, Islamabad may be forced to pre-deploy and pre-delegate fully usable nuclear assets. In an atmosphere of a fully fortified international border, with Pakistan on a de facto continuous nuclear crisis footing, each of the risks of inadvertent escalation and nuclear use noted above could be amplified.

At the heart of India's effort is the much-vaunted Cold Start doctrine, which seeks to enable limited surprise offensives that can achieve their objectives before Pakistan countermobilizes and before international pressure forces Indian operations to halt.[138] Cold Start calls for simultaneous army and air force combined arms operations that can be executed with minimal mobilization times (three to four, rather than ten to twenty-one, days). Brig. Gen. Gurmeet Kanwal (ret.) writes, "[The army and air force] should be launching their break-in operations and crossing the 'start line' even as the holding (defensive) divisions are completing their deployment on the forward obstacles. Only such simultaneity of operations will unhinge the enemy, break his cohesion and paralyze him into making mistakes from which he will not be able to recover."[139] In particular, India envisions making shallow, "salami slice" penetrations across the international border and LoC from a variety of azimuths to confuse Pakistani commanders, and to achieve limited objectives without triggering Pakistan's nuclear redlines. Indian strategists view Cold Start as enabling conventional operations that fall short of a "dominant maneuver," thereby rendering Pakistan's nuclear deterrent threats noncredible, because these penetrations would not pose an existential threat to the state.[140]

Although the necessary logistics, matériel, and command and control architecture to implement the Cold Start concept are far from being in place, military organizations—particularly the Pakistan Army, whose officers are

138. The posture calls for prepositioning key units closer to the international border and breaking up India's three strike corps into more easily deployable units. See Ladwig, "A Cold Start for Hot Wars?"; Gurmeet Kanwal, "Cold Start and Battle Groups for Offensive Operations," *Strategic Trends,* Vol. 4, No. 18 (June 2006); and Tariq M. Ashraf, "Doctrinal Reawakening of the Indian Armed Forces," *Military Review,* Vol. 84, No. 6 (November/December 2004), pp. 53–62.
139. Kanwal, "Cold Start and Battle Groups for Offensive Operations."
140. Bharat Karnad, *India's Nuclear Policy* (Westport, Conn.: Praeger, 2008), chap. 4.

trained with 1971 seared into their brains—tend not to be sanguine about an opponent's posture whose sole aim is to enable confusing surprise offensives. Pakistan Army officers have repeatedly noted that given Pakistan's perceived lack of strategic depth, there is no such thing as limited war for Pakistan; thus Indian offensives, to be effective by any reasonable measure, would necessarily pose a potential existential threat to Pakistan's military forces and strategic centers, and therefore require a total conventional and nuclear response.[141]

In addition to revising its conventional posture to place the army and air force at higher states of readiness and deploy army units closer to the border,[142] Pakistan will likely make destabilizing revisions to its asymmetric escalation posture to keep it credible in a Cold Start world. In particular, it might lower its nuclear threshold and take steps to credibly enforce these earlier redlines. Although Pakistan presently has a short time buffer to assemble and deploy its weapons as a crisis materializes and Indian forces mobilize, that time could be severely compressed under Cold Start conditions. Pakistan would thus be pressured to move to a fully ready and alert posture with nuclear weapons assembled, mated, pre-deployed, and pre-delegated, and with fewer—if any—negative controls in order to credibly deter limited surprise Indian penetrations across the LoC or international border. Pakistan's nuclear posture may thus creep toward a ready deterrent on hair-trigger stance that demands immediate release of nuclear weapons—whether graduated or all-out—against any warning of Indian conventional movements, because by the time hard confirmation of an Indian offensive was received, it might be too late for the Pakistan Army and state to respond.

The command and control demands of managing a hair-trigger posture without inadvertent nuclear use would be extremely challenging for any state—they were difficult enough for the superpowers during the Cold War. If Pakistan were to adopt a similar nuclear posture, the result could be extreme instability in South Asia, because the risks of accidents and misperceptions are heightened by the following conditions: (1) India and Pakistan lack advanced and robust early-warning and command and control architectures; (2) they border each other, which drastically reduces warning and flight times; and (3) they rely on dual-use delivery vehicles, which makes discriminating between nuclear and conventional missions in real time almost impossible. Pakistan Army thinking has already identified the destabilizing effects of Cold Start, with Brigadier General Khan (ret.) writing: "Indian confidence regarding the possibility of escalation control, the predictable outcome of a war,

141. Brigadier General Khan (ret.), interview by author, March 19, 2009.
142. Ashraf, "Doctrinal Reawakening of the Indian Armed Forces," p. 59.

and the faith of Indian leaders in the safety of nuclear weapons on full- or near-full-alert status raises the question of whether India fully realizes the possible repercussions" of a limited war posture.[143]

The Pakistan Army certainly has every incentive to argue that Cold Start is destabilizing. Still, analysis of Pakistan's likely response to Cold Start, intended to maintain the credibility of its asymmetric escalation nuclear posture, suggests that the consequences might indeed be a net negative for regional and global security, particularly if a deteriorating domestic political environment in Pakistan results in more frequent or more intense subconventional attacks against India that trigger acute militarized—and thus nuclearized—crises. In such situations, India's Cold Start offensives might outpace political deliberations in both countries and spiral toward uncontrollable escalation.

Conclusion

Of the three nuclear postures adopted in South Asia since the late 1980s, only Pakistan's asymmetric escalation posture has been able to directly deter both conventional aggression and nuclear coercion. There is little evidence to suggest that India was deterred by Pakistan's catalytic nuclear posture, but U.S. intervention, prompted by concerns over Pakistani nuclear movements, helped to prevent escalation. After Pakistan's adoption of an asymmetric escalation nuclear posture in 1998, however, Indian leaders have been deterred several times from authorizing significant conventional retaliatory operations against Pakistan—even as the United States intensely pressured Pakistan to back down. On the flip side, although India's assured retaliation posture may deter Pakistani use of nuclear weapons against India's major cities, it has not deterred Pakistani attacks—both at the subconventional and conventional levels—which can now be achieved without fear of Indian reprisal. Indeed, the current configuration—a limitedly revisionist Pakistan, with an asymmetric escalation nuclear posture that blunts India's conventional power and renders India's assured retaliation posture mostly irrelevant—is acutely unstable. It was not simply Pakistan's acquisition of nuclear capabilities that caused this state of affairs, given that Pakistan has had limited revisionist intentions and nuclear weapons since 1986, but its adoption of the asymmetric escalation nuclear posture in 1998.

The theoretical contribution of this article is to suggest that the acquisition of nuclear weapons alone may not produce a uniform deterrent effect across

143. Khan, "Challenges to Nuclear Stability in South Asia," p. 66.

states. The selection of a particular nuclear posture—how a state operationalizes its nuclear capabilities—does indeed have differential effects on deterrence and dispute dynamics. The empirical pattern in South Asia suggests that nuclear posture may therefore be an important omitted variable in explaining conflict dynamics in the region, and that it may set scope conditions for when interactions are more or less stable at both the conventional and nuclear levels. In addition, the general pattern—that different postures can have variable deterrence effects—may have substantial external validity for other regional nuclear powers, because the differential deterrent power of nuclear postures at various levels and intensities of conflict derives from a logic that should be valid across other midsize nuclear powers such as China, Israel, and potentially Iran. One natural question that arises from this finding is why states select the postures they do. This is a question I explore elsewhere in an effort to develop a rigorous theoretical and empirical understanding of the sources and consequences of regional power nuclear postures.[144]

At the policy level, this article highlights critical deterrence/management trade-offs generated by the asymmetric escalation posture and identifies a source of deep instability in the India-Pakistan dyad. Although Pakistan's asymmetric escalation posture may deter conventional attacks, it also enables Pakistan to more aggressively pursue revisionist aims against India with little fear of retaliation, more frequently triggering precisely the crisis scenarios that magnify the risks of intentional or inadvertent use of nuclear weapons. These challenges will only be intensified if India—to redress its current perceived paralysis against persistent Pakistani provocations—progresses toward a Cold Start conventional posture, which might then push the Pakistan Army toward a ready deterrent on effectively hair-trigger alert. Such a combination could spawn intolerable risks of accidental or unauthorized nuclear use.

Given the proximity and dynamic instability between India and Pakistan, these two nations and the international community should awaken to the danger that their conventional and nuclear postures are barreling toward increasing instability, especially when coupled with Pakistan's growing domestic political volatility, which may further amplify its support for subconventional attacks against India. India and Pakistan should take appropriate measures to establish clear lines of communication, signaling procedures, confidence-building measures, and technical safeguards to mitigate the risk that small misperceptions and miscalculations could spiral to the intentional or unintentional use of nuclear weapons. Although nuclear weapons on the subcontinent

144. Vipin Narang, "Posturing for Peace? The Sources and Deterrence Consequences of Regional Power Nuclear Postures," Ph.D. dissertation, Massachusetts Institute of Technology, forthcoming.

are now an irreversible reality, nuclear posture is a malleable variable. The United States and the international community can take steps to help make Pakistan's operationalization of its asymmetric escalation posture safer—making the management of the arsenal more secure without sacrificing deterrent power—and lean on both India and Pakistan to walk away from the dynamic instability induced by their choice of conventional and nuclear postures.