LESSONS FOR PROLIFERATION SCHOLARSHIP IN SOUTH ASIA

The Buddha Smiles Again

David J. Karl

India caught the world by surprise when it set off a series of nuclear test explosions in May 1998. Conducted under the code name *Shakti* (Hindi for "divine power"), the tests came 24 years after New Delhi fired off its first nuclear detonation. By a coincidence that Indian officials later claimed was unintentional, the 1974 and 1998 tests both occurred on the religious holiday of Buddha Purnima, the birthday of Buddhism's founder.[1] Although New Delhi at the time described the 1974 test as a "peaceful" nuclear explosion and subsequently maintained a policy of artful ambiguity about its nuclear capabilities for a quarter of a century, the 1998 explosions were intended as an emphatic declaration that the country had entered the ranks of nuclear weapons powers. As one senior government official stated, "These tests have established that India has a proven capability for a weaponized nuclear program. They also provide a valuable database which is useful in the design of nuclear weapons of different yields for different applications and for different delivery systems."[2] Prime Minister Atal Behari

David J. Karl is Senior Program Associate at the Pacific Council on International Policy, Los Angeles, California. The author is grateful to Sumit Ganguly and the other participants of a January 2001 workshop at the University of Texas at Austin as well as an anonymous reviewer for their helpful comments.

Asian Survey, 41:6, pp. 1002–1022. ISSN: 0004–4687

1. Appropriating this theme, the code words informing Prime Minister Indira Gandhi of the 1974 test's success were "the Buddha smiles."

2. Brajesh Mishra, a close aide to Prime Minister Vajpayee, is quoted in Sukumar Muralidharan and John Cherian, "The BJP's Bomb," *Frontline*, May 23–June 5, 1998.

Vajpayee more succinctly declared, "We now have the capacity for a big bomb."[3]

Predictably enough, Pakistan quickly followed suit by conducting its own battery of test explosions and proclaiming that it, too, was a nuclear weapons state. The country's foreign secretary announced that "the devices tested conform to weapons configuration, compatible with delivery systems."[4] Then-Prime Minister Nawaz Sharif issued a more colorful if somewhat bizarre notice. In an address to the media, he stated that "today the flames of the nuclear fire are all over. I am thankful to God that . . . we have jumped into these flames."[5]

By suddenly demonstrating actual capabilities that were until then a matter of conjecture, both India and Pakistan dropped, at least partially, the shroud of opacity that traditionally surrounded their nuclear programs. Their tit-for-tat displays of nuclear power have catapulted South Asia into a new and, in the view of many, more dangerous strategic era. Given the crisis-prone character of Indo-Pakistani relations, the region has long been regarded as a nuclear powder keg, so much so that U.S. officials have taken to calling it the most likely venue for a nuclear conflict. Such apprehensions were reinforced by the 1998 tests, which raised the specter of a spiraling arms race between India and Pakistan. In this context, the border war that erupted in the Kargil region in 1999 seemed to suggest that the festering dispute over Kashmir could unleash a nuclear war. A recent U.S. intelligence assessment finds that there is a sharply increased chance of a military conflict between the two countries possibly erupting into a nuclear exchange.[6] Another intelligence study concludes that the risk of war in South Asia "will remain fairly high over the next 15 years. India and Pakistan are both prone to miscalculation. Both will continue to build up their nuclear and missile forces."[7]

Besides heightening concerns among policy officials, the overt nuclearization of South Asia has renewed the scholarly discussion about the consequences of nuclear proliferation on regional stability. Given its complex structure and empirical significance, the Indo-Pakistani rivalry has long been a focus–indeed a crucible of sorts–for the debate between proliferation op-

3. Manoj Joshi, "Nuclear Shock Wave," *India Today*, May 25, 1998.

4. John Kifner, "Pakistan Sets Off Another Nuclear Device," *New York Times* (*NYT*), May 31, 1998.

5. John Ward Anderson and Kamran Khan, "Pakistan Sets Off Nuclear Blasts; 'Today, We Have Settled a Score,' Premier Says," *Washington Post*, May 29, 1998.

6. Judith Miller and James Risen, "A Nuclear War Feared Possible over Kashmir," *NYT*, August 8, 2000, p. A1.

7. National Intelligence Council (NIC), *Global Trends 2015: A Dialogue About the Future with Nongovernment Experts* (Washington, D.C.: NIC, December 2000), p. 33. Available at the NIC home page at <http://www.cia.gov/nic/pubs/2015_files/2015.htm>.

timists and pessimists.[8] Although both schools of thought agree that nuclear weapons are powerful deterrents to the outbreak of deliberate, premeditated war, they differ over the dangers of unintended nuclear conflict between proliferant states. Believing that the problems involved in creating situations of mutual deterrence are not beyond the grasp of a number of states, optimists hold generally reassuring views of the effects of regional nuclear proliferation. Pessimists, in contrast, worry that technical, organizational, and doctrinal problems will plague deterrence stability between new nuclear powers.

South Asia has become a kind of Rorschach test for proliferation analysts. The region's politico-military circumstances are so multifaceted that optimists and pessimists alike can adduce, with varying degrees of plausibility, any number of factors in support of their positions. Whereas optimists point to the not inconsiderable elements of stability and restraint in the Indo-Pakistani rivalry, pessimists worry about the surfeit of powerful and interlocking factors pushing New Delhi and Islamabad toward military conflict. While optimists contend that both countries will likely avoid the pitfalls of nuclear deterrence that came to light during the U.S.-Soviet nuclear rivalry, pessimists doubt they will be able to negotiate the crisis-stability and accidental-war dangers inherent in nuclear deterrence, particularly in light of their technological and financial limitations.

The opaque nature of the Indian and Pakistani nuclear programs in the past offered narrow empirical grounds for advancing the quality of the debate between optimists and pessimists. As a result, the discussion turned largely on reasoned speculation and inferences drawn from Cold War nuclear history. The evidentiary constraint has been relieved, at least to some extent, by the spate of information that have emerged since the 1998 nuclear tests. This article sifts through the data that have come to light so far, with the aim of assaying the relative merits of each school's perspectives. How did optimist and pessimist arguments fare in light of the events of the past several years? Which perspective offered the best predictions of what has happened so far and the most persuasive explanation of why it happened? And which provides a better basis for peering down the road and forecasting how future developments will unfold?

In view of the brevity of time since the 1998 tests, the continued fluidity of the strategic situation, as well as the considerable ambiguity that still envelopes the Indian and Pakistani nuclear programs, only a preliminary assess-

8. The terminology is adopted from Peter D. Feaver, "Proliferation Optimism and Theories of Nuclear Operations" in *The Proliferation Puzzle: Why Nuclear Weapons Spread (and What Results)*, eds. Zachary S. Davis and Benjamin Frankel, special issue of *Security Studies* 2:3–4 (Spring–Summer 1993), pp. 159–91. The terminology is also developed in David J. Karl, "Proliferation Pessimism and Emerging Nuclear Powers," *International Security* 21:3 (Winter 1996/97), pp. 87–119.

ment can be offered here about optimism and pessimism, one that is subject to revision as further evidence arises. Nonetheless, given the empirical significance of the Indo-Pakistani nuclear rivalry, even a tentative stocktaking will help sharpen understanding of the regional effects of proliferation and the quality of advice scholars render to the strategic policy community. The following three sections focus on specific areas of contention regarding weaponization and arms-racing dangers, crisis stability, and the adequacy of Indian and Pakistani command and control arrangements. A fourth section turns to an issue, the stability-instability paradox, that is quite relevant to the analysis of nuclear proliferation in South Asia, though it remains under-examined by proliferation scholars. This article concludes with the provisional judgment that the empirical record so far sustains optimists' assumptions far better than it does the pessimists' case.

Continuity and Change in the Strategic Landscape

The debate between optimists and pessimists is a nuanced one. Both agree that the possibility of accidental and inadvertent war are inherent in nuclear arsenals. The dispute thus concerns the relative probability of these dangers in emerging nuclear arsenals and how one should weigh the concomitant consequences for both deterrence and crisis stability. Basic to the optimist-pessimist controversy is a disagreement over the operational tradeoffs new nuclear states will make as they balance security pressures and resource shortcomings. Optimists argue, particularly with regard to South Asia, that doctrinal constraints and the lack of material resources will limit proliferators to rely on small arsenals composed of relatively low-yield weapons, thus mitigating concerns about first-strike vulnerabilities and the sturdiness of command and control arrangements. In support of their position, optimists in the past pointed to the non-weaponized type of deterrence practiced by India and Pakistan and the slow development pace of both countries' strategic weapons programs. Pessimists dissent from this assessment, reckoning that the classical dilemmas of nuclear security, as well as technological and bureaucratic imperatives, will push states toward larger and more sophisticated arsenals. They thus predict that pressures for greater military readiness will inevitably lead to the deployment of fully assembled weapons as well as the predelegation of launch authority and the adoption of time-urgent force posture, which in turn increase preemptive-attack incentives as well as the potential for accidental and unintended nuclear escalation.

The nuclear tests and subsequent declarations by New Delhi and Islamabad that they intend to weaponize affirm pessimist expectations to some extent. A non-weaponized type of deterrence held for longer than pessimists would have assumed, particularly given the intensity of the Indo-Pakistani rivalry,

eventually did give way. But it did so in a manner that does not entirely accord with pessimist logic, which places great emphasis on the pernicious effects of security-dilemma pressures. In view of Pakistan's enduring military inferiority vis-à-vis India, as well as the termination of U.S. military assistance in the early 1990s, pessimists would have expected Islamabad, during a period of high tension with New Delhi, to be the first to move toward an overt nuclear weapons capability. Similarly, pessimism cannot account for Pakistan's continued willingness to forego the deployment of nuclear forces, provided India does so as well. In discussions with New Delhi, Islamabad has advanced proposals for a strategic restraint regime that emphasizes the non-operationalization of nuclear forces, and both countries have agreed to joint discussions on other ways to reduce nuclear risk. While Islamabad is very unlikely to revert to the nuclear status quo as it existed prior to May 1998, the Pakistani leadership seems to have decided that resource constraints make it problematic to move toward full-fledged weaponization and deployment.

Nor does pessimist logic either comport well with the moratoria on further nuclear tests both New Delhi and Islamabad have adopted in the face of considerable doubts about the reliability and military effectiveness of their nuclear stockpiles or adequately explain their delay several years after the tests in fully weaponizing and deploying nuclear arsenals. Both countries demonstrated in 1998 a capacity for fashioning relatively simple, low-yield fission weapons; India may have also displayed a capacity for more powerful and complex fusion weapons, though this remains a matter of considerable controversy.

India and Pakistan have also deployed delivery systems (strike aircraft and ballistic missiles) capable of carrying nuclear payloads and each is busy developing more advanced missile systems. By all accounts, however, both New Delhi and Islamabad have so far refrained from deploying nuclear-armed forces in the field. Contrary to the much higher numbers given in most estimates of South Asia's arsenals, the U.S. Defense Department recently reported that "India probably has a small stockpile of nuclear weapon components and could assemble and deploy a few nuclear weapons within a few days to a week." Pakistan's nuclear weapons are, likewise, "probably stored in component form."[9] One analyst notes, "at present, it is believed that India's and Pakistan's nuclear-capable [missiles] are kept in storage, with

9. Government of the U.S., Office of the Secretary of Defense, *Proliferation: Threat and Response* (Washington, D.C.: Department of Defense, January 2001), pp. 23, 27.

warheads separated from their delivery vehicles, and would only be made fully operational in the event of a major crisis."[10]

Pessimists anticipated that the growth of Chinese power would increase pressures for Indian weaponization. Although the prominence of the China factor in Indian justifications for testing is in line with this prediction, a security-based explanation does not adequately account for New Delhi's decision. Indeed, a great deal of ambiguity and even ambivalence continues to surround the country's nuclear policy. The Vajpayee government has adamantly insisted on its prerogative to deploy a minimum nuclear deterrent, but seems in no hurry to clarify the nature and composition of the arsenal India supposedly requires. As Deepa M. Ollapally explains in this issue, ambiguity and ambivalence are hallmarks of Indian strategic culture, nudging policy makers in New Delhi away from radical, costly, or irrevocable decisions.

Beyond enunciating a no-first-use doctrine, India has yet to spell out an authoritative doctrine for the employment of nuclear weapons. Given the precipitate nature of the Indian decision to test, it is likely little sustained thought was given to such issues.[11] Prime Minister Vajpayee made the momentous decision to conduct tests immediately upon taking office in April 1998 and without prior consultation with senior cabinet officials, coalition partners, or the military establishment. In the first weeks of the Vajpayee government, Defense Minister George Fernandes publicly ruled out the need to conduct nuclear tests or flight tests of the Agni intermediate-range ballistic missile (IRBM). Moreover, Vajpayee's government had previously announced that a decision on testing would follow the formation of a National Security Council that would in turn undertake a comprehensive review of strategic policy. As it turned out, the Council was created a full six months following the tests and the strategic defense review completed more than a year after that.

One reason why developments so far have not unfolded according to pessimist logic is that it remains unclear whether India's leaders, as they balance security compulsions and resources limitations, see it in the country's interest to deploy operational nuclear capabilities, as opposed to maintaining an active option to do so on a ready basis. India's vast strategic depth has bred a general disinterest in national security affairs on the part of the national leadership, and residual Nehruvian disdain of nuclear weapons has resulted in a profoundly cautious approach toward the deployment of nuclear weapons.

10. Ben Sheppard, "South Asia's Ballistic Missile Ambitions" in *India's Nuclear Security*, eds. Raju G. C. Thomas and Amit Gupta (Boulder, Colo.: Lynne Rienner Publishers, Inc., 2000), p. 172.

11. K. Subrahmanyam, India's leading strategic analyst and someone who is close to the Vajpayee government, admits as much. See "Pokhran II and Beyond," *Times of India*, May 14, 1998.

As a consequence, the country's political and technological elite tends to view strategic weapons as icons of national power that can enhance their domestic standing and amplify New Delhi's voice in world affairs. This stance, one analyst notes, does "not require elaborate military preparations or use plans or command and control arrangements."[12] Indeed, India's leaders sometimes give the impression that they still adhere to notions of existential deterrence. Shortly after the nuclear tests, then-Defense Minister George Fernandes announced that New Delhi would continue to follow a policy of "recessed [minimally weaponized] deterrence" and Prime Minister Vajpayee explained to parliament that the "fact that we've become a nuclear weapons state should be a deterrent itself."[13]

Balancing Compulsions and Constraints

Optimists and pessimists diverge on whether new nuclear powers like India and Pakistan can fulfill the theoretical prerequisites for stable deterrence. Optimists claim that the problems involved in creating situations of mutual deterrence are not so demanding as to be beyond the ken and capacity of a fair number of states. In their view, the effect of crisis-stability pressures is largely mitigated when the lack of material resources precludes states from fielding large or militarily effective arsenals. While small arsenals create, in the abstract, inviting targets for offensive action, they also restrict the number of weapons available for use in counterforce attacks. Unless such attacks are executed with unlikely accuracy and effectiveness–all the more dubious in view of Indian and Pakistani deficiencies–they are improbable given the modest and low-yield arsenals that emerging nuclear states are likely to deploy against each other, as well as the relative ease in which small forces can be concealed and protected. The comparatively simple character of emerging nuclear arsenals also reassures optimists, since they reason that the lack of technological sophistication renders force postures less susceptible to catastrophic malfunction. Optimists thus tend not to worry that India and Pakistan have not deployed advanced warning systems, since their absence reduces the likelihood that spurious indications of attack could lead to the inadvertent firing of weapons.

Whereas optimists see force-development constraints as a brace for crisis stability, pessimists regard them as a bane. They fear that resource constraints will likely result in small and rudimentary force postures that are vulnerable to first-strike attack and operate under ramshackle safety measures

12. Waheguru Pal Singh Sidhu, "India's Nuclear Use Doctrine" in *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons*, eds. Peter R. Lavoy, Scott D. Sagan, and James J. Wirtz (Ithaca, N.Y.: Cornell University Press, 2000), p. 129.

13. John F. Burns, "India's Defense Minister Calls U.S. Defense Policies 'Hypocritical'," *NYT*, June 18, 1998; and "PM Declares No-First Strike," *Indian Express*, August 5, 1998.

and command and control structures, especially considering the short time-to-target distances and lack of reliable early warning capabilities in South Asia. Such shortcomings will, in turn, generate greater pressures on crisis stability as well as increased opportunities for accidents and unauthorized use. As a result, pessimists predict that both countries will evolve nuclear forces that rely on "launch-on-warning" postures that are liable to precipitous overreactions in the heat of a serious crisis.

As noted above, both India and Pakistan have so far held back from deploying operational nuclear weapons, though they continue to refine their arsenals and have enunciated minimum deterrence strategies to guide their evolving force postures. New Delhi has announced that it intends to field a credible but minimum deterrent force, though it refuses to place quantitative parameters on this force. The Vajpayee government also expresses a determination to eschew the accoutrements of nuclear deterrence as it was practiced by the superpowers during the Cold War. Holding that India needs only to concern itself with dissuasion rather than war-fighting, Indian strategists have traditionally denied that a deterrence strategy requires the expansive force postures built by the U.S. and the Soviet Union. Prime Minister Vajpayee has hewn to this line, claiming that "India's nuclear doctrine is qualitatively different from that of other nuclear weapons states" and that New Delhi has "no intention of engaging in a nuclear arms race and building huge arsenals as we have seen other nuclear weapons states do, because their doctrines were predicated on nuclear war." Echoing this stance, another Indian leader has stated "we are not replicating the experience of the West. Therefore, what the West constructed in the management of their arsenals is not what India requires."[14]

These precepts were called into question when the Vajpayee government in August 1999 released for public comment a draft document on nuclear doctrine. The document was formulated by a blue-ribbon commission, called the National Security Advisory Board (NSAB). The advisory board was composed of 27 persons–scholars, journalists, former bureaucrats, and retired military officers–representing a range of strategic opinion and its large membership may have contributed to logrolling and the accommodation of divergent viewpoints. K. Subrahmanyam, a doyen of India's strategic community and the chair of the NSAB, noted that it was a consensus document, even though individual members of the board might disagree with particular recommendations.[15]

14. Kenneth J. Cooper, "Leader Says India Has a 'Credible' Deterrent," *Washington Post*, June 17, 1998, p. A21.

15. R. Ramachandran, "Uncertain Nuclear Identity," *Frontline*, August 28–September 10, 1999. According to one report, at least two NSAB members disagreed with India's no-first-use

The six-page document reiterated the previous government's pronouncements by recommending a doctrine of "credible minimum nuclear deterrence" based on a retaliatory posture capable of inflicting "damage unacceptable to the aggressor."[16] However, its proposal for a "triad of aircraft, land-based missiles, and sea-based assets" capable of surviving "repetitive attrition attempts" seemed to point toward an open-ended force expansion. The document endorsed a force posture capable of shifting "from peace-time deployment to fully employable forces in the shortest possible time" as well as the development of an "integrated operational plan" to conduct nuclear operations. All of this appeared to substantiate pessimistic concerns that pressures for greater military readiness would inevitably lead to the deployment of fully assembled weapons that rely on time-urgent and pre-planned strategies. Moreover, according to one estimate India would require $500 million annually over the next decade for even a minimal version of the force posture envisaged by the NSAB paper.[17]

Silent or ambiguous on a number of key force development and weapons use issues, the NSAB paper leaves much to be desired as an exposition of strategic policy. A thorough assessment of the strategic considerations that should drive Indian nuclear policy is conspicuously absent, as is a discussion of the proper scope and attributes of the adequate retaliatory capability it recommends. Despite a call for operationally prepared forces, the document fails to specify what this entails in concrete terms.

Noting that the document incongruously combines a call for complete nuclear disarmament while making the case for nuclear deterrence, a close observer of the Indian strategic scene suggests that the proposal for a triad-based posture was an effort to preempt inter-service competition for budget allocations and strategic missions.[18] Another commentator notes that "the hurried manner in which the NSAB drew up the nuclear doctrine and the strenuous efforts to finalize a consensus document ensured that the result would abound in contradictions."[19]

In any event, the Indian government has publicly distanced itself from the NSAB document. Indeed, Subrahmanyam has recently publicly criticized the Vajpayee government for not moving quickly to implement the NSAB rec-

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declaration and minimum deterrence policy. See Achin Vanaik, "The Draft Nuclear Doctrine," *Hindu*, September 4, 1999.

16. NSAB, "Draft Report of National Security Advisory Board on Indian Nuclear Doctrine," August 17, 1999, on the Internet at <http://www.indianembassy.org/policy/CTBT/nuclear_doctrine_aug_17_1999.html>

17. "India's Military Spending," *Strategic Comment* 6:6 (July 2000), p. 2.

18. Sidhu, "India's Nuclear Use Doctrine," p. 127.

19. P. R. Chari, "India's Nuclear Doctrine: Confused Ambitions," *Nonproliferation Review* (Fall–Winter 2000), p. 133.

ommendations.[20] Questioning whether the country actually needs a triad-based nuclear posture, Foreign Minister Jaswant Singh has denied that the paper constitutes an official blueprint for the development of India's nuclear capability.[21] And pointing to India's October 1998 initiative in the U.N. to reduce the possibility of accidental nuclear war through the de-alerting and de-targeting of strategic forces, he has underscored India's determination to eschew launch on warning postures. "Retaliation," he said, "does not have to be instantaneous; it has to be effective and assured."[22]

Indian strategists have traditionally suggested that a no-first-use policy would in practice entail a delayed-retaliation strategy with nuclear forces maintained in a non-alert state of readiness and geared toward counter-city targeting. Some analysts argue that the document "has restraint written all over it" and that the defensive retaliation-only doctrine it recommends mandates "a relaxed nuclear posture that is not biased toward rapid escalation in a crisis."[23] Subrahmanyam has also commented that "India and Pakistan have very small arsenals and for years to come they are not likely to cross the two-digit figure. . . . The countries are not likely to deploy their weapons lest they should lose them to even conventional strikes."[24]

Pakistan has likewise not publicly articulated a full-fledged nuclear strategy. In response to the NSAB document, Islamabad announced that its force development efforts would be guided by a strategy of minimum deterrence in which numerical parity with India was not necessary. Underscoring this policy, the country's current leader, General Pervez Musharraf, has stated that Pakistan would retain just enough missile capacity to reach "anywhere in India and destroy a few cities, if required." He added that "[w]e are not concerned with a mathematical ratio and proportion. We understand and we have quantified our own minimum deterrence."[25] Elsewhere, he has affirmed an intention not to "direct our limited resources towards the race of weapons of mass destruction."[26]

Given that the regional conventional balance favors India, many suspect that Pakistan would be inclined to use nuclear weapons in an early stage of a conflict. Islamabad has repeatedly rejected New Delhi's proposal for a mutual no-first-use agreement. For instance, a former key manager of Pakistan's nuclear program stated that four of the country's nuclear tests were of "small

20. "Challenges to Indian Security," *Strategic Analysis*, December 2000.

21. "Jaswant Allays U.S. Fears on Nuclear Policy; Oppn Assails Govt," *Times of India*, August 19, 1999.

22. "India Not to Engage in N-Arms Race: Jaswant," *Hindu*, November 29, 1999.

23. C. Raja Mohan, "Hostility to N-doctrine Subsiding?" ibid., August 28, 1999.

24. "Past Imperfect: Time for New Nuclearspeak, *Times of India*, August 3, 1998.

25. Barry Bearak, "Pakistan's Boss: Realist, Not Diplomat," *NYT*, November 18, 1999.

26. "Pak's N-Deterence to Stay: Pervez," *Hindustan Times*, June 27, 2001.

tactical weapons of low yield. Tipped on small missiles, they can be used in the battlefield against concentration of troops."[27] Pakistan also has not been reticent in issuing nuclear warnings during periods of heightened tension, both to deter possible Indian military action and catalyze extraregional intervention into the bilateral relationship. On at least one occasion, however, General Musharraf has asserted that Islamabad would employ nuclear weapons only as a last resort: "Only if Pakistan is vanquished from the globe will it happen. It will never happen."[28] He has also indicated that Pakistan has so far not mated its warheads and delivery vehicles:

> One of the main issues is geographic separation of the warheads and the delivery system. When that is so, there is no button. It is only when you couple them that you are ready, the button is on. But that is not the case. When the time comes, yes, there will be a button. And that button will be with me, of course. But we have not got to that as yet.[29]

Resource constraints and the contours of Indian strategic thought make it doubtful whether South Asia's nuclear postures will evolve quickly and dramatically or in a way that will place an overbearing strain on crisis stability. As one Indian nuclear hawk (and NSAB member) has acknowledged, "India does not have the plutonium or the financial resources to build more than a very small nuclear arsenal, and is far from having the capacity to carry out a first strike that could disarm an adversary."[30] Moreover, it is highly questionable whether either country's nuclear tests were sufficient to ensure the development of militarily decisive weapons and whether Pakistan's missiles at present have the accuracy or reliability to carry out counterforce strikes.

Other events immediately following India's test do give some substance to pessimist concerns, however. As Pakistan prepared to stage its own tests in answer to India's, Islamabad became concerned that New Delhi was about to take preventative action against its nuclear facilities. As a result, Pakistan put its military forces on high alert, armed strike aircraft, deployed Ghauri IRBMs targeted against India, and warned of swift and massive retaliation in the event of an Indian strike. Islamabad also advanced by a day its own test schedule. It is uncertain whether the alerted aircraft and missiles were armed with nuclear warheads and U.S. officials quickly discounted Pakistani fears. Although much is still unknown about this false warning incident, including

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27. Molly Moore, "'Father of the Islamic Bomb,' Defends Role," *Washington Post*, June 1, 1998.

28. Pamela Constable, "Pakistani Leader 'Willing to Cooperate' on Bin Laden," *Washington Post*, February 4, 2000.

29. Amit Baruah, "We Don't Have a Nuclear Button, Says Musharraf," *Hindu*, November 24, 1999.

30. Brahma Chellaney, "After the Tests: India's Options," *Survival* 40:4 (Winter 1998/99), p. 106.

whether Islamabad concocted it in order to deflect international pressure from its own nuclear tests, the situation is suggestive of the dangers of crisis stability and inadvertence about which pessimists, including Scott Sagan in this issue, warn.

The Nuclear Button

India and Pakistan brought their nuclear programs out of the basement in 1998 but not so far into the light as to erase all shadows of ambiguity. From the pessimists' perspective, the opacity that continues to shroud important aspects of their arsenals offers ample reason for alarm. Pessimists worry that opacity compartmentalizes decision-making within a small, secretive coterie of officials, thus impeding searching discourse on the political and military utility of nuclear weapons as well as the development of sound strategies for their use. As one pessimist argues, opacity inhibits learning within nuclear organizations so that central command authority "may have grave misconceptions about what their arsenals can and cannot do, and about what kind of risks and failures modes are associated therewith."[31] Pointing to the reported confusion and haste with which Israel decided to arm and target its nuclear arsenal in the 1973 Arab-Israeli War, pessimists fear that opacity hinders the effective management of nuclear activities in times of crisis as arsenals are haphazardly weaponized and deployed. Not only would national leaders resort to ad hoc and panicky alert and targeting decisions, but the potential for accidents would be high as military personnel untrained in the safe handling of nuclear weapons were called upon to assemble, transport, deploy, and–possibly–employ them hurriedly.

Pessimists also worry about the adequacy of command and control arrangements fashioned by new nuclear states, particularly in countries with turbulent civil-military relations. Pessimist logic emphasizes that military establishments have strong organizational biases toward offensive action and worst-case strategizing. Without strong civilian controls, such proclivities are likely to translate into counterforce targeting doctrines and preemptive and launch-on-warning force postures as well as highly decentralized command structures in which nuclear weapons are kept on high states of alert and use authority is delegated in advance to field commanders. Additionally, military services, owing to their strong offensive traditions, tend to lack sufficient incentives to make nuclear forces invulnerable and will perceive prelaunch survivability measures to be unnecessary for deterrence or, too (as in excessively), costly to implement.

In contrast, optimists have more relaxed views about command and control problems. Restraints on force development, they reckon, will limit the size

31. Feaver, "Correspondence," *International Security* 22:2 (Fall 1997), p. 191.

and operational readiness of arsenals, thus allowing for a tight exercise of control. These structural attributes, they believe, also mitigate against the probability of accident and inadvertence even if arsenals were weaponized and deployed in the heat of crisis.

The Indian command and control infrastructure was one of many critical issues glossed over in the NSAB document. Rejecting the need to follow the superpower experience, Indian strategists have long suggested that the country's minimum deterrence needs require only a modest command structure. Prime Minister Vajpayee has underscored this theme, maintaining that "we do not need to, or intend to, replicate the kind of command and control structures which [other nuclear weapons states] required. Our approach is to have a credible deterrent which should prevent the use of these weapons."[32]

When Prime Minister V. P. Singh took office in late 1989, he reportedly was appalled by the very rudimentary control system then in place to manage nuclear operations in the event the civilian leadership became disabled. "This is scary," Singh told a close aide. "This matter cannot be just between the prime minister and the scientific adviser. Supposing someone attacks Delhi, there is no formal procedure as to who then decides what to do. We have to institutionalize it."[33] A detailed set of instructions on how to obtain access to nuclear weapons and employ them was thereafter drawn up and deposited with an unspecified theater military commander, which he was to open in the event of a nuclear war.[34] A more elaborate arrangement came into being a few years later. Up until 1995, the Bhabha Atomic Research Center in Trombay was apparently the sole site for storing unassembled components for nuclear warheads. Subsequently, the components were dispersed to at least one other site and procedures established to ensure that they could be assembled on an urgent basis. A number of measures were also instituted to ensure the maintenance of strict civilian control. The combined efforts of at least three different agencies were thus required to assemble warheads and input codes from separate agencies necessary to launch nuclear-armed missiles. A briefcase with special identification codes was also developed to enable the prime minister to authorize nuclear strikes.[35]

In the days following the 1998 tests, Prime Minister Vajpayee claimed that "the necessary command and control system" was in place and a key manager of India's nuclear program declared that "the command and control structure, which had been existing in various forms, is now being consoli-

32. Cooper, "Leader Says India Has a 'Credible' Deterrent."

33. Raj Chengappa, *Weapons of Peace: The Secret Story of India's Quest to Be a Nuclear Power* (New Delhi: HarperCollins, 2000), p. 355.

34. Stephen Peter Rosen, *Societies and Military Power: India and Its Armies* (Ithaca, N.Y.: Cornell University Press, 1996), p. 252.

35. Chengappa, *Weapons of Peace*, pp. 391, 418.

dated."[36] The NSAB paper called for a tight, centralized control system in which "the authority to release nuclear weapons for use resides in the person of the Prime Minister of India, or the designated successor(s)," though there is no evidence that a chain of command has been established.

A number of schemes for further institutionalizing command and control arrangements have been advanced since the 1998 tests, spurred in large measure by the failings in India's national security apparatus that came to light during the 1999 Kargil border war with Pakistan. The Vajpayee government recently decided to introduce into service the mobile Agni-II IRBM, notwithstanding that the attendant command and control structure is reportedly still being worked out. Vajpayee is also expected to integrate the armed forces with the civilian-dominated defense ministry and to appoint India's first-ever chief of defense staff (CDS) who would, among other functions, have overall charge of a newly created strategic nuclear command. Both steps would be major departures in the country's security management system if they ever came about. However, strenuous resistance on the part of the Indian air force, which is making a bid to assume sole command authority of nuclear forces, has delayed the CDS appointment. Moreover, the government reportedly has come to the realization that India does not at present have much of a nuclear force over which the CDS is supposed to exercise authority.

Keen on maintaining civilian supremacy as well as deflecting military demands on the national treasury, India's political leaders have traditionally kept the armed forces out of the strategic policy and planning apparatus, even at the risk of degrading the country's defense preparedness. As Stephen Cohen observes, the role of the armed services is quite anomalous–"in no other middle or great power is the military's advice so detached from political and strategic decisions" as in India.[37] Civilian control of military matters also extends to defense research and development. The civilian-led defense research establishment embarked on an ambitious program to develop a suite of ballistic missiles without much regard to the preferences of the armed services or the dictates of military logic. The Prithvi short-range missile, for example, was built without any clear military requirement and the Indian air force was virtually coerced into placing orders for it. Due to lingering doubts about the missile's accuracy and operational capabilities, the Indian army stores its complement of Prithvi missiles at a depot far from any conceivable theater of combat. Moreover, the army has yet to receive certain critical support sub-systems from the Indian defense research establishment.

36. "India Is Now a N-Weapons State: PM," *Times of India*, May 16, 1998.

37. Stephen Philip Cohen, *India: Emerging Power* (Washington, D.C.: Brookings Institution, 2001), p. 77.

The military also was not consulted during the negotiations for the Comprehensive Test Ban Treaty (CTBT) or when New Delhi decided to offer a no-first-use treaty to Islamabad. Similarly, the military remained uninformed about the existence of a chemical weapons stockpile until the national leadership decided to sign the Chemical Weapons Convention. Even after the 1998 tests, the civilian government has not moved to involve the armed forces in nuclear planning. Indian military officials have reported that planning for nuclear contingencies is underway, but so far military units have not rehearsed the operations they might one day be called upon to execute. At present, India keeps its nuclear arsenal in a state of divided control, with a civilian agency having custody of the warheads and the military in charge of the delivery vehicles.

Given the detachment of political elites to military affairs, it is also unclear whether New Delhi has thought systemically about how to manage nuclear activities amid the exigencies of a war-threatening crisis. Institutionally, India lacks a strong policy coordination system capable of formulating government-wide contingency plans or effective crisis management machinery capable of overseeing the mobilization of nuclear assets. Despite the NSAB's recommendation for an integrated operational plan for nuclear weapons use, India–unique among major nations–currently lacks both a defense ministry that is integrated with the military establishment as well as an effective joint military planning and coordination system.

On the one hand, according to pessimist logic the lack of military involvement is reassuring since it helps ensure strong civilian control over nuclear inventories and insulates nuclear planning from pernicious military biases. On the other hand, the absence of concerted and coordinated attention within the Indian government raises the risk of accidents and even accidental war in the event New Delhi feels compelled to deploy nuclear assets on an emergency basis. The Indian army chief-of-staff at the time of the nuclear tests has acknowledged that India's "systems [for] dealing with nuclear weapons are anything but robust" and U.S. officials have said that its doctrine for deploying and using them remain "immature."[38]

The bureaucratic power of India's nuclear scientific community is equally problematic. Like all large enterprises, this community has strong autonomy-seeking proclivities, which in this case reinforces civilian control of the nuclear stockpile. India's nuclear stockpile is managed by the Atomic Energy Commission (AEC). The AEC designs and manufactures the weapon cores. But the Defense Research and Development Organization (DRDO) devises and fabricates the weapon assemblies and delivery vehicles that carry them. Since the technocrats from these two agencies derive their status from main-

38. Alan Sipress, "U.S. Seeks to Lift Sanctions on India," *Washington Post*, August 12, 2001.

taining exclusive custody of nuclear weapons, they are predisposed against delegating use authority or articulating a use doctrine that would justify handing weapons over to the military services.

Pessimists worry that this sort of compartmentalization shields the custodians of the nuclear program from critical oversight or scrutiny, increasing the probability of serious mishaps during the manufacture, storage, assembly, and transport of nuclear materials. Given that the AEC has a notoriously poor safety culture, is responsible solely to the prime minister, and operates without an effective regulatory or oversight mechanism, pessimists may have strong grounds for concern. Ominously in this regard, AEC reactors producing weapons-grade fissile material have recently been exempted from independent safety review.

Pessimists expect similar problems in Pakistan's tightly compartmentalized nuclear program and are troubled by the country's pattern of civil-military relations, though for reasons that are different from the Indian case. In India opacity acts to exclude the military from deep involvement in nuclear matters. In contrast, Pakistan's military has played a central, often predominant, role in the country's political life and has maintained firm control over the nuclear program. No civilian leader reportedly has ever been granted access to the main nuclear facility in Kahuta, and two former civilian prime ministers, Benazir Bhutto and Nawaz Sharif, allege that they lacked basic authority over the program while in office. Sharif has even claimed that the final decision for Pakistan's nuclear tests laid with the military establishment and he also might not have been fully informed about the military operations that led to the Kargil crisis in May–July 1999.[39]

Unlike India, Pakistan has institutionalized a system for managing nuclear activities. Various officials have frequently maintained that a proper and secure command and control structure is in place. General Musharraf claims that the nuclear arsenal is "very secure. . . . The national command authority is in place."[40] In 2000, Islamabad announced creation of a National Command Authority (NCA). This body purportedly exercises deployment control over all strategic nuclear forces and strategic organizations. Two subsidiary bodies have also been formed, both chaired by the head of government. At present, General Musharraf, serves concurrently as chief of army staff and chairman of the Joint Chiefs of Staff Committee. The Employment Control Committee develops policy for the deployment and use of nuclear weapons and includes several civilians among its members. The Development Control Committee, on which only military officers presently serve, guides the design and evolution of Pakistan's nuclear capabilities. The Strategic Plans Divi-

39. Michael Hirsh and John Barry, "Nuclear Jitters," *Newsweek*, June 18, 1998, p. 16.

40. "Nuclear Attack against India an Option: Musharraf," *Times of India*, October 17, 2000.

sion, headed by a three-star general and located at the Joint Strategic Headquarters in Rawalpindi, functions as the NCA secretariat. A strategic forces command has also been created and Islamabad has reportedly requested command and control technology from the U.S.

So far, Pakistani behavior has belied pessimist expectations about the effect of military biases on nuclear policymaking and planning. Given the severe resource constraints that Islamabad faces, it is not surprising that Pakistan, as optimists anticipate, has decided contingent on Indian reciprocity to forego the deployment of operational nuclear forces. Such constraints also seem likely to push Islamabad in the direction of countercity targeting. In light of the Pakistani army's highly centralized command structure, it seems improbable that custody of nuclear weapons would be dispersed to field commanders or employment authority predelegated.

On the other hand, the Pakistani case does lend credence to concerns that militaries, especially in the absence of robust civilian controls, may not build secure second-strike forces and will tend toward imprudent and risky action. Unlike India, which has the luxury of strategic depth, Pakistan's nuclear assets are located close to the border, vulnerable to attack even by conventional means. They are also at risk of coming into direct contact with conventional combat operations during wartime, which could in turn compel a hasty decision to expend them for fear they are about to be captured or destroyed.

Pakistani warheads and Ghauri IRBMs are currently stored at the Kahuta facility close to Islamabad. Warhead components are also stored at the Khushab plutonium production reactor near Lahore, with M-11 short-range missiles deployed at the nearby Sargodha air base where two squadrons of F-16 nuclear-capable fighters are also based. It is probable that in a time of crisis, the mobile M-11 missiles would be deployed at Gujranwala, Okara, Multan, Jhang, and Dera Nawab Shah–all sites close to the Indian border–where defense communications terminals have been set up. On the other hand, the placement of nuclear-capable forces close to the border might well be an interim step until longer-range missiles are produced.

Equally troubling is that General Musharraf has a reputation as an anti-India hardliner and was a key architect of Pakistan's tactically brilliant–but strategically disastrous–Kargil incursion. Worrisome, too, are the inroads Islamic radicals have made in the country's armed forces. The issue here, according to pessimist logic, is not that the Pakistani military is necessarily predisposed to launch a deliberate nuclear conflict out of anti-India zealotry. Rather, it may be inclined to brinksmanship, instigating situations that unintentionally spiral out of control to the nuclear level. Important crisis-stability dangers might also come into play, as India's lack of confidence that the Pakistan military would exercise due restraint in a crisis could conceivably prompt New Delhi to take preemptive action.

The dynamics of the 1999 Kargil border war, the third in a trilogy of Indo-Pakistani crises with nuclear tinges over the past dozen years, substantiate such concerns. Although the Kargil conflict was a localized affair, it should be characterized as a border war since the level of fatalities on both sides was high. India suffered 474 dead and 1,109 wounded. Pakistani casualties are thought to be substantial but a precise count is unavailable, as Islamabad denies (to the belief of few observers) any involvement of its forces in the fighting. Besides the 1969 Sino-Soviet border conflict, the Kargil crisis is the only instance of nuclear-armed countries engaging in direct combat. The crisis, which was the most serious military escalation between India and Pakistan since they last went to war in 1971, came about when Pakistani troops and irregulars occupied a key swath of Indian territory near the town of Kargil in northern Kashmir. Although ultimately confined to the level of bloody if relatively low-level military actions, the conflict triggered a wide-scale mobilization on both sides and carried the serious potential for open war.

The conflict featured a number of Pakistani deterrent warnings as well as the deployment of nuclear-capable delivery vehicles on both sides. During the Kargil crisis, Pakistan fielded missiles and activated some of its missile launch areas. New Delhi increased the readiness level of its arsenal as well. A telephone conversation between the two military establishments also took place with the aim of ensuring there would be no use of nuclear weapons. Nevertheless, Raj Chengappa reports that the Indian air force was readied for a possible nuclear strike. Chengappa claims that "an Agni missile capable of launching a nuclear warhead was moved to a western Indian state and kept in a state of readiness."[41]

At the moment it is uncertain whether operational nuclear weapons were actually assembled or deployed during the crisis. It is also significant that no evidence has emerged that either country was readying its arsenal for the purposes of launching a preemptive strike. Nonetheless, the origins and dynamics of the Kargil conflict exemplify pessimistic concerns about the dangers of military risk-taking and inadvertent nuclear use. Optimists might retort that the caution-inducing properties of nuclear deterrence kept a tight lid on any escalatory potential, allowing the conflict to be defused before erupting into full-scale war. A definitive judgment on this issue will have to wait until a fuller account of the conflict's genesis and trajectory becomes available. At the very least, however, the risk-taking behavior exhibited by the Pakistani military as well as the conflict's escalatory dynamics epitomizes some of the factors pessimists fear will lead to catastrophe as nuclear weapons proliferate among regional adversaries.

41. Chengappa, *Weapons of Peace*, p. 437.

The Stability-Instability Paradox of Nuclear Proliferation

The Kargil episode holds another key lesson for proliferation scholarship, since it suggests that the spread of nuclear weapons may actually promote the outbreak of crisis situations in which crisis-stability and accidental-war dangers come into play. Proliferation in South Asia has been accompanied by a progressive increase in low-level conflict, contradicting claims that nuclear weapons make adversary states more cautious in their dealings with each other.

Analysts have accounted for this phenomenon by way of the stability-instability paradox in which the shield of nuclear deterrence is thought to lead states, particularly those with revisionist ambitions, to calculate that it is safe to challenge the status quo through low-level military action. In this view, Pakistan's nuclear program emboldened decision-makers in Islamabad to assume a heightened degree of risk by supporting secessionist rebellions in Indian Punjab in the 1980s and the Indian portion of Kashmir in the 1990s, confident that Pakistan was insulated from Indian military retribution.

An increase in risk-taking behavior, engendered by the belief that a nation has the strategic cover for bellicose actions, constitutes one side of the stability-instability paradox. Restraint born of self-deterrence comprises the other. In the wake of the nuclear tests, high-ranking Indian officials argued that the emergence of an overt nuclear dimension in the subcontinent imposed effective constraints on India's capacity to retaliate against Pakistan's proxy war in Kashmir. Expecting increased Pakistani military action across the Line of Control (LOC) in Kashmir, one senior intelligence official in New Delhi asserted that Islamabad "could just carry out such attacks, because nuclearization and its aftermath ha[ve] forced us to raise the threshold of tolerance."[42]

The Kargil conflict is arguably the latest and most virulent expression of the workings of the stability-instability paradox in the Indo-Pakistani rivalry. Although the exact calculus informing Islamabad's actions is unknown, the coincidence of Pakistan's nuclear tests and its brazen incursion less than a year later is strong circumstantial evidence in favor of this explanation. Just weeks before the fighting began in the Kargil area, General Musharraf publicly emphasized that the presence of nuclear weapons in South Asia diminished the likelihood of conventional war while increasing the possibility of low-level conflict.

Equally notable is that the robust Indian response in the Kargil conflict belies the self-deterrence envisaged in the paradox. Islamabad was reportedly taken aback by the resolve New Delhi displayed and had not anticipated the possibility that events could escalate to open war. Following the Kargil

42. Praveen Swami, "Flashpoint Kashmir," *Frontline*, August 15–28, 1998.

conflict, New Delhi has adopted a more aggressive posture in Kashmir, responding to Pakistani provocations with sharp attacks of its own. Indian military forces in Kashmir were reportedly given authorization to conduct operations across the LOC in the event of Pakistan's escalating tensions during President Clinton's visit to the subcontinent in March 2000. New Delhi has also articulated a new limited war doctrine, premised on the belief that localized military actions against Pakistan will not escalate to the nuclear level.

Pessimism has not focused much attention on the dynamics of the stability-instability paradox. The localization of the Kargil war, as well as the sharp limits New Delhi and Pakistan imposed on their actions, are striking, though much remains uncertain about either side's calculations and the contingencies they prepared for. Yet at first glance, the episode demonstrates that the greatest danger of a nuclear engagement in South Asia resides in the escalation of conventional actions that spin out of control. A conventional clash brought about by risk taking and miscalculation could well generate the intense escalatory dynamics and preemptive war pressures that pessimists fear would ignite a nuclear exchange.

The Continuing Debate

The complex structure of the Indo-Pakistani rivalry makes it a pivotal case study for proliferation scholarship. In the abstract, concerns about the destabilizing consequences of the spread of nuclear weapons appear fully justified in the South Asian context. Because India-Pakistan relations represent a textbook case of intense security competition and ritualized conflict between regional antagonists, one would intuitively expect South Asia to be a most unlikely context for peaceful proliferation outcomes. The region's overt nuclearization thus poses a salient field test for contending views in the proliferation debate.

The few years since the 1998 tests offer mixed evidence for the optimist-pessimist debate. Although the tests portended an ominous departure from their past policy of nuclear restraint, India and Pakistan have yet to move toward full-scale weaponization and the operational deployment of nuclear weapons. As optimism holds, the combination of doctrinal constraints (at least in New Delhi's case) and resource limitations seems to account for this behavior. The reluctance in fielding nuclear forces by both countries has also militated against the command and control and crisis-stability problems pessimists fear. Nor have the military organizational biases pessimists find so pernicious, especially in the case of Pakistan, been translated into counterforce strategies and preemptive or time-sensitive force postures. Although more research is surely needed on behavior during the Kargil war, the early evidence here, too, appears to favor optimist assumptions. The

problems of opacity highlighted by pessimists appear not to have hampered New Delhi's and Islamabad's management of their arsenals during their most serious and longest military confrontation in three decades. Nor did the measures they took to prime elements of their arsenals for possible use lead to volatile interactions between both side's nuclear forces or otherwise burden crisis stability.

However, other aspects of the empirical record testify to the pessimists' concerns. In the absence of firm civilian supervision, the Pakistani case lends credence to fears that military establishments will neglect force vulnerability problems and tend toward risk-acceptant behavior. The dynamics of the stability-instability paradox also highlight the preemptive-attack dangers raised by pessimists. While organizational pathologies engendered by opacity appear not to have influenced Indian and Pakistani behavior during the Kargil war, their baleful emergence in future crises cannot be ruled out.

On balance, the still-evolving empirical record tends to affirm optimist expectations, though the evidentiary base since the 1998 tests is too (as in extremely) small to permit definitive judgment on the validity of the competing claims in the proliferation debate. Sufficient evidence will not be available for years to demonstrate the relative worth of either pessimist concerns or optimist beliefs. Yet, now that the empirical constraints have been loosened on South Asia's nuclear programs, the task before scholars is to look hard at the evidence as it emerges and to revise our assumptions accordingly as new data come to light.