

AN IMPOSSIBLE GAME: STABLE NUCLEAR DETERRENCE AFTER THE INDIAN AND PAKISTANI TESTS

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The Indian and Pakistani nuclear explosions of May 1998 have reopened the scholarly debate on the impact of nuclear proliferation on regional peace and stability after the Cold War. Proliferation optimists argue that nuclear weapons have a stabilizing effect in international and regional relations because they prevent conventional wars. Proliferation pessimists challenge that claim. Will nuclear weapons bring stability to South Asia? I will argue that small nuclear forces will not guarantee a "nuclear peace" on the subcontinent, that the risk of actual use of nuclear weapons in a crisis is unacceptably high, and that the only way out of the South Asian nuclear predicament is regional denuclearization.

Realist scholars explain the nuclear tests of May 1998 in security terms. The standard realist explanation is that India needs nuclear weapons to deter the conventional and nuclear military threat posed by China and the nuclear threat posed by Pakistan, aggravated by Chinese assistance to the Pakistani nuclear weapons program.² Similarly, realist scholars explain the Pakistani nuclear tests of May 30, 1998, as needed to counter Indian military superiority with a small nuclear force. Nuclear weapons are the "great equalizer" in international relations, and Pakistan can be more secure by deterring an Indian conventional attack with the threat to use nuclear weapons.³

The realist claim that India and Pakistan are more secure after the

May 1998 nuclear explosions is based on the assumption that nuclear weapons are a "peacemaker" because their overwhelming destructive capacity has a stabilizing effect on international relations and regional balances of power. Today, the arguments about the utility of nuclear weapons in keeping the Cold War peace no longer appear to be as compelling as they once were. Even during the Cold War, the thesis that nuclear weapons bring peace was controversial.⁴ Recent reassessments of the Cuban missile crisis show that the superpowers came much closer to nuclear war than it was once thought, and that nuclear war was avoided less because of deterrence stability than because of sheer luck, or as General Butler puts it, "only by the grace of God."⁵

Post-test Indo-Pakistani nuclear relations provide an opportunity to revisit the question of deterrence stability in a regional context. The issue is important because there is a latent conventional war going on between the two countries in Kashmir, and the danger of escalation from conventional to nuclear war is very real.⁶ Recent “bus diplomacy” has created some expectations about the possibility of a thaw in Indo-Pakistani relations. Yet there have been similar rapprochements between both countries in the past, followed by “mini-Cold Wars.” Although Indian Prime Minister Vajpayee’s bus trip to Lahore on February 20, 1999, was full of symbolism, the two prime ministers made little progress toward genuine nuclear arms control in their talks, while signing agreements that were “long on good intentions and short on details.”⁷ To reduce the risk of a devastating nuclear war, they promised to alert each other to “any accidental, unauthorized, or unexplained incident” that might touch off a nuclear exchange. They promised to continue their declared moratoriums on further nuclear trials, and agreed to announce in advance any testing of ballistic missiles. Is this enough, considering the failure of past attempts to implement confidence-and-security-building measures?⁸ Despite the rhetoric of good intentions, are the South Asian rivals moving imperceptibly to the precipice of nuclear war? Are there alternatives to nuclear deterrence?

This article first summarizes the debate between proliferation optimists and proliferation pessimists. Section two explores the policy changes brought about by the nuclear tests, suggesting they have

created pressures for further weapons development. Section three then argues that the nuclear tests have in fact destabilized the fragile “balance” created by non-weaponized deterrence and opened up a dangerous game that could result in nuclear war in at least two scenarios, which are described. Section four shows that after the nuclear tests stable Indo-Pakistani nuclear deterrence is unlikely, due to geographic proximity (which puts a premium on launch-on-warning strategies), the danger of preemptive strikes, serious command and control problems, the complicating effect of Sino-Indian nuclear relations, and the likelihood of misperception. The fifth section argues that India’s decision to test nuclear weapons was a strategic mistake because even full deployment will not guarantee stable nuclear deterrence with Pakistan and/or China and may lead to a regional nuclear arms race. The final section argues that denuclearization is the best strategy to establish a lasting peace in the region.

THE PROLIFERATION OPTIMISM-PESSIMISM DEBATE

The central tenet of proliferation optimism is that “the chief impact of nuclear weapons is to deter war between their possessors.”⁹ According to deterrence optimism, nuclear proliferation is stabilizing because even a small nuclear arsenal provides enough deterrence to dissuade potential enemies from attacking the proliferator. Deterrence is “existential,” the argument goes, because the risk of retaliation by even a small number of nuclear weapons outweighs any possible benefit of a military attack.

The concept of “existential deterrence” was first used by McGeorge Bundy to refer to US/Soviet nuclear relations: “As long as we assume that each side has very large numbers of thermonuclear weapons which *could* be used against the opponent, even after the strongest possible preemptive attack, existential deterrence is strong.”¹⁰ Once a country acquires a credible second strike capability, the stability of nuclear deterrence is assured by the mutual fears created by the tremendous destructiveness of nuclear weapons and the unavoidable uncertainties surrounding nuclear war scenarios.

Although Bundy had in mind *deployed* nuclear forces (while warning that it is *certainty of capability* that produces deterrence stability), proliferation optimists extend the concept of existential deterrence to unassembled, non-deployed nuclear weapons by minor proliferators. Optimists claim that the backwardness of incipient nuclear forces would contribute to deterrence stability for two reasons. First, protecting small nuclear forces by hiding and moving them would be quite easy, thus deterring adversaries from a preemptive strike because they could not count on successfully knocking out all of the opponent’s nuclear weapons.¹¹ New nuclear states would not need large numbers of nuclear weapons to have second strike forces; small numbers would do the job “quite nicely.”¹²

Second, proliferation optimists claim that the new proliferators are less likely to suffer the same command and control problems as the superpowers during the Cold War. For example, Jordan Seng argues that “small and simple arsenals al-

low for centralized communications and supervision. (...) Important information and instructions can get out quickly and directly.” Seng claims that small nuclear forces allow central leaders to maintain “broad operational access with just a handful of domestic phone calls or transmissions.”¹³ Proliferation pessimists rebut that this is naive reasoning, considering the dubious reliability of many Third World phone systems.¹⁴

Proliferation pessimists make several interrelated claims. First, they argue that nonproliferation and nuclear disarmament are better than nuclear deterrence for the simple reason that the latter *can* fail, and nuclear proliferation *could* lead to regional nuclear war.¹⁵ Second, they challenge the rationality assumption of deterrence theory. Scott Sagan argues that organizational imperfections may lead new nuclear nations to build inadequate forces, which are vulnerable to preemptive military strikes, for several reasons.¹⁶ In particular, military bureaucracies “display organizational behaviors that are likely to lead to deterrence failures and deliberate or accidental war,” due to “common biases, inflexible routines, and parochial interests.” For example, they may be reluctant to take effective measures to protect a small nuclear arsenal due to budgetary constraints. In addition, “there are strong reasons to believe that future nuclear-armed states will lack the positive mechanisms of civilian control” of the five declared nuclear weapon states.¹⁷ Even if the new nuclear weapon states can establish civilian control of the military, they will have strong incentives to delegate launching authority to avoid the decapitation of their small

nuclear forces, thus increasing the risk of unauthorized use of nuclear weapons in a crisis.¹⁸

Proliferation pessimists suggest that a minimum existential deterrence is inherently temporary and unstable, and will evolve sooner or later into full weaponization. By contrast, proliferation optimists claim that existential deterrence will continue keeping the peace because regional rivals will never need to weaponize. They can hence bypass the dilemma between delegating control to avoid the danger of decapitation and centralizing control to avoid the danger of accidental/unauthorized use of nuclear weapons. Yet none of the five declared nuclear weapon states ran their nuclear arsenals as if existential deterrence mattered. On the contrary, the superpowers engaged in a relentless nuclear arms race, spending hundreds of billions of dollars, far beyond the needs of minimum deterrence. The most recent example is the Chinese effort to modernize its relatively small nuclear arsenal.

Proliferation pessimists argue that the nuclear behavior of new nuclear nations will be constrained by their geopolitical environment, particularly if their relations with hostile neighbors escalate to the point of crisis. If their strategic environment worsens, they will face tremendous pressure to weaponize their incipient nuclear arsenals. As Peter Feaver puts it: “When war is unlikely, existential deterrence is cheap. As war becomes more likely, the pressures to assure retaliation will mount.”¹⁹

Before the May 1998 nuclear tests, proliferation optimists claimed that the mere existence of

Indian and Pakistani capabilities to produce nuclear weapons on short notice deterred them from fighting an all-out conventional war for fear of escalation to the nuclear level.²⁰ General Sundarji (the former Indian army chief of staff) and other South Asian and US strategic analysts agreed.²¹ Optimists point to the peaceful outcome of two previous crises as evidence that even non-weaponized deterrence works. India’s “Brasstacks” exercises in 1987 and escalating problems in Kashmir in 1990 both resulted in crises that could have led to war. Optimists cite the fact that war did not develop, in contrast to the several wars fought before India and Pakistan had nuclear capabilities, as proof of their position.

Pessimists dispute this interpretation of the crises. They have found evidence that the Brasstacks crisis of 1987 had the potential to escalate to a nuclear confrontation, while the Kashmir crisis of May 1990 had a direct nuclear dimension.²² The faith in non-weaponized deterrence as a “peacemaker” was dangerous because it relegated efforts to roll back South Asian proliferation to the back burner, which would have had disastrous consequences if deterrence failed and US diplomacy could not prevent the use of nuclear weapons in a future Indo-Pakistani crisis.²³

THE TEST EXPLOSIONS: FROM NON-WEAPONIZED DETERRENCE TO MINIMUM NUCLEAR DETERRENCE

What did the tests signal about nuclear policies and postures in South Asia? After the 1998 tests, India and Pakistan have clearly crossed a *political* threshold from a

policy of deliberate nuclear ambiguity to declared nuclear weapon status and a minimum nuclear deterrence posture. Yet their contradictory statements regarding the production and deployment of nuclear weapons make it difficult to determine whether they have become “real” nuclear weapon states.²⁴ It all depends on how one defines “weaponization” and “minimum nuclear deterrence.”

Minimum nuclear deterrence is a strategy in which a state inserts nuclear warheads in operational delivery systems (nuclear-capable fighter-bomber aircraft or missiles), deploying “the minimum number of nuclear weapons necessary to inflict unacceptable damage on its adversary even after it has suffered a nuclear attack.”²⁵ Unlike Israel, which has developed a full-fledged, though covert, small nuclear force with a fairly advanced degree of weaponization, India and Pakistan remain in a “no-man’s land” between delayed weaponization and an open, fully developed small nuclear force. Despite the rhetoric that accompanied the nuclear tests of May 1998, India and Pakistan have not yet deployed nuclear weapons, although the recent missile tests of the Agni-2 (India) and the Ghauri-2 (Pakistan) bring them closer to actual deployment.²⁶ By taking their nuclear weapon programs “out of the closet” while adopting *declared* minimum deterrent postures, they have moved to a new “ball game” that is still ambiguous, although less so than in the past. The term “weaponization” is ambiguous enough to allow India to talk about a “recessed deterrent” while it goes ahead with its ballistic missile program.²⁷

The test explosions mark a significant change in Indian nuclear doctrine—from Prime Minister Nehru’s explicit rejection of nuclear deterrence as official Indian security policy (maintained after Nehru by several Congress Party governments and by the Janata government, 1977-79) to the explicit acceptance of nuclear deterrence as official security policy by the Bharatiya Janata Party (BJP) government in March 1998 and by the most influential security analysts.²⁸

On the other hand, by responding in kind to the Indian nuclear tests, Pakistan lost the opportunity of having, for the first time, an independent nuclear diplomacy. Before the test explosions, Pakistan had made several nuclear arms control proposals, including a nuclear-weapon-free zone for South Asia, that were always rejected by India on the grounds that they did not take into consideration the “China factor.” This diplomacy was cost-free because Pakistan knew that India would reject its proposals. After the Indian tests, Pakistan could have abandoned the diplomacy of merely reacting to Indian actions by showing that it was genuinely interested in regional nuclear arms control, refraining from testing, and calling for regional denuclearization. Instead, Pakistan persisted with its policy of linking its nuclear diplomacy to the Kashmir dispute, which makes it very difficult to denuclearize the subcontinent.²⁹

Who Benefits from the Nuclear Tests?

Nuclear weapons have always been seen as the “great equalizer” in international relations. This is

summarized in the claim by Gen. Sundarji, former Indian army chief of staff, that the big lesson of the Gulf War is that one should never fight the United States without nuclear weapons. From this perspective, the nuclear tests favored Pakistan, since India lost the advantage of more or less permanent conventional military superiority.

On the other hand, one may argue that India would *not* be deterred from using conventional weapons to meet a conventional Pakistani attack to “liberate” Kashmir, or, short of that, from pursuing Kashmiri insurgents into Pakistani territory. The “great equalizer” argument cuts both ways. As Ayoob points out, after the May tests, “New Delhi could decide to attack training camps and bases in Pakistani-occupied Kashmir, gambling that Pakistan would limit any war to conventional weapons.”³⁰ According to this interpretation, the Pakistani test explosions have not eliminated India’s inherent strategic superiority, since in any nuclear balance that develops in South Asia, India will be significantly more powerful than Pakistan by a factor of at least three or four in numbers of warheads and bombs.³¹ This inequality will be magnified by Pakistan’s lack of strategic depth, which compels it to develop ballistic missile technology to counter the vulnerability of its air force to Indian conventional counterforce attacks.

Yet to establish its nuclear superiority India will have to fully develop a sizeable nuclear force at the risk of becoming economically bankrupt, like the former Soviet Union.³² India might even be tempted to start a nuclear arms race to reestablish her strategic predomi-

nance on the subcontinent, while stretching the Pakistani economy to its limit, following the model of the Reagan administration's policies toward the Soviet Union in the early 1980s. On the other hand, Pakistan does not necessarily have to embark on a nuclear arms race with India, and could adopt a policy of asymmetric deterrence, similar to that of France.³³ As noted, though, even an asymmetric policy will require significant further investment in its missile forces. Hence, neither India nor Pakistan is likely to stand pat after the tests. The move to overt policies of minimal deterrence has created strong incentives for additional weapons buildups by both sides.

INDO-PAKISTANI STRATEGIC INTERACTIONS AFTER THE NUCLEAR TESTS

Contrary to what proliferation optimists would have us believe, the possession of nuclear weapons may encourage risk taking, not caution. According to Pervez Hoodbhoy, "in informal discussions, [Pakistani] military leaders have indicated that a large-scale Indian attack could drive Pakistan to use nuclear weapons."³⁴ A survey conducted by the Kroc Institute of the University of Notre Dame shows that the majority of the Pakistani middle class is supportive of this position: "Ninety-eight percent of those polled agreed that Pakistan could use nuclear weapons if India were to launch an attack across the Line of Control [in Kashmir]."³⁵

How stable can nuclear deterrence be when an overwhelming majority of Pakistani public opinion supports a nuclear strike that is quite possible,

considering that India could well launch such a conventional attack across the border to punish Pakistani support for the Kashmiri militants? Pakistani strategists may believe that Pakistan's declared nuclear arsenal deters India from doing that and that it can continue supporting the Kashmiris without worrying about an Indian invasion. Yet hawks in the Indian government and some Indian scholars disagree. As Mohammed Ayooob notes:

Indian patience is wearing thin, especially in the context of massacres of civilians that put tremendous pressure on New Delhi to follow policies of hot pursuit and strike at terrorist bases beyond the Line of Control in Kashmir and across the border in Pakistan. (...) Islamabad is playing with fire in this matter, and it is imperative that it should be made to behave more responsibly in the new nuclearized context of the subcontinent.³⁶

In fact, both sides are "playing with fire" by moving to weaponize their nuclear option in this context.

Can one argue that nuclear deterrence is at work in South Asia? Even during the Cold War it was difficult to make a similar claim; one could always argue that the United States and the Soviet Union did not fight a conventional war for other reasons, not because of the existence of nuclear weapons.³⁷

Deterrence balances are not inherently stable. One cannot extrapolate the apparent stability of the US/Soviet strategic nuclear balance to regional conflict scenarios. The rationality dilemmas created by nuclear deterrence situations are exacerbated at the regional level because regional powers lack the sophisticated technology that kept

the peace during the Cold War (such as Permissive Action Links [PALs], and developed command, control, and communications systems). Regional rivals may believe that a limited nuclear war is survivable, or may be compelled for reasons of military strategy to use tactical nuclear weapons in a conventional war.³⁸

Although India has agreed to sign (under certain conditions) the Comprehensive Test Ban Treaty (CTBT), it has consistently said that it *will* develop a minimum nuclear deterrent. India has refused, during diplomatic negotiations with the United States, to pledge not to deploy nuclear weapons. Moreover, although India has offered a bilateral "no-first-use" treaty to Pakistan, the latter has declined the offer because nuclear weapons allow it to compensate for its conventional inferiority in most war scenarios.³⁹ Therefore, even if India and Pakistan stick to the prescriptions of "minimum existential deterrence" and limit themselves to deploying only aircraft-borne, countervalue weapons, an Indo-Pakistani nuclear war is still quite possible in at least two scenarios: Indian reprisals against Pakistani support for Kashmiri insurgents, or a Pakistani conventional invasion.

In the first scenario, India might initiate a conventional war as a reprisal for Pakistani support for the Kashmiri insurgents. Pakistan might then use tactical nuclear weapons to stop an Indian offensive in the Punjab plains that has penetrated some distance into Pakistani territory, in the mistaken belief that India does not have ready-to-use nuclear weapons, or that even if it has them it will not retaliate because

it is “a much softer state” than Pakistan.⁴⁰ Would India retaliate or would it give up Kashmir?

Or the Pakistani leadership might believe that the Indian nuclear force has an assertive, tightly controlled command system when in fact India has adopted a delegative system and the possibility of nuclear retaliation by an Indian local commander with pre-delegated authority is much higher than they thought. This is a real possibility considering the history of misperceptions in prior Indo-Pakistani crises (as mentioned above—see note 22).

Whether Indian and Pakistani decisionmakers like it or not, the Kashmir conflict is already nuclearized, considering that Pakistan’s nuclear strength does not seem to deter India from considering the possibility of starting a conventional war.⁴¹ While Pakistan apparently believes that it is deterring India (the Pakistani army chief of staff has reportedly declared that “there is zero chance” of a conventional war between the two countries), India claims that the Pakistani nuclear deterrent would *not* deter it from initiating a conventional conflict in Kashmir, if Pakistani support for the Kashmiri militants, in the words of the Indian army chief, “grows too big.”⁴² Yet would India and Pakistan be able to avoid escalation to nuclear use once an all-out conventional war had started?

In the second scenario, India could threaten to use (or even use) tactical nuclear weapons first to stop a Pakistani offensive in Kashmir. In such a case, there is a real chance Pakistan would retaliate with its own nuclear weapons.

Both scenarios show how dangerous Indo-Pakistani strategic interactions are after the test explosions. The nuclear tests destabilized the precarious “balance” created by non-weaponized deterrence and opened up a new situation where many options could have unforeseen consequences.

CAN STABLE MINIMUM NUCLEAR DETERRENCE BE ESTABLISHED?

Pakistan’s Prime Minister Sharif explained the Pakistani nuclear tests as a response to the “weaponization” of India’s nuclear program: “This had led to the collapse of existing deterrence and had radically altered the strategic balance in our region.”⁴³ If Sharif’s interpretation of the Indian nuclear tests is correct, what are the prospects for stabilizing post-test Indo-Pakistani nuclear relations?

Deterrence is essentially an *overt* nuclear strategy, based on a credible and clearly communicated threat of nuclear retaliation under certain specified conditions. The three key elements of successful deterrent threats are: (1) the deterrer has the capability to use nuclear weapons against a potential attacker; (2) the deterrer clearly communicates its willingness to retaliate with nuclear weapons in case of attack; and (3) the deterree perceives that the first two elements exist.⁴⁴ In classical deterrence theory, threats had to convey certainty of the retaliatory strike; there was uncertainty only as to where and when it would occur. In the notion of existential deterrence adopted by proliferation optimists, other forms of uncertainty can deter. Just the risk that one’s actions could provoke a response that causes

events to get out of control, leading to escalation to the nuclear level, is expected to deter even limited conventional attacks.⁴⁵

There are four major requirements for *stable* nuclear deterrence to exist: (1) both nuclear arsenals must be technologically reliable: the stock of fission or fusion bombs must be adequately tested, with proven weapon designs; (2) both states must develop secure second strike capabilities, i.e., their nuclear forces must be able to retaliate if attacked first; (3) neither side can have incentives to carry out preemptive military attacks designed to destroy the other side’s incipient nuclear forces before they can be used in combat; and (4) neither nuclear arsenal can be prone to accidental or unauthorized use.⁴⁶ Most Western strategic analysts believe that the transitional phase to mutual deterrence between India and Pakistan will be characterized by significant deterrence instability, and that achieving successful deterrence stability will be a “less-than-automatic outcome.”⁴⁷

As far as the first requirement is concerned, some critics have raised doubts about the claims of the nuclear scientists who conducted the Indian nuclear tests of May 1998.⁴⁸ If the main purpose of overtly “going nuclear” was to develop a suitable nuclear deterrent against China, it was critically important for India to meet the reliability requirement. Yet even assuming that India is now ready to sign the CTBT because it is confident about proven weapon designs to achieve minimum nuclear deterrence against China (and Pakistan), there are other reasons to believe that India’s decision to declare nuclear weapon status was ill-advised and

will not result in the creation of stable Sino-Indian and Indo-Pakistani nuclear deterrence systems.⁴⁹

The Problem of Proximity

First, geographic proximity between India and Pakistan is a source of deterrence instability because it dramatically reduces warning times and creates incentives to strike first in a crisis. Once they deploy nuclear weapons both countries (especially Pakistan) will have strong incentives to adopt a “hair-trigger” launch-on-warning policy, because of the proximity of their major population centers and military assets to their common border. When the maximum flight time of a ballistic missile to reach its target is five to seven minutes, “the margin for error is razor thin, and any mistake or miscalculation could lead to catastrophe.”⁵⁰ Although India could possibly adopt a more successful strategy of dispersal of nuclear weapons and delivery systems, nuclear deterrence would still be unstable because it is more difficult for Pakistan, with its smaller territory, to do the same, and because of command and control problems.

In fact, geographic proximity will be problematic regardless of the delivery systems the South Asian rivals employ. Even if India and Pakistan do not deploy ballistic missiles and use only aircraft as delivery vehicles, nuclear deterrence would be unstable. In a bomber-bomber system, unless the United States and China provide both regional rivals with improved ground- and air-based early warning systems, they would (especially Pakistan) be critically vulnerable to both non-nuclear and nuclear attack.

Preemptive strikes are a real possibility in the absence of meaningful confidence-building measures and/or a nuclear arms control regime. Before the test explosions, proliferation optimists claimed that there was no danger of preemptive strikes because India and Pakistan could disperse and/or conceal nuclear weapons and delivery systems. Yet there is a precedent of preemptive attacks (unsuccessful in the case of Pakistan, successful in the case of India) during the 1971 Indo-Pakistani war, despite efforts on both sides to protect their air forces from conventional attacks.⁵¹ In an aircraft-aircraft system, the danger of a preemptive military attack that would disable its small nuclear forces is more acute for Pakistan, because it only has a limited number of airfields that can accommodate nuclear strike-aircraft.⁵² If these airfields are disabled, a strategy of dispersal and concealment of nuclear weapons would be ineffective, because it would be impossible to threaten their delivery in retaliation to Indian attack. With its strategic depth, India would be less vulnerable to preemptive military strikes in an aircraft-aircraft system.

Because of its strategic vulnerability, Pakistan is almost compelled to deploy its small nuclear force in ballistic missiles, to ensure its survivability. However, Pakistani missile development is perceived by India as provocative and may fuel a ballistic missile race. India’s decision to test nuclear weapons was apparently triggered by Pakistan’s test-flight of the 1,500-km-range Ghauri ballistic missile in April 1998.⁵³

Yet if India and Pakistan deploy ballistic missiles, nuclear deterrence

will be even more unstable than in an aircraft-aircraft system. If they adopt a launch-on-warning strategy, they run the danger of inadvertent nuclear war in the event of a false warning. By deploying the Prithvi (a short-, 150-mile-range missile) India has put enormous pressure on Pakistan to adopt launch-on-warning procedures while expanding its nuclear arsenal and ballistic missile capabilities.⁵⁴ Ballistic missiles are destabilizing without adequate early warning systems and safety systems to prevent unauthorized launch. These items are themselves very expensive systems that neither India nor Pakistan can afford. The possibility of technical assistance in these areas from the United States is unlikely, because it would not risk compromising its own security by sharing sensitive technology.⁵⁵

Command and Control Problems

Even if India and Pakistan can each discourage the other side from a preemptive military attack by dispersing their ballistic missiles, they would still face command, control, and communications problems that are virtually unsolvable. Small nuclear forces face what Peter Feaver calls the “always/never” dilemma—the need to guarantee that the weapons will always be launchable when ordered but never go off when not ordered. If political leaders adopt an *assertive* command and control system they can guarantee that nuclear weapons will “never” be used without authorization from the political leadership, but they increase their vulnerability to an enemy first strike. If they adopt a *delegative* command system they minimize the risk of decapitation,

but at the cost of raising the danger of an accidental or unauthorized use.⁵⁶ If, as K. Subrahmanyam, Gen. Sundarji, and other Indian strategic analysts have suggested, the purpose of India's minimum deterrent is a "no-first-use," purely defensive system, the concentration of nuclear forces and an assertive command system is India's logical option, to avoid the communication problems of dispersal; but in this scenario India's small nuclear force becomes an attractive target for a preemptive strike. Pakistan, in turn, because of its strategic vulnerability and small nuclear arsenal has strong incentives to avoid the danger of decapitation by pre-delegating launch authority, thus increasing the risk of unauthorized use.

The China Factor

Sino-Indian nuclear relations further complicate the prospects for establishing stable nuclear deterrence in South Asia. Ironically, the reason India did *not* carry out a second nuclear explosion for 24 years after its first nuclear test in 1974 is probably the China factor. Some Indian analysts then argued that given China's full-fledged nuclear weapons program a small Indian nuclear weapons capability would be more dangerous than none at all. Others argued that without nuclear weapons India would not be able to deal as a political equal with China on issues such as their border dispute.⁵⁷

The Chinese and Pakistani nuclear threats were the major rationales for the Indian nuclear tests of May 1998. If India wants to deploy a minimum nuclear deterrent, it will necessarily have to complete the development and deployment of its Agni missiles, in order to achieve

threshold deterrence against China. But such a deployment will only fuel a missile race in South Asia, without guaranteeing deterrence stability. If India agrees to forego placing nuclear weapons on missiles, however, this would create a more unstable balance with respect to China. Missile-aircraft deterrence systems are even more unstable than aircraft-aircraft deterrence systems, because the country with a nuclear force made up of bombers becomes vulnerable to disabling preemptive strikes, and to attack against its potential missile-producing facilities.⁵⁸ Thus, Sino-Indian nuclear relations would be unstable even if India and Pakistan agree on confidence-building measures and "freeze" their incipient ballistic missile race. Unfortunately, steps to prevent a nuclear arms race on the subcontinent will make it harder for India to achieve a stable minimum deterrent against China, but Indian efforts to match China would be extremely provocative to Pakistan.

Dangers of Misperception

Crisis stability depends to a significant extent on psychological factors, particularly on both sides' perception of how tightly controlled the enemy's forces are. Once a crisis begins, the line between "rational" and "irrational" behavior gets blurred. Proliferation optimists and some Indian military strategists wrongly believe that in a situation of low-level nuclear symmetry (presumably the Indo-Pakistani situation) the danger of a nuclear holocaust does not exist.⁵⁹ Imagine that Pakistan uses tactical nuclear weapons first in the belief that there is only a minor risk of nuclear retaliation, based on the "rational," cost-benefit calculation that India

will not retaliate because the Indian leadership fully controls the Indian arsenal and will conservatively decide that war termination is better than a regional holocaust. If India *does* retaliate because it has pre-delegated launch authority, anger will probably produce escalation, more hundreds of thousands of casualties, more anger, and more *irrational* retaliatory strikes, the very situation that minimum nuclear deterrence was supposed to prevent. Although there is no obligation to retaliate if one suffers a nuclear first strike, even the most assertive, centrally controlled nuclear arsenal could give the order to do so, following employment plans that would become self-fulfilling prophecies.

INDIA'S DEPLOYMENT DILEMMA

India's decision to test nuclear weapons in May 1998 has placed it in a Catch-22 situation. After the tests, full deployment of nuclear weapons is probably the only means by which it can regain its nuclear superiority vis-a-vis Pakistan, while establishing threshold deterrence with China. Yet full deployment does not guarantee stable nuclear deterrence with Pakistan or China, and creates dangerous instabilities regardless of whether or not India deploys ballistic missiles. The latter is a necessity to establish a credible nuclear deterrent against China, but it is very expensive and creates incentives for a Chinese preemptive military strike against India's Agni missiles. Because China is modernizing its nuclear force (partially as a response to US preparations for deployment of theater and national missile defenses), a Sino-Indian nuclear arms race would be inevitable in this scenario.

If India adopts a strategy of mobility and dispersal to guarantee the survivability of its nuclear force, it will be tempted to pre-delegate launching authority, thus running the risk of accidental or unauthorized use in a crisis. Proliferation optimism's recipe for stabilizing nuclear deterrence (the dispersal of nuclear-armed missiles, "ready to go") could make nuclear war *more* likely both in Indo-Pakistani and Sino-Indian scenarios.

On the other hand, if India does *not* deploy nuclear weapons and contents itself with keeping a "recessed" deterrent, it runs into all the problems of non-weaponized deterrence: (1) lack of credibility of deterrence threats; and (2) possible use of undeclared tactical nuclear weapons at the beginning of a conventional conflict because uncertainty may breed miscalculation rather than fear of nuclear retaliation.⁶⁰

India's decision to test nuclear weapons was a strategic mistake for several reasons. First, it unnecessarily deteriorated relations with China, while starting a Sino-Indian nuclear arms race that India cannot afford. Second, it provoked Pakistan to also test nuclear weapons. Pakistan obviously did not buy Subrahmanyam's claim that Pakistan "will only be wasting money" if it decides to deploy ballistic missiles,⁶¹ and is developing its own short-range (the 600-km Hatf-3) and long-range (the 1,500-km Ghauri) missiles, as a response to India's deployment of the Prithvi in Punjab and development of the Agni (allegedly developed to counter the Chinese, not the Pakistani threat).⁶² As noted, without adequate warning systems and sophisticated PALs to make weapons hard or impossible to use except

when released by a signal of authorization from the national command authority, these developments are likely to destabilize regional nuclear relations. Proliferation optimists simply assume all countries will develop secure second strike capabilities coupled with no-first-use doctrines and reliable command and control. A closer look at what is likely to happen in South Asia shows this optimism is misplaced.

CONCLUSION: WHY DENUCLEARIZATION IS BEST

Regional strategic interactions cannot be isolated from global changes such as the end of the Cold War, globalization, the development of international regimes, and geoeconomic definitions of security. Although India and Pakistan are still far from a real rapprochement, recent "bus diplomacy" may show the light at the end of the tunnel. Prime Minister Vajpayee asked the Pakistanis to "put aside the bitterness of the past and let us together make a new beginning." But in the words of Mani Shankar Aiyar, "Will the two prime ministers show the imagination to move matters decisively forward?"⁶³ Now that new elections are scheduled in India, this question will have to be asked of Vajpayee's successor as well.

Realist interpretations of the test explosions do not help. Although the nuclear tests clearly allowed India and Pakistan to reassert their identities and gain attention from the Western powers, Russia, and China, they also paid the high price of abandoning the advantages of having only "virtual arsenals." India and Pakistan have entered the uncharted and dangerous waters of build-

ing a credible nuclear deterrent under significant external pressure, while draining scarce resources from development programs that would have benefitted the poor. As T.T. Poulouse argues, India better served the security of its people when it questioned the madness of other countries' nuclear buildups in the Nehru era.⁶⁴

Some scholars have argued that the Indian nuclear tests were made inevitable by the entry-into-force clause of the Comprehensive Test Ban Treaty. According to Mohammed Ayoob, that clause was perceived by some members of the Indian strategic community "as designed to mount pressure on India to sign the CTBT quickly as a non-nuclear weapon state."⁶⁵ The tests would have been aimed at gathering sufficient information to be able to develop and deploy "a credible deterrent capacity," and then "sign the CTBT as a nuclear weapons power."⁶⁶ Yet India could have refused to sign the CTBT while keeping the policy of nuclear restraint and "recessed deterrence." The tests did not exempt India from external pressures; on the contrary, Western sanctions were imposed on both countries and international pressures mounted to induce them to reverse their decision to deploy nuclear forces.

The Dangers of "Living with the Bomb"

Although non-weaponized deterrence was not a panacea, it gave India and Pakistan ample time to negotiate the resolution of a crisis before it escalated to the nuclear level, thus postponing the need to confront their command and control problems. The present situation is

much more dangerous, considering the prospects for a Sino-Indian nuclear and missile arms race and the persistence of the Kashmir conflict as a major stumbling block to improving Indo-Pakistani relations. What makes Indo-Pakistani nuclear relations so precarious after the nuclear tests is the absence of nuclear arms control, with the exception of a few confidence-building measures negotiated in 1990-1991, including an agreement, which entered into force in January 1991, prohibiting the two states from attacking each other's nuclear installations.

The nuclear tests might have the salutary effect of leading to regional nuclear arms control, but India and Pakistan must first take urgent steps to diminish the possibility of inadvertent nuclear war by freezing their ballistic missile race. Because achieving deterrence stability in the region is an impossible game, India and Pakistan should seriously consider pulling back from the nuclear brink while taking steps toward regional denuclearization.

Some scholars have argued that it is too late to roll back the Indian and Pakistani nuclear weapons programs, and that the best US non-proliferation strategy is to "strike a deal" with India and Pakistan while encouraging them to agree on confidence-building measures to diminish the risk of nuclear war.⁶⁷ This advice accepts the realist argument that India and Pakistan have legitimate security concerns that can best be dealt with by having nuclear weapons.

Yet one can argue that India and Pakistan are *not* more secure after the nuclear tests. India now faces greater constraints on using its con-

ventional military superiority across the border in Kashmir because of the possibility of a Pakistani tactical or strategic nuclear response (e.g., an all-out attack on New Delhi or Bombay). Pakistan is also *less* secure, because of its strategic vulnerability and the inescapable dilemmas it would confront before making the decision to escalate a war with India to the nuclear level.⁶⁸ Should nuclear weapons be used in a future Indo-Pakistani war, the destruction on both sides would be beyond description,⁶⁹ and although India might survive as a functioning country, Pakistan could well cease to exist. Proliferation optimists argue that this will never happen because open nuclearization will induce caution in the South Asian rivals, thus foreclosing the possibility of a fourth Indo-Pakistani war. Yet "living with the bomb" is a dangerous prospect for them, because there is a real possibility that a future Indo-Pakistani crisis will escalate to the nuclear level. As long as Pakistan refuses to make a no-first-use pledge, deliberate nuclear war is possible (e.g., tactical use of nuclear weapons by Pakistan) although unlikely. Yet, as I have shown, deterrence during a crisis would be very dangerous and the risk of *inadvertent* nuclear war is high.

Even if India and Pakistan survive the transition to stable nuclear deterrence, there is no guarantee that it will bring about a lasting "nuclear peace." Even US/Soviet nuclear deterrence, with all the advantages of 50 years of "nuclear learning," was not as stable as strategic analysts would have us believe. As Francois Heisbourg points out, once theater-range ballistic missiles are deployed in South Asia, the strategic situation

will resemble the Cuban missile crisis, with the difference that "[it] would be permanent rather than temporary, would occur without adequate C³I in place, and with political leaderships located less than five minutes from mutual armageddon."⁷⁰ Even between the United States and Russia, many have worried that sooner or later their "nuclear peace" based on the "balance of terror" will fail.

If one defines "peace" as "the absence of war," one can argue that both non-weaponized deterrence before May 1998 and post-test deterrence have kept the peace in South Asia because there has been no war thus far, only tests. But if one defines peace in the peace research tradition, there is no peace between India and Pakistan. "Positive peace" is not the same as the absence of all-out war. In the South Asian context, positive peace means Indo-Pakistani economic and social cooperation for lifting hundreds of millions of Indian and Pakistani citizens from absolute poverty. Instead, the quest for security through nuclear weapons calls for threatening hundreds of millions of innocent Indian and Pakistani citizens with nuclear annihilation.

India and Pakistan are engaged in a low-intensity conflict in Kashmir, and even before the tests some analysts believed that war was a real possibility.⁷¹ The optimism of Generals Zia ul-Haq and Sundarji and other South Asian strategic analysts⁷² is falsely reassuring, for two reasons. First, the belief in a South Asian "nuclear peace" contributes to the freezing of India/Pakistan relations and the indefinite postponement of a settlement of the Kashmir dispute. This leaves in place the very

conflict most likely to trigger a war. Second, as I have shown, the post-test Indo-Pakistani strategic balance is more unstable than it was under non-weaponized deterrence. The interaction between India's arms races with China and Pakistan, respectively, is creating pressure to move to nuclear weapon deployment on missiles in both South Asian countries. Given short flight times and weak warning and safety systems, deliberate preemption and inadvertent escalation due to either miscalculation or pre-delegation of launch authority are all becoming more likely.

A Non-Weaponized Deterrence Regime

Nuclear roll-back in South Asia is still possible. Although the nuclear tests have put some pressure on India and Pakistan to start serious conversations on Kashmir, a resolution of the Kashmir issue is not a prerequisite to establishing an Indo-Pakistani nuclear arms control regime.⁷³ The best alternative to "living dangerously with the bomb" is to negotiate a non-weaponized deterrence regime, with an adequate verification system. This would be the first step to defuse the unacceptably high danger of crisis instability created by the test explosions, and a building block toward denuclearization. In the meantime, progress toward real nuclear disarmament between China and the other four declared nuclear weapon states could make it unnecessary for India to deploy the Agni missiles, thus opening up the possibility of a negotiated missile arms control regime between China, India, and Pakistan, once the latter feels more secure and less compelled to deploy the Ghauri-1 and 2.

A non-weaponized deterrence regime would have three elements. First, both sides would agree not to deploy nuclear weapons. Second, India and Pakistan would agree not to assemble nuclear weapons, and to keep weapons-grade fissile material separate from non-nuclear components; they would also refrain from keeping finished nuclear weapon cores. These measures would enhance crisis stability by reassuring both sides that attack is not imminent and providing time for external diplomatic intervention to defuse a crisis. It would extend the time between a decision to use nuclear arms and their firing, which is critically important to avoid catastrophic accidental war in a "hair-trigger" situation. A non-weaponized deterrence (NWD) regime⁷⁴ could be signed once both parties have built mutual trust (building on the "new beginning" mentioned by Indian Prime Minister Vajpayee in his bus trip to Lahore).

An NWD regime would move Indo-Pakistani nuclear relations back to "level 2 opacity" (minimal weaponization).⁷⁵ Although there is no guarantee that in a crisis they would not move up to level 3 (delayed weaponization) or level 4 (covert weaponization), at least such a regime would make accidental nuclear war more difficult. In the absence of a crisis, if both countries make good on their promise to sign the CTBT and there is progress in global nuclear disarmament negotiations (including the signing of a fissile material cut-off treaty), both countries could see a move back to level 2 opacity as in their security interests. At this level, "existential deterrence" would provide the minimum of deterrence and crisis stability needed for further steps toward

weaponless deterrence and eventually a regional denuclearization regime. Since nuclear weapons would be unassembled and non-deployed, the two countries would not immediately face command and control dilemmas and would not suffer the geographic and political constraints that make minimum nuclear deterrence a questionable proposition in South Asia.

Moving Beyond Deterrence: Why Denuclearization

As India and Pakistan pull back from the nuclear brink, the declared nuclear weapon states could further de-emphasize the role of nuclear weapons in their security policies, moving toward a world of "virtual nuclear arsenals."⁷⁶ But even if the nuclear weapon states continue relying on nuclear weapons, it would be in the best interest of India and Pakistan to seek security *without* nuclear weapons, joining the growing number of countries that have given up nuclear weapons on the assumption that they offer no defense and provide no real security. The alternative is "living with the bomb," knowing that the first false warning of nuclear attack could be the last and could lead to hundreds of millions of deaths in both countries. Moving beyond deterrence would make India and Pakistan more secure than living with the uncertainties of their current semi-weaponized nuclear relationship.

The contradictions and shortcomings of deterrence theory appear especially starkly in the Indo-Pakistani nuclear drama. What rational purpose could either India or Pakistan have in launching a retaliatory strike? To show resolve? Even at the cost of escalation and further de-

struction of their own country? How and when would escalation stop? As Jonathan Schell points out, “the logic of the deterrence strategy is dissolved by the very event—the first strike—that it is meant to prevent.”⁷⁷

The major obstacle to regional denuclearization in South Asia is *nuclearism*, the cult of the bomb, which is deeply ingrained among influential Indian and Pakistani political elites. Nuclearism has legitimized deterrence theory’s central tenet that security will be guaranteed as long as both countries threaten each other with massive destruction. But by cultivating annihilation, the South Asian rivals may get annihilation. As Francois Heisbourg points out, Indian and Pakistani military strategists and decisionmakers are as familiar with deterrence theory as nuclear decisionmakers in the “official” nuclear weapon states.⁷⁸ Therefore, they are well aware of the dangers pointed out in this article. Yet they are not likely to abandon their minimum deterrent policy because (among other reasons), as Schell points out, “the doctrine of nuclear deterrence deters debate about itself.”⁷⁹ Only an open, truly democratic debate on the nuclear issue in both countries will allow the formation of broad anti-nuclear coalitions with enough power to compel their governments to abandon the madness of current nuclear policies and unilaterally or bilaterally renounce nuclear weapons, while providing real economic, social, and environmental security to the millions of people living in South Asia.

¹ This is a revised version of a paper presented to the 1998 Annual Meeting of the International Security Studies Section (ISSS) of the International Studies Association (ISA), Monterey, California, November 6-7, 1998. I am indebted to Jeffrey Knopf, Tariq Rauf, and an anonymous reviewer for very helpful comments and suggestions. I thank Stephen P. Cohen for encouraging me to write on this topic and for very useful press clips. I am also grateful to Maria Schueneman and Agueda Gonzales for library assistance at Texas A&M University-Kingsville.

² See e.g., Mohammed Ayooob, “Nuclear India and Indian-American Relations,” *Orbis: A Journal of World Affairs* 43 (Winter 1999), pp. 59-74; Brahma Chellaney, “After the Tests: India’s Options,” *Survival* 40 (Winter 1998/99), pp. 93-111.

³ A good summary of the “nuclear shield” doctrine, as presented by Pakistani security analysts, appears in Pervez Hoodbhoy, “Pakistan’s Nuclear Future,” in Samina Ahmed and David Cortright, eds., *Pakistan and the Bomb* (Notre Dame, IN: University of Notre Dame Press, 1998), pp. 70-71. It is beyond the scope of this article to discuss the growing literature on the Indian and Pakistani test explosions. For a domestic politics explanation, showing that the Indian government had no compelling strategic reason to carry out the tests, see Gaurav Kampani, “From Existential to Minimum Deterrence: Explaining India’s Decision to Test,” *The Nonproliferation Review* 6 (Fall 1998), pp. 12-24. For the opposite, realist interpretation that India was compelled to carry out the tests for strategic reasons, see Chellaney, “After the Tests: India’s Options.” For an overview of different explanations, see Mario Carranza, “Indo-Pakistani Nuclear Relations After the Test Explosions,” *International Politics* (forthcoming).

⁴ See e.g., Bruce Russett, “Away from Nuclear Mythology,” in Dagobert L. Brito et al., eds., *Strategies for Managing Nuclear Proliferation* (Lexington, MA: D.C. Heath and Co, 1983), pp. 145-155.

⁵ George Butler, “The General’s Bombshell: Phasing out the U.S. Nuclear Arsenal,” *Washington Quarterly* 20 (Summer 1997), p. 132; James G. Blight and David A. Welch, “Risking ‘The Destruction of Nations’: Lessons of the Cuban Missile Crisis for New and Aspiring Nuclear States,” *Security Studies* 4 (Summer 1995), pp. 811-850.

⁶ In the words of an Indian major-general: “An escalation of hostilities along the border can happen very easily. It takes just one officer in the field to start it off. There’s no telling where it will stop.” Quoted by Amitav Ghosh, “Countdown: Why Can’t Every Country Have a Bomb,” *The New Yorker*, October 26-November 2, 1998, p. 191.

⁷ Barry Bearak, “India Promises, with Pakistan, to Seek Peace,” *New York Times*, February 22, 1999, pp. A1, A4.

⁸ See Aabha Dixit, “India-Pakistan: Are Commonly Accepted Confidence-Building Structures Relevant?” *Security Dialogue* 26 (June 1995), pp. 191-204.

⁹ Devin T. Hagerty, “Nuclear Deterrence in South Asia: The 1990 Indo-Pakistani Crisis,” *International Security* 20 (Winter 1995/96), p. 114.

¹⁰ McGeorge Bundy, “Existential Deterrence and Its Consequences,” in Douglas McLean, ed., *The Security Gamble: Deterrence Dilemmas in the Nuclear Age* (Totowa, NJ: Rowman and Allanheld, 1984), pp. 8-9.

¹¹ Martin Van Creveld, *Nuclear Proliferation and the Future of Conflict* (New York: Free Press, 1993), p. 85.

¹² Kenneth N. Waltz, “Waltz Responds to Sagan,” in Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate* (New York: W.W. Norton, 1995), p. 110; Peter Lavoy, “The Strategic Consequences of Nuclear Proliferation,” *Security Studies* 4 (Summer 1995), p. 725.

¹³ Jordan Seng, “Less is More: Command and Control Advantages of Minor Nuclear States,” *Security Studies* 6 (Summer 1997), pp. 73-74.

¹⁴ See Peter Feaver, “Neooptimists and the Enduring Problem of Nuclear Proliferation,” *Security Studies* 6 (Summer 1997), p. 101.

¹⁵ Peter D. Feaver, “Proliferation Optimism and Theories of Nuclear Operations,” in Zachary S. Davis and Benjamin Frankel, eds., *The Proliferation Puzzle* (London: Frank Cass, 1993), p. 162. As Schell puts it, “If we are honest with ourselves we have to admit that unless we rid ourselves of our nuclear arsenals a holocaust not only might occur but will occur—if not today, then tomorrow; if not this year, then the next.” Jonathan Schell, *The Fate of the Earth* (New York: Avon Books, 1982), pp. 183-184.

¹⁶ See Scott Sagan, “Response and Reflections,” *Security Studies* 4 (Summer 1995), pp. 806-807.

¹⁷ Scott D. Sagan, “More Will Be Worse,” in Sagan and Waltz, *The Spread of Nuclear Weapons*, pp. 48-49.

¹⁸ “Ceteris paribus, the smaller and cruder the arsenal, the more vulnerable it will be. The more vulnerable the arsenal, the greater the temptation for the proliferator to rely on delegative command systems. The more delegative the command system, the greater the chance for undesirable nuclear operations.” Feaver, “Proliferation Optimism and Theories of Nuclear Operations,” p. 167.

¹⁹ *Ibid.*, p. 176. See also Feaver, “Neooptimists and the Enduring Problem of Nuclear Proliferation,” p. 115.

²⁰ “The existence of Indian and Pakistani nuclear weapon capabilities now constitutes the chief foundation for peace in the region.” Hagerty, “Nuclear Deterrence in South Asia,” p. 112. See also Hagerty, “The Power of Suggestion: Opaque Proliferation, Existential Deterrence, and the South Asian Nuclear Arms Competition,” in Davis and Frankel, *The Proliferation Puzzle*, pp. 256-283; and Lavoy, “The Strategic Consequences of Nuclear Proliferation,” pp. 695-753.

²¹ See K. Sundarji, “Changing Military Equations in Asia: The Relevance of Nuclear Weapons,” in

Francine R. Frankel, ed., *Bridging the Non-Proliferation Divide* (Lanham, MD: University Press of America, 1995), p. 127; M. G. Morgan, K. Subrahmanyam, K. Sundarji, and Robert M. White, "India and the United States," *Washington Quarterly* 18 (Spring 1995), p. 164.

²² See Mario Carranza, "Dangerous Optimism: Non-Weaponized Deterrence and Regional Peace in South Asia," *International Politics* 35 (June 1998), p. 118. The large-scale Indian military exercise, code-named Brasstacks (December 1986-March 1987), provoked several mobilizations and counter-mobilizations, border skirmishes, and exchanges of fire between Indian and Pakistani troops in Kashmir, as well as an exodus of Indian refugees. India provided Pakistan with the wrong information about the duration of the exercise. There were serious misperceptions and lack of communications between the political leadership of both countries at the height of the crisis, and complete lack of contact between the chiefs of staff of both armies. The hotline between the director generals of military operations of the two countries was not used at all between December 1986 and January 23, 1987. See C. Kumar and K. Bajpai, "Appendix Two: Brasstacks and Its Antecedents: 1984-1987," in K. Bajpai et al., *Brasstacks and Beyond: Perception and Management of Crisis in South Asia* (New Delhi: Manohar, 1995). During the Kashmir crisis of May 1990, "nuclear threats were most likely issued by one or both sides and there was a real danger of nuclear confrontation during the crisis." Carranza, "Dangerous Optimism," p. 118. See also Seymour M. Hersh, "On the Nuclear Edge," *The New Yorker*, March 29, 1993, pp. 56-73.

²³ Carranza, "Dangerous Optimism," p. 121.

²⁴ The statement announcing the Pakistani nuclear tests on May 28, 1998 also said that the long-range Ghauri missile was being capped with nuclear warheads; but this was denied the day after by Pakistan's Foreign Ministry. According to Samina Ahmed, "because a default on its external debt liabilities could cut off Pakistan from all sources of external finance...[the Pakistani] leaders have pledged that they would neither deploy nor transfer nuclear weapons." Samina Ahmed, "Pakistan's Nuclear Weapons Program," *International Security* 23 (Spring 1999), p. 201. The Indian government has not promised not to deploy nuclear weapons. It is not clear whether it has already transferred nuclear weapons to the armed forces, and whether a minimally safe command and control system is already in place. See John F. Burns, "In Nuclear India, Small Stash Does Not a Ready Arsenal Make," *New York Times*, July 26, 1998.

²⁵ See Nicholas Wheeler, "Minimum Deterrence and Nuclear Abolition," in Regina Karp, ed., *Security Without Nuclear Weapons?* (New York: Oxford University Press, 1992), p. 250. There is disagreement in the literature as to what level of nuclear forces should be deemed "minimum." See *ibid.*, p. 277.

²⁶ See Barry Bearak, "India Tests Missile Able to Hit Deep Into Neighbor Lands," *New York Times*,

April 12, 1999, p. A3; Celia Dugger, "Pakistan Tests a New Missile, Matching India in Arms Race," *New York Times*, April 15, 1999, p. A9. There is no evidence in the literature that India and Pakistan have actually deployed nuclear weapons. Dr. Stephen P. Cohen, Senior Fellow, Brookings Institution, e-mail communication with author, April 29, 1999.

²⁷ Some scholars define weaponization as "the insertion of warheads in operational delivery systems." See e.g., William Walker, "International Nuclear Relations After the Indian and Pakistani Test Explosions," *International Affairs* 44 (1998), p. 518, note 33. For other scholars, "weaponization" means actually assembling nuclear weapons, i.e., fashioning weapon-grade fissile materials into a bomb, by using a workable bomb design. See e.g., David Albright and Mark Hibbs, "Iraq's Quest for the Nuclear Grail: What Can We Learn?" *Arms Control Today* 22 (July/August 1992), p. 7. A more demanding definition is that "weaponization" means the actual deployment of nuclear warheads in nuclear-capable aircraft and/or ballistic missiles.

²⁸ The most striking example is K. Subrahmanyam's "conversion" to nuclear deterrence theory and policy. See T.T. Poulouse, "India's Deterrence Doctrine: A Nehruvian Critique," *The Nonproliferation Review* 6 (Fall 1998), pp. 77-84.

²⁹ See Paula Newberg, "Dateline Pakistan: Bhutto's Back," *Foreign Policy* 95 (Summer 1994), pp. 171-174.

³⁰ Mohammed Ayoob, "Advantage, India," *New York Times*, June 1, 1998.

³¹ Pakistan is believed to have enough highly enriched uranium to produce between 15 and 25 nuclear weapons. The most recent estimate is that India has enough weapons-grade plutonium to produce 85 nuclear weapons, although if the research-grade fissile material were to be included, India's potential stockpile of fissile material could generate between 395 and 470 nuclear weapons. See W.P.S. Sidhu, *Jane's Defence Weekly* (June 1998), quoted by Anupam Srivastava, "Indo-Russian Military Technical Cooperation: Implications for Southern Asia," *World Affairs* 161 (Spring 1999), p. 209; David Albright et al., *World Inventory of Plutonium and Highly Enriched Uranium 1992* (Oxford: Oxford University Press, 1993), pp. 160-161.

³² See Poulouse, "India's Deterrence Doctrine: A Nehruvian Critique," p. 83.

³³ I am indebted to Tariq Rauf for bringing this important point to my attention. French nuclear doctrine started from the assumption that the "equalizing power of the atom" would allow a minor nuclear power with limited resources to deter aggression by any potential attacker ("in all directions") by threatening to "tear its arm off" using a counter-city nuclear strategy.

³⁴ Hoodbhoy, "Pakistan's Nuclear Future," p. 70.

³⁵ *Ibid.*

³⁶ Ayoob, "Nuclear India and Indian-American Relations," pp. 72-73.

³⁷ Russett, "Away from Nuclear Mythology," pp. 148-49.

³⁸ See Carranza, "Dangerous Optimism," p. 114, using one of General Sundarji's hypothetical scenarios to illustrate the logic of the situation.

³⁹ On the other hand, Pakistan has offered a no-war treaty, which has not been accepted by India. I am indebted to Tariq Rauf for bringing this point to my attention.

⁴⁰ See General K. Sundarji, *Blind Men of Hindoostan* (New Delhi: UBS Publishers, 1993), p. 110.

⁴¹ The question "how much is enough" has always haunted deterrence theory. According to Krauthammer, the strategic situation in South Asia "will only begin to stabilize when both countries have deployed enough nukes—spread out in enough areas—that neither side can be sure of a successful first strike." See Charles Krauthammer, "Thinking the Unthinkable... Again," *The Weekly Standard*, June 22, 1998, p. 24.

⁴² "Having crossed the nuclear threshold does not mean that a conventional war is out," said General V.P. Malik at a press conference in New Delhi on February 10. See Najam Mushtaq, "The Deterrence Enigma," *The News* (Islamabad), 17 February 1999.

⁴³ "Pakistan's Words: 'To Restore the Strategic Balance'," *New York Times*, May 29, 1998, p. A6.

⁴⁴ See e.g., Louis Halle, *The Elements of International Strategy* (Lanham, MD: University Press of America, 1984), pp. 23-33; David Tarr, *Nuclear Deterrence and International Security* (New York: Longman, 1991), p. 67; William F. Kaufmann, *Military Policy and National Security* (Princeton, NJ: Princeton University Press, 1956), p. 19; Patrick Morgan, *Deterrence: A Conceptual Analysis* (Beverly Hills, CA: Sage Publications, 1983), pp. 33-38.

⁴⁵ This uncertainty is Thomas Schelling's "threat that leaves something to chance." Schelling recognizes that "as a rule, one must threaten that he will act, not that he may act, if the threat fails." See Thomas Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1980), p. 187. But then he stretches the meaning of "threat" to include situations such as inadvertent nuclear war which are by definition independent of the parties to a deterrence relationship. One does not "threaten" inadvertent nuclear war; it just "happens." Mutual awareness of the danger of inadvertent nuclear war may induce caution about challenging any of the other side's interests—but it does not preclude the possibility of a real accident because the structure of the situation is beyond the parties' control. On the other hand, Schelling shows that the deterrer can manipulate uncertainty by threatening limited war that may escalate to an all-out nuclear war. See *ibid.*, p. 191. Similarly, Waltz argues that "uncertainty about controlling escalation is at the heart of deterrence." Waltz, "Waltz Responds to Sagan," p. 110.

⁴⁶ Tarr, *Nuclear Deterrence and International Security*, pp. 58-77; Scott Sagan, "The Perils of Proliferation," *International Security* 18 (Spring 1994), p. 71.

⁴⁷ See Ashley Tellis, "Stability in South Asia," Documented Briefing (Santa Monica, CA: Rand Corporation, 1997), p. 52; Susan M. Burns, "Preventing Nuclear War: Arms Management," in Stephen P. Cohen, ed., *Nuclear Proliferation in South Asia* (Boulder, CO: Westview Press, 1991), p. 93; Z. Khalilzad, "Proliferation and Stability in Southwest Asia," in D. L. Brito et al., eds., *Strategies for Managing Proliferation* (Lexington, MA: Lexington Books, 1983), pp. 189-197.

⁴⁸ See Dr. A. Gopalakrishnan, "How Credible is Our Deterrence?" *The Hindu*, November 18, 1998.

⁴⁹ The likelihood that India will sign the CTBT by September 1999 has diminished due to the fall of the BJP government in April 1999. Celia W. Dugger, "India's Chances of Signing Nuclear Test Ban Appear to Fade," *New York Times*, May 9, 1999, p. A4.

⁵⁰ Samina Ahmed and David Cortright, "Going Nuclear: The Weaponization Option," in Ahmed and Cortright, eds., *Pakistan and the Bomb*, p. 94.

⁵¹ Sagan argues that organizational imperfections could produce failure in the implementation of survivability measures aimed at protecting small nuclear forces from preemptive strikes. See Sagan, "Response and Reflections," p. 807.

⁵² "If a conventional war continued long enough, most of the PAF's strike force could be destroyed—even if the IAF was not intentionally targeting Pakistan's nuclear capability—a danger of which Pakistani military planners are becoming increasingly aware." Eric Arnett, "Nuclear Stability and Arms Sales to India: Implications for US Policy," *Arms Control Today* 27 (August 1997), p. 9.

⁵³ For a dissenting opinion, see Kampani, "From Existential to Minimum Deterrence," p. 17.

⁵⁴ The Indian government has announced that it has inducted the Prithvi into the army. There are said to be plans also to deploy Prithvi on naval vessels, including five nuclear submarines to be built with Russian assistance. See *PPNN Newsbrief* (Fourth Quarter 1998), p. 13.

⁵⁵ See Steven E. Miller, "Assistance to Newly Proliferating Nations," in Robert D. Blackwill and Albert Carnesale, eds., *New Nuclear Nations: Consequences for US Policy* (New York: Council on Foreign Relations Press, 1993), pp. 97-131.

⁵⁶ See Peter D. Feaver, "Command and Control in Emerging Nuclear Nations," *International Security* 17 (Winter 1992/93), pp. 160-187.

⁵⁷ See Khalilzad, "Nuclear Proliferation and Stability in Southwest Asia," p. 186.

⁵⁸ *Ibid.*, pp. 194-195.

⁵⁹ See e.g., Lavoy, "The Strategic Consequences of Nuclear Proliferation," pp. 735-745.

⁶⁰ "In certain war-game scenarios, uncertainty about the other side's capability to deploy nuclear weapons quickly in a crisis may lead to an early use of undeclared tactical nuclear weapons as a counterforce measure. For example, Pakistan would have strong incentives to use undeclared tactical nuclear weapons to prevent India from a successful counter-offensive into its territory." See Carranza, "Dangerous Optimism," p. 114.

⁶¹ See K. Subrahmanyam, "Nuclear Force Design and Minimum Deterrence Strategy for India," in B. Karnad, ed., *Future Imperilled: India's Security in the 1990s and Beyond* (New Delhi: Viking, 1994), esp. pp. 193-195. The author proposes an Indian "small nuclear force" of 60 warheads, deployed on 20 Prithvis and 20 Agnis; and a Pakistani SNF of 20 warheads deliverable by aircraft.

⁶² Pakistan also has about 30 nuclear-capable M-11 surface-to-surface missiles with a 280-300 km range supplied by China, and is reported to be constructing a factory to build similar missiles. Rodney W. Jones and Mark G. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998* (Washington, DC: Carnegie Endowment for International Peace, 1998), p. 131.

⁶³ Mani Shankar Aiyar, "Is India-Pakistan Cold War Ending?" *TFT* (Pakistan), February 12, 1999. I am indebted to Stephen P. Cohen for an electronic copy of this article.

⁶⁴ See Poulouse, "India's Deterrence Doctrine," p. 84.

⁶⁵ See Ayoob, "Nuclear India and Indian-American Relations," pp. 67-68.

⁶⁶ *Ibid.*, p. 67.

⁶⁷ "Overt pressure on India and Pakistan to renounce their recently acquired nuclear capability will backfire." Francois Heisbourg, "The Prospects for Nuclear Stability between India and Pakistan," *Survival* 40 (Winter 1998-99), p. 86.

⁶⁸ In the words of Lt. Gen. Mujibur Rehman Khan, "Will Pakistan resort to nuclear means at the fall of Lahore, or when a strategic area is about to be overrun? By the time we are in a position to take such a momentous decision, our present borders will have been pushed inwards towards the interior, putting us that much more at a disadvantage. At the same time, the Indians will have attained the necessary air superiority to have turned the scale of the conventional battle to their advantage. Under such adverse conditions, how do we launch this nuclear strike to stem India's military success?" Quoted by Zia Mian, "Renouncing the Nuclear Option," in Ahmed and Cortright, eds., *Pakistan and the Bomb*, p. 61.

⁶⁹ On the devastating impact of even a minor nuclear exchange between India and Pakistan, see S. Rashid Naim, "After Midnight," in Stephen P. Cohen, ed., *Nuclear Proliferation in South Asia* (Boulder, CO: Westview Press, 1991), p. 44.

⁷⁰ Heisbourg, "The Prospects for Nuclear Stability between India and Pakistan," p. 86.

⁷¹ See e.g., Neil Joeck, *Maintaining Nuclear Stability in South Asia*, Adelphi Paper no. 312 (London: International Institute for Strategic Studies, 1997).

⁷² In the late 1980s, General Zia, President of Pakistan, claimed that the South Asian region had achieved "a stable nuclear deterrent relationship based on ambiguity as to whether India or Pakistan had nuclear weapons, and if they did, how many they possessed." Quoted by David Fischer, *Stopping the Spread of Nuclear Weapons* (London: Routledge, 1992), p. 97. In the 1990s, Gen. K. Sundarji, former Indian army chief of staff,

and Munir Khan, a former head of the Pakistan Atomic Energy Commission, made similar claims, along the lines of proliferation optimism.

⁷³ See Mario Carranza, "Rethinking Indo-Pakistani Nuclear Relations: Condemned to Nuclear Confrontation?" *Asian Survey* 36 (June 1996), pp. 561-573.

⁷⁴ The concept of a non-weaponized deterrence regime was first proposed by George Perkovich, "A Nuclear Third Way in South Asia," *Foreign Policy* 91 (Summer 1993), pp. 85-104.

⁷⁵ The concept of nuclear opacity was first developed by Avner Cohen and Benjamin Frankel, "Opaque Nuclear Proliferation," in B. Frankel, ed., *Opaque Nuclear Proliferation* (London: Frank Cass, 1991), pp. 14-44. Peter Feaver distinguishes four levels of nuclear opacity. Level 1 is the *absence of a nuclear weapons program*, although a country has the basic nuclear knowledge and nuclear research and power reactors that could some day be exploited for military purposes. Level 2 is *minimal weaponization*: the country has all the nuclear and non-nuclear components required to build nuclear weapons on short notice; it has unassembled, untested atom bombs, and it is not bound by nonproliferation commitments. Level 3 is *delayed weaponization*, until the country faces a crisis that forces rapid weaponization. The country assembles nuclear warheads, but keeps them separate from delivery systems. Level 4 is *covert weaponization* while refusing to acknowledge nuclear weapon status. The arsenal has many of the features of an open nuclear capability, including a nuclear use doctrine and a command, control, and communications system. See Feaver, "Proliferation Optimism and Theories of Nuclear Operations," pp. 175-178, and Carranza, "Dangerous Optimism," pp. 111-112 and table 2, p. 120.

⁷⁶ See Michael J. Mazarr, ed., *Nuclear Weapons in a Transformed World: The Challenge of Virtual Nuclear Arsenals* (New York: St. Martin's Press, 1997).

⁷⁷ Schell, *The Fate of the Earth*, p. 202.

⁷⁸ See Heisbourg, "The Prospects for Nuclear Stability between India and Pakistan," p. 82.

⁷⁹ Schell, *The Fate of the Earth*, p. 204.