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Coercion and Risk-Taking in Nuclear South Asia

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The partition-bred conflict between India and Pakistan that began in 1947 went into remission in 1971 following India's emphatic victory in war that year.[1] It reemerged in 1989 when serious disaffection in the Kashmir Valley gave Pakistan an opening to promote militancy. This created a dangerous situation because it was about the same time that both Pakistan and India also acquired nuclear weapons.[2] There was a major confrontation between the two countries during March–May 1990. Since then there has been continuous tension with each attempting to coerce the other. In May 1998 both countries carried out several nuclear tests each. A year later, during May–July 1999, the two fought a two-month "limited war" in the Kargil region of Kashmir that caused over 1,200 fatalities. Kargil was a clear effort on Pakistan's part to test the deterrence value of its nuclear weapons.[3] In December 2001 India resorted to an unprecedented military mobilization (Operation Parakram), holding out the clear threat of attacking Pakistan unless the latter stopped its sub-conventional operations.

The only historical parallel for two nuclear powers fighting one another is the Sino-Soviet border skirmishes of 1969.[4] But the total fatalities in those clashes were less than a hundred, and there had been no fighting between the two countries before nor has there been since. In Kashmir nearly 40,000 have been killed in twelve years of continuous warfare since India and Pakistan acquired nuclear weapons. It has been coercive risk-taking of a high order.

A number of theoretical perspectives can be brought to bear on what has been going on in South Asia. Viewed through the proliferation lens it would appear to confirm the worrisome thesis that proliferation leads directly to greater nuclear war risk.[5] If one looked through the deterrence theory lens one could find reasons to support the stances of both deterrence optimists and deterrence pessimists.[6] The optimists would argue that nuclear deterrence has worked in South Asia for over a decade despite great political hostility and regular border clashes and cross-border terrorism, and that when a war did break out (in Kargil) it stayed restrained. The pessimists would counter that the Kargil war did not spin out of control only because of U.S. intervention and, what is more, the two sides appear to have drawn dangerously divergent lessons from it. India seems to have concluded that it is possible to fight a limited conventional war under the nuclear threshold and Pakistan that, while Kargil-size operations could pose

problems, it is possible to persist with smaller-scale transborder operations.[7] If Kargil was a Pakistani effort to test India's nuclear fear, Operation Parakram was, in part, an Indian effort to test Pakistan's fear of India's superior nuclear capability.[8]

If one looked at the issue from the organization theory perspective, one could find considerable cause for concern.[9] The organizations controlling and operating nuclear weapons in both India and Pakistan are ad hoc, compartmentalized, and heavily reliant on relations between key individuals. What is more, they have been grafted on existing systems not known for high standards of reliability. The two countries also have serious technical and financial constraints.[10] The fact that political and operational constraints come in the way of adequate training of personnel and testing of systems should also cause disquiet. So should the fact that these organizations, for reasons of secrecy, are structured very differently from the experience-based systems of recognized nuclear weapon states (NWS). More worrying, when weapons are deployed in a crisis in the two countries, operating personnel and systems shall suddenly be placed under vastly increased stress. This does not occur in the case of NWS as their weapons are always deployed.

The so-called stability-instability paradox is also relevant in South Asia.[11] The huge constraints on the use of nuclear weapons make it possible for certain types of military provocation and operations to be carried out in conditions of nuclear deterrence. The scope for such activities between Pakistan and India is dynamic and is determined not only by relatively static features such as the military balance, the nature of stakes, and the shapes of military vulnerability curves, but also by more transient factors such as domestic contexts, leadership inclinations, and international trends. In general terms Pakistan would like to see the scope for such activities limited to sub-conventional warfare whereas India would like to extend the scope to include "limited" conventional warfare. The contest on this account, to create an advantageous general setting for each side, has a major bearing on coercion and risk-taking in South Asia.

This paper begins by examining the nature of the two-way coercion going on between the two countries since 1989 followed by an analysis of the international environment that influences it. This leads to an examination of the sub-conventional fighting that Kashmir has had to endure for twelve years followed by the possible contours of a conventional war such fighting could lead to. Moving to the nuclear realm the paper examines, in sequence, the nuclear arsenals of the two countries, the issues involved in managing these arsenals, the implications of their opaque nature, the nuclear strategies of the two countries, the manner in which they are gearing up to conduct nuclear operations, and the nuclear risks that are being run. This is followed by a look at the nature of the coercive risk-taking that is going on, spanning sub-conventional through nuclear. The paper ends with a set of conclusions.

Two-Way Coercion

The dominant characteristic of India-Pakistan relations since 1989 has been the attempts by the two sides to coerce one another. Coercion had not played a major role in their relations before 1989, although there has been political hostility and three wars during those forty-two years. This was so because neither country then had useful instruments to coerce the other with. They had no economic levers against each other (they still do not) and their politico-military capital was insufficient to apply serious pressure, bilaterally or through third parties.

In fact, neither had even sufficient deterrence capability against the other until India's post-1971 military superiority came into play. But this deterrence broke down in the late 1980s when disaffection in the Kashmir Valley was transformed into Pakistan-supported insurgent activity. India found itself constrained by two factors. One, in the initial years, the foot soldiers of the militant groups were mostly from within Indian Kashmir. And the mainline perception, within India and abroad, was that the problem was basically one of India's own making. The other was that, by 1990, India had recognized Pakistan's probable capability to deliver nuclear weapons using F-16 aircraft.[12] Pakistan exploited both factors and exerted coercive pressure through low-intensity operations.

By 1993 it had become obvious, not just to Indians but even to outsiders, that the militancy in Kashmir had become primarily a Pakistan-run operation. Moreover, the Pakistani coercive effort had begun to take the form of terrorism with civilians getting increasingly targeted. Since terrorism had become unacceptable to the United States long before the al Qaeda attacks, India tried to get the U.S. to focus on that aspect. This did not succeed because India's actual influence in Washington, though steadily increasing from the mid-1980s, was trailing the rhetoric by a long mile. Also, South Asia continued to be of marginal relevance within the overall U.S. strategic framework, a position that would begin to change only when nuclear weapons were tested there in May 1998.

Delhi had long understood that Islamabad's possession of nuclear weapons would limit the military pressure India could exert on Pakistan.[13] India's U.S.-directed diplomatic effort to prevent Pakistan from acquiring them failed because of the decade-long (1979–88) strategic window open to Pakistan on account of the Soviet presence in Afghanistan. An Indian preventive air strike on Pakistan's nuclear facilities during this period, which was considered during the early 1980s,[14] was also not possible, for both political and military reasons.[15] India's Brasstacks exercise of winter 1986–87 may also have been an attempt to eliminate Pakistan's emerging nuclear capability.[16] Some have argued that if India were keen that Pakistan should not become a nuclear power, it should not have tested in 1998, thereby enabling Pakistan to test too. This view is untenable for two reasons. One, in military terms the testing did not add much to the nuclear weapon capability that Pakistan had had for nearly a decade although in political terms it no doubt did. Two, notwithstanding the advantage the chain of events would confer on Pakistan, India had to test to ensure that the Comprehensive Test Ban Treaty, underpinned by the nuclear Non-Proliferation Treaty, did not freeze India's strategic inferiority relative to the great powers, especially China.

In the two-way coercion that has been going on since 1989 Pakistan and India have brought into play asymmetric capabilities. Pakistan's strengths have been its capacity to wage an effective low-intensity conflict and the ability to manipulate the risk of nuclear escalation, to a considerable extent, to forestall a conventional war. Despite Pakistan's serious ethnic and sectarian fissures, India has not found it possible to respond on the same plane to serious purpose. India's main strengths have been its superior diplomatic strength based on economics and global values and its stronger conventional military capability. In the global influence field the liberalization of India's economy (seven times the size of Pakistan's) beginning in 1991 has created growing pro-Indian business interests in the U.S. and elsewhere. Also, beginning in 1992 India has continuously outperformed Pakistan in terms of both macroeconomic stability and economic growth. Complementing this economic advantage is the global-values advantage that India's long-established democratic and secular credentials have conferred on it. At the same time, Pakistan's traditional diplomatic strength of being a valuable Islamic ally of the U.S. has become attenuated because of the growth of anti-American feelings in that country.

India found a context to apply its diplomatic strength when the war on terrorism got going in late 2001. It also presented an opportunity to use India's military superiority as a fulcrum for its diplomatic lever. India could now respond to twelve years of sub-conventional coercion with a dose of coercive diplomacy.[17] Pakistan, discredited internationally for its Kargil recklessness, military coup, and Taliban connection, was put under huge pressure by India's crisis initiation strategy. The non-Kashmiri jihadis, on whom Pakistan had been increasingly relying for its Kashmir effort, now became a major problem. Though tougher fighters, they were difficult to control. Viewed in principal-agent terms, the ideologically driven agent now wanted to coerce the tactically cautious principal. When India exploited this and exerted heavy military pressure, Pakistan was forced to resort to nuclear threats. This created a new dilemma. Long saddled with the image of Islamic fanaticism, Pakistan could ill afford to acquire another of nuclear irresponsibility. Maneuvering as Pakistan had been doing, making simultaneous use of nuclear deterrence against conventional attack and sub-conventional coercion to achieve political objectives, is something no other country has tried to do. The serious risks the strategy carried, bilateral and international, now came to the fore.

The International Environment

International interest in South Asia, including in Kashmir, has traditionally been low. This is now changing because of India and Pakistan's operational nuclear capabilities. The acquisition of 700–1,500 kilometer range mobile ballistic missiles (versions of Agni, Ghauri, and Shaheen) that can hit Islamabad, Karachi, Delhi, and Mumbai from launch points deep inside both countries has contributed to this change as much as the nuclear tests of 1998. To make matters worse, the situation is far from a path towards stabilization. Longer range, better circular error probable (CEP), greater mobility, and faster reaction time are being sought for the missiles, and higher yield and better yield-to-weight ratio for the warheads. The global community is aware of this but has little capability to intervene.[18] Yet, as the Kargil war of May–July 1999 and Operation Parakram beginning December 2001 showed, the danger of matters rolling out of control towards the nuclear brink is serious.

The U.S. looms large today in the calculations of both India and Pakistan. Dominant groups within the Indian elite have become committed to an economic growth path paved by foreign investment and exports, and are now ready to tailor the country's foreign policy appropriately. The U.S., in turn, is attracted to India because of its economic prospects and the stability of its democracy. India's security elite also sees a growing convergence of U.S.-India interests with regard to both China and political Islam. Pakistan is much less sanguine about the future of its U.S. ties. The presence of fanatical Islamic groups in a country with a growing nuclear arsenal and no democratic resilience to cushion its many structural tensions is a cause for serious Western worry. Pakistan also has no economic card to play and its usefulness with regard to Central Asia and West Asia is increasingly in doubt. Pakistan, therefore, sees its significance to the West stemming not from what it can offer but from the dangers that can emanate from within it should the West not prove helpful. Pakistan and the United States will have difficulty defining the nature, extent, and objectives of such help, especially since their relationship lacks the ballast of economic drivers and political affinity.

India and Pakistan are aware that while the level of global acceptance of their nuclear weapons did register a quantum increase with their 1998 tests, they still have a long way to

traverse before they can hope to become NWSs and secure the freedoms and benefits that status brings. To a degree, the two are on probation right now where they are expected to demonstrate responsible conduct in three major areas, viz. material and technology security, adherence to the provisions of strategic regimes, and keeping war risks under control. India has no serious problem with the first two, but the third will pose a challenge as long as Kashmir remains militarily contested. For Pakistan all three areas pose difficulty. Leakage will remain an international concern as long as radical Islamic groups have influence in the ruling circles. Strategic regimes will continue to be violated so long as Pakistan needs Chinese help to improve its nuclear-missile arsenal. As for war risk, being the revisionist party in Kashmir, Pakistan will find itself more tempted than India to manipulate threats and risks.

The international community is important to the two countries in their efforts to choreograph the nuclear war risk in different ways. Both are aware that for a host of reasons, ranging from the possibility of a global economic depression to environmental contamination, the world cannot lean back and watch the two fight a private nuclear war. Yet, Pakistan wants to establish that if India launches a conventional war, it may have no choice but to reach for the nuclear trigger. In holding out the nuclear war risk, Pakistan is trying more to get the international community to pressure India to stay its hand than to impress India directly. Similarly, in threatening Pakistan with a conventional war that could escalate to a nuclear one, India is trying more to get the world to squeeze Pakistan and make it adhere to the new anti-terrorist global norms than to fight it to a finish. Neither country wants a conventional war any more than it wants a nuclear war. They therefore do not want the world to stay on the sidelines and let them fight. Each wants the world to intervene, but in differing ways that would lead to different end games.

The Sub-Conventional Struggle

In 1988 Pakistan found itself, for the first time, in a position to exploit an indigenous anti-Indian movement in Kashmir. Pakistan had tried sub-conventional operations in Kashmir earlier, in October 1947 and in August 1965. On both occasions the attempts had turned quickly into full-scale conventional wars.[19] In 1947 India's conventional response to Pakistan's irregular effort was immediate. In 1965 Pakistan followed up its unsuccessful irregular penetration with a full-scale conventional offensive, the two having been parts of an integrated two-step plan. In 1947 and 1965 Pakistan was trying to create an insurgency with no local support. In 1989 it was different because the militancy was spearheaded by the Jammu and Kashmir Liberation Front (JKLF) with strong roots in the Kashmir Valley. Scalded by its 1947 and 1965 experiences Pakistan was initially careful. But when the JKLF achieved notable results on the ground in the summer of 1989, Pakistan threw its full weight in support. This led to the huge tensions of the spring of 1990 that raised serious fears of a conventional war with the scope to escalate into a nuclear one.[20]

Pakistan was not happy with the JKLF as the latter's objective was an independent and not a Pakistani Kashmir. Pakistan therefore switched support to Hizbul Mujahideen (HM), the military wing of the fundamentalist Jamaat-e-Islami group. Without Pakistan's support the JKLF soon got neutralized by Indian security forces, and by 1992 the HM had become the dominant militant group. This was the point where what had been a struggle for self-determination began to acquire the tones of a jihad. The HM worked very closely with the ISI—

Pakistan's Inter-Services Intelligence organization. Its "Kashmiri" fighters included a large number of ethnic Punjabis from Pakistan-controlled Kashmir. By 1994 India's counter-insurgency effort had matured. That year the JKLF renounced the armed struggle and the other groups including the HM found themselves hard-pressed. This led Pakistan to pump in larger numbers of Pashtuns and "non-Kashmiri" Punjabis. It also increased the geographic spread of the conflict by pushing militants into the Muslim-majority districts of the Jammu region. A systematic effort to vitiate communal relations also began by massacring non-Muslim civilians. The Indian security forces found themselves seriously stretched once again.

In the early spring of 1999, a force of Pakistan army personnel (mainly from the Northern Light Infantry) and mujahideen irregulars, numbering about 1,500, occupied some 130 points along a length of 160 kilometers on the Indian side of the Line of Control (LoC), coming in as deep as 15 kilometers at places. This led to the Kargil war from mid May to late July 1999.[21] Both India and Pakistan fought in a restrained manner on account of nuclear risk and international pressure. India did not strike inside Pakistan and Pakistan did not use air power against Indian aircraft striking Pakistani positions inside India. Successful Indian military action, supplemented by strong U.S. pressure in the later stages, forced Pakistan to pull back behind the LoC. Kargil was a huge military and diplomatic setback to Pakistan. Yet it chose to escalate the fighting in Kashmir further. Groups like Lashkar-e-Toiba and Jaish-e-Mohammed, both almost entirely non-Kashmiri in their composition and later to be branded as terrorist organizations by the U.S., began to carry out suicide missions.[22]

The unpredictability and the viciousness of these attacks put Indian security forces under serious pressure. For a decade a substantial part of the Indian infantry had been engaged in anti-militant/terrorist operations in Kashmir. It was bad for morale—being asked to fight defensively in the face of grave provocation. The pressure to escalate the level of fighting welled up. The global war on terrorism came as a great opportunity. Two highly symbolic terrorist attacks in 2001 shortly after 9/11 (on the Kashmir legislative assembly on October 31 and on the Indian parliament on December 13) brought matters to a boil. India was unimpressed by the possibility that groups angry with the Pakistan government had launched the attacks. What India knew and stressed was that these groups had come up under the patronage of the Pakistan army and that their effectiveness could be seriously brought down if the Pakistan army wanted to. Operation Parakram, the mid-December 2001 mobilization of the Indian military, with its strong threat of a conventional offensive into Pakistan, was intended to coerce the Pakistan military government to cut its ties with the terrorist groups. If in the process the Pakistan army got weakened so much the better, for the Indian security community is almost uniformly convinced that it is the organizational interests of the Pakistan army that is the primary driver behind the conflict in Kashmir.[23]

Conventional War and Its Limits

It is a fact that India had not been able to deter (though it could defeat) Pakistan even in the pre-nuclear years, as the wars of 1965 and 1971 showed. The substantial military assistance that Pakistan got from the United States during 1954–64 and India's decision to downplay the role of military force in its security calculus until 1962 were the initial causes for this. The 1965 war, deliberately initiated by Pakistan but which saw Pakistan coming under considerable pressure towards the end, should have been an eye opener to it. But it was not to be.

Pakistan, with a politically ascendant army, had by then internalized a high degree of aggressiveness and a wishful sense of culture-based military superiority.[24] This and bad internal political management led it to another war in 1971 that resulted in the country's breakup. Pakistan's aggressiveness came down sharply after 1971, but the diminution in pugnacity was made up by increased hostility on account of the loss of East Pakistan.

Indian military expansion and modernization, gathering pace from 1963, moved up a gear after 1971 and left the U.S.-abandoned Pakistan trailing a long way behind. What China was giving Pakistan could not match what India was getting from the Soviet Union, in terms of either quantity or sophistication. The situation changed in 1980 when U.S. assistance poured into Pakistan as recompense for its help against the Soviets in Afghanistan. This set off the only simultaneous arms race the subcontinent has seen, with India going in for equipment from both the Soviet Union and Western Europe to counter Pakistan's bounty from the U.S. Pakistan had to drop out of the race in 1990 when the Pressler amendment kicked in.[25] India's effort too slowed down in the early 1990s because of economic difficulties, but by the mid-nineties it was back on track.

Pakistan's military spending during the three decades 1972–2001, despite being nearly two-and-a-half times India's in GDP percentage terms, has only been a little over a third in absolute terms. Moreover, during this thirty-year period Pakistan has had access to major U.S. equipment for only eight years, 1980–88. China has been a stable supplier, but its equipment quality has been low. Pakistan could not buy much from Western Europe either—primarily because of a lack of funds but also because of proliferation-related barriers that began to come up in 1976. France was an exception but its high prices rendered it an unattractive source.[26] India, in contrast, has had in the Soviet Union (later Russia) a relatively inexpensive source of sophisticated military equipment from the mid-1960s. And it has had more money than Pakistan to buy from Western Europe. From 1992 Israel too became a key source of high technology.

In broad terms (a bean count with a rough adjustment for deployability, sophistication, and battle worthiness) India now has a 1.5 to 1 advantage over Pakistan in land forces, 2 to 1 in air forces, and 3 to 1 in naval forces.[27] If there were no nuclear weapons and no related international pressures, India should be able to defeat Pakistan comprehensively in a time frame of four to six weeks. But India had known, even before the advent of nuclear weapons, that international pressures would not permit it four weeks of free run. And it cannot do the job in much less than four weeks. Environmental factors such as mountainous terrain and high altitude make it difficult to achieve territorial gains quickly across the LoC in Kashmir. When tanks and fighter aircraft entered the Indian inventory in large numbers from the late 1970s India began to look at the option of deep armor-led thrusts in the plains. Because of good canal defenses along much of Pakistan's Punjab border, the logical place to attack was to the south, particularly near Rahimyar Khan where the rail and road links connecting Karachi (Pakistan's sole major port) to Punjab run close to the border.

Such a strategy too, which was investigated during the Brasstacks exercise in 1986–87, is seen by many analysts as incapable of achieving results within four weeks.[28] Allowing for the forces needed to defend against Pakistani counterthrusts, India does not have enough armor, ground attack fighters, mechanized infantry, self-propelled artillery, and logistic support to make a breakthrough and drive 100 kilometers rapidly. This factor plus Pakistan's increasingly credible nuclear capability has made India rethink its land attack strategy in the 1990s. A better strategy is now seen as drawing Pakistan's forces into battle and inflicting severe losses through high-intensity attrition warfare.[29] The logic behind this is that while India

would be able to make up its hardware losses quickly after a war, a cash-strapped Pakistan would not be. If in the process India were able to capture substantial territory while losing much less of its own, a strong bargaining chip would also have been created.

At present India does not have a true air-land warfare capability that can make combined use of close air support (CAS) and deep strikes against follow-up echelons. The army's main demand of the Indian Air Force (IAF) is CAS, which it has problems delivering because of inadequate stand-off and precision-guided capability. The air force preference is for counter air operations designed to degrade the Pakistan Air Force (PAF) by disabling airfields and attriting aircraft. The problem is that counter air operations are unlikely to achieve decisive results in less than two weeks since India's offensive air effort will have to be split from the beginning between counter air, CAS, and battlefield interdiction, all within Pakistan's fairly good air-defense ground environment. But the IAF is set to rapidly increase its superiority over the PAF, which is running today largely on the boost it got during the 1980–88 U.S. aid period. In a few years, when Su-30s and Mirage 2000s have come in large numbers, MiG-21bis squadrons have been modernized, PGM availability and EW capability have improved, and Israeli Phalcon AEW systems have arrived, the PAF is likely to be rendered ineffective within days of a war breaking out. But that prospect is still some years ahead. For the present, the very professional PAF, nursing its aging F-16s and Mirage III/Vs, continues to be a tough adversary in a short war.

India's superiority over Pakistan is most marked in the maritime field. Indian submarines, destroyers, and frigates, with reconnaissance support provided by shipborne and shore-based aircraft, can effectively close all approaches to Karachi, even one hugging the Makran coast, from day one of the outbreak of a war. A blockade of Karachi can seriously impact the country's warfighting capability in two to three weeks. Much of Pakistan's oil has to come over the sea, and overall its dependence on critical imports is a good deal greater than India's. Moreover, Pakistan is not in a position to seriously disrupt India's seaborne trade. Pakistani submarines can pose some threat to Indian tanker traffic into the Gulf of Kutch, and also to shipping into the Mumbai and Gujarat coast harbors. But India has adequate ASW capability to keep Mumbai open. Besides, it has a large number of other ports well away from Pakistan. The Pakistan navy's surface forces will find it impossible to operate anywhere except close to Karachi. As in the case of the air forces, in the case of the navies too India's advantage will expand in the coming years. More than the increase in India's fleet size, it is improvements in EW, air defense, ASW, and reconnaissance, which Pakistan would not be able to match, that will contribute to the widening gap.

Nuclear Arsenals

From the time it started two months after the loss of East Pakistan in the 1971 war, Pakistan's search for nuclear weapons has had a unifocal, sustained purpose.[30] The aim has been to deter India from using its already superior conventional capability, not a prospective nuclear capability. India's nuclear search, on the other hand, has always had multiple objectives with deterring Pakistan being only one of them. At the time of the 1974 test, India's primary objective was to demonstrate technological capability and latent great-power potential. This evolved later to a search for broad strategic autonomy and achievement of strategic parity with China. India's decision to test in 1998 was largely driven by the latter two objectives.

While India has always been guided primarily by the political dimension of nuclear weapons, the military dimension did become a consideration when it appeared around 1980 that Pakistan might succeed in its nuclear quest. By 1985 that possibility had turned into a strong probability. India, therefore, decided to invigorate its nuclear weapon program. For some years it was actually a catch-up effort. Just as it was faster in operationalizing its nuclear weapon technology, Pakistan was faster than India in migrating its nuclear warheads from fighter-bombers to missiles. It had probably succeeded in fitting nuclear warheads on China-supplied 300-km range M-11s by 1996. India seems to have succeeded in mating warheads to the 150-km Prithvi in 1998 and to the 1,500-km Agni in 1999. There are many who judge that Pakistan's operational nuclear capabilities are currently superior to India's.[31] The basic reasons for this enigmatic situation (India's weapon-grade fissile material availability, adjusted for plutonium/enriched uranium difference, is about twice that of Pakistan's and India, unlike Pakistan, has a very successful space program) are two. One is the continuing lack of adequate military participation in India's missile and warhead development efforts. The other is the substantial help Pakistan has been getting from China—in the case of missiles, from North Korea as well.

Publicly available estimates of warhead potential range 50–100 for India and 30–50 for Pakistan.[32] These estimates are based on fissile material availability, which in turn is derived largely from reprocessing and enrichment rate calculations. There is no publicly available data about how many bombs might actually have been made with the available fissile material. In addition to its primary fissile material route of uranium enrichment, Pakistan now has a small plutonium reprocessing capability. Going the other way, India has now acquired some enrichment capability. With reprocessing and enrichment as well as conversion of fissile material into weapons now going on at best speed in both countries, it is likely that by 2005 Pakistan will have warheads in high two-digit figures and India in low three-digit figures.[33] While new testing is unlikely unless one of the recognized NWSs carries out a test, the data gathered by the two countries from their May 1998 tests should enable them to improve their warhead designs. Both are almost certainly pursuing boosted fission designs. Weapon yields, a few years from now, could climb past the 100-kiloton mark. Whether India would have the confidence to go in for thermonuclear weapons as well, without further testing, is not clear.

Pakistan is manufacturing liquid-fuel, 1,500-km range, DPRK-derived Ghauri II missiles at Kahuta, and solid-fuel, 700-km range, China-derived Shaheen I missiles at the National Development Complex (NDC) in Fateh Jang. Solid-fuel, 300-km range Hatf-III (Chinese M-11) missiles are also being manufactured at the NDC. Pakistan is also developing longer-range versions of both Ghauri and Shaheen. It is likely that Pakistan will eventually concentrate on the Shaheen series for bulk production. In India, both Agni and Prithvi are being manufactured at Bharat Dynamics near Hyderabad. Agni is now available in a single-stage version of 750 km and a two-stage version of 1,500 km, both using solid fuel. Extended-range Agnis with ranges going up to 3,000 km are on the production horizon.[34] India is likely to discontinue the production of the short-range liquid-fuelled Prithvi missiles and concentrate on the longer-range solid-fuel Agni series. The initial concentration for bulk production is likely to be on the Pakistan-specific, single-stage 750-km Agni, first tested in January 2002.

The Ghauri, Shaheen, and Agni series are all road-mobile and, at least in the case of Agni, rail mobility is also being planned. India would ideally want ranges up to 5,000 km to be able to hit all parts of China from a wide range of launch positions. Pakistan would similarly want ranges up to 3,000 km to bring the entire Indian mainland within range from safe launch positions in Baluchistan and the Northwest Frontier Province. Testing of missiles is unlikely to

get constrained. The United States, Russia, and China are going to keep testing missiles, especially because of the U.S. need to develop ballistic missile defense and the Russian and Chinese need to penetrate it. This fact and its need to target China effectively will keep missile tests going in India. That in turn will provide testing space for Pakistan. One can expect to see improvements in the coming years in South Asian missiles in the areas of range, CEP, reaction time, reliability, operational ease, and ground mobility. The two countries are going to work hard at pushing the CEP-yield curve up by addressing it from both the missile and warhead ends.

A major source of uncertainty is the future course of Chinese help to Pakistan. On the one hand China has been diluting its public support to Pakistan on its differences with India. There are also indications that China wants to be seen as adhering to the global norms on nuclear and missile proliferation. On the other hand China continues to transfer missile technologies to Pakistan, which is obvious from Pakistan's ability to move from Hatf-III (based on M-11) to Shaheen I (probably based on M-9) to Shaheen II (probably based on M-18).[35] Three factors are at work here. First, the Missile Technology Control Regime is more porous with regard to components than with regard to completed missiles. Second, Pakistan has by now built up a substantial, sharply focused strategic industrial base and therefore needs less of materials and components than "knowledge." Passing of knowledge is more difficult to track than hardware transfer. Finally, the U.S. approach to disclosing intelligence on regime violations by China has a political dimension to it. Many in India are dubious about the United States' more relaxed estimates of recent Chinese strategic support to Pakistan.

Arsenal Management Issues

As their arsenals expand and the employment dimension gets more strongly factored in, demands relating to safety, security, survivability, and readiness (with many of the demands working at cross purposes) will pose major problems for both countries. Safety concerns with regard to nuclear weapons are basically in the areas of accidental explosion and radiation leakage. Virtually no design detail of the weapons of the two countries is publicly available, but considering the technological limitations under which both work it is unlikely that either would have been able to incorporate features such as those found in the ENDS (Enhanced Nuclear Detonation Safety) system employed in the U.S. It is not known how well one-point-principle[36] issues involving fire-resistant pits, conventional explosive sensitivity to heat and shock, strong-weak link circuitry, et al. have been tackled. The requirement to keep warheads and delivery systems (and perhaps even the fissile and non-fissile sections of the warhead) separate for reasons of security and survival could add to design and maintenance problems relating to safety. The relatively small number (six at best) of explosive tests carried out by each country, and that too in a time-compressed manner, raises worries about design safety as well.

Security concerns about nuclear weapons relate primarily to unauthorized use on the one hand and seizure and theft on the other. Both countries have chosen to rely on mobility and dispersal to enhance the survivability of their weapons. The number of locations to be made secure goes up as weapons are moved about. Transportation security also becomes a harder problem to tackle. This has fallout with respect to both unauthorized use and seizure/theft risks. To prevent unauthorized use of nuclear weapons, reliance on "authorization" control

(secure codes and such) is generally considered not enough. There must be "enablement" control through systems such as permissive action links (PALs). The control technology for PALs is not very difficult to develop. But the parallel need for secure, wide-band communications capability to transmit enablement programs confidently is not easy to create especially when launch control nodes are distant, and more so when they are mobile. Neither country possesses PALs at present.[37]

Risks of seizure and theft are also serious. There are both outsider and insider risks. The outsider risk is greater in Pakistan because of the much higher presence of terrorist groups in that country, and the fact that some of them enjoy links with some who occupy positions of authority. The insider risk is also higher in Pakistan because of the greater spread of radical ideologies there. The ISI, which has close links with many jihadi groups, plays a major role in screening Pakistan's nuclear operators.[38] The quality of personnel reliability programs (PRP) in the two countries is not known. Pakistan has one advantage over India in that the entire structure controlling its nuclear weapon and delivery systems is within the military, while in India it is divided among the military, the Atomic Energy Commission (AEC), and the Defense Research and Development Organization (DRDO)—all with differing ethos and systems. The overall responsibility for system effectiveness is not clear.

Survivability concerns regarding nuclear weapons are much more serious in Pakistan than in India. India has (or will eventually have) larger numbers of weapons and delivery systems. It also has a bigger landmass over which to distribute them.[39] More important, India has to worry only about Pakistan as a source of threat to its systems. Because of the risk of weapons falling into the hands of radical Islamists, Pakistan cannot discount threats from Israel and the United States as well.[40] Both India and Pakistan have chosen to make their systems difficult to locate rather than difficult to destroy after location. The locating difficulty is being built up through a series of interlocking steps involving dispersal, mobility, and deception. By distributing delivery systems and warheads separately throughout a large number of locations, the number of targets to be destroyed can be vastly increased. This problem can be made more acute by having a larger number of hides than there are hardware sections to be hidden and by moving the hardware among them. It can be taken a step further through measures such as camouflage, use of dummies, and disinformation. Agni, Prithvi, Ghauri, Shaheen, and M-11 are all road-mobile. They can be made rail-mobile as well since many military bases in India and Pakistan have rail links. As far as air-delivered weapons are concerned both countries have several airfields from which the needed types of aircraft can operate.

The measures being adopted by India and Pakistan to enhance survivability have a broadly adverse relationship with those being pursued to promote safety and security. Theoretically viewed, the more locations there are where assets can be hidden and the more frequently they are moved, the better should be their survivability.[41] But the larger the number of locations and the greater the frequency of moves, the greater also becomes the security risks and (though to a lesser degree) the safety risks. To strike a compromise between survivability risks on the one side and security and safety risks on the other, the general approach being adopted seems to be to keep assets concentrated in a small number of secret locations during peacetime and to disperse them more widely when tensions rise. This is based on the assumption that a bolt-from-the-blue attack can be ruled out.

The term "readiness" when applied to a nuclear arsenal connotes the ability to deliver one or more nuclear strikes effectively against a planned target array in a chosen time frame. Such readiness can have different implications depending on the nuclear doctrine adopted. India's readiness level ought to be related to two facets of its doctrine—no first use (NFU) and mas-

sive retaliation. These call for the ability to absorb a strike and then retaliate with a large salvo within a few hours.[42] Pakistan's readiness level has to be related to different requirements—the need to initiate nuclear weapon use in response to conventional military setbacks and the need to make graduated use thereafter. Relative to India's, Pakistan's doctrine requires not only a more robust command and control system but also an arsenal that can respond flexibly to a wider variety of demands.

The command and control challenges (command-chain integrity and connectivity) posed by dispersal and movements are considerable.[43] Any NCA (national command authority) has to continuously maintain both negative control (weapon never launched unless ordered) and positive control (weapon always launched when ordered). In India's case where the doctrine calls for executing only two strikes (a massive retaliatory strike with the provision for a reserve strike), and that too in a not very time-sensitive manner, there is adequate time to shift emphasis from negative to positive control.[44] In Pakistan's case, where a greater number of strikes have to be planned for, and that too in a flexible manner related to battlefield developments, both negative and positive controls have to work with a high level of effectiveness all the time. This, when combined with connectivity problems stemming from infrastructural limitations, will make Pakistan's command and control system much more decentralized than India's. And decentralization necessarily involves a certain amount of pre-delegation.

Nuclear Opacity

The May 1998 tests and the developments since then have not reduced the opacity of the two arsenals in any way, except that it is now established that both sides have nuclear weapons with effective means of delivery. Beyond that there is no public knowledge regarding even elemental issues such as the number of bombs/warheads and their yield, the types and numbers of nuclear-capable aircraft, and the types and numbers of nuclear-capable missiles and their accuracies. There is no information about how nuclear operations are being conducted during peacetime and are planned to be conducted during war.[45] There is no knowledge of how issues relating to safety, security, survivability, and readiness are being tackled. There is no information about field-level operational structures and the kind of personnel who man them. Nor is anything known about communications and intelligence structures.

The opacity is partly the result of pressures exerted by the external environment and partly the result of internal needs. The two countries are not violating any international regime by possessing nuclear weapons as they are not parties to the nuclear Non-Proliferation Treaty (NPT) or any other control regime. Yet they are not NWSs under the NPT and many countries, particularly the U.S. and its allies, would like to constrain their capabilities. Prudence therefore demands that they keep their vulnerabilities, political and military, low by revealing as little information as possible. This is particularly so since both countries have decades of intense technical and organizational development ahead of them. In Pakistan's case there is the additional vulnerability posed by the need for illegal external assistance for many of its nuclear-related programs.

The most important reason for the two countries to seek opacity for their arsenals, however, has to do with ensuring deterrence. Both their first use and retaliatory strike capabilities are predicated on the secrecy of the locations of warheads and delivery systems.[46] Equally important, their systems have many technical and organizational vulnerabilities, which if made

known to the adversary can seriously degrade their survivability. Pakistan's problem in this regard is more acute since it has to fear not only India but also Israel and in certain circumstances the United States. The concealment of the size, characteristics, and locations of their arsenals is critical to both countries and therefore the transparency needed for nuclear confidence-building measures is seen as highly dangerous.

The limited technical intelligence capabilities of the two countries also contribute to the opacity of the arsenals. Signal intelligence (SIGINT) capabilities are not significant on either side. This is probably more so in the case of Pakistan. Electronic intelligence (ELINT) capabilities are also weak especially away from the borders. In the reconnaissance field India has a slight edge with its IRS satellites and MiG-25 aircraft, but as far as continuous real-time monitoring of nuclear delivery systems is concerned, both sides are effectively blind. This places a heavy premium on human intelligence (HUMINT). Relying on HUMINT without corroboration from TECHINT (technical intelligence) can easily lead to misperceptions, and in turn to disastrous miscalculations. Uncertainty about the capabilities and intentions of the adversary in a crisis situation can create "first-strike instability" and lead to major mistakes being committed in estimating the risks and benefits of striking first.

The opacity of the two arsenals has an impact not only on the other country but also within one's own country. Most security commentators have little knowledge about the "operational" nuclear capabilities of their own country, and still less about how they interact with the adversary's. As a consequence public perceptions about what is possible during crisis bargaining may be unreal. To a much lesser but nevertheless significant degree, this applies even to those involved in nuclear decision-making. This problem has two sources. One, for reasons of security and survivability the knowledge of one's own nuclear capabilities is heavily compartmentalized and rationed. Two, the knowledge that is disseminated is based on "proprietary" inputs from different organizations with little system-level oversight. This can lead to overconfidence or underconfidence on the part of the NCA about the capabilities at its command, which in turn can pose a serious danger in crisis situations.

The dominant view in both South Asia and outside is that the prevailing conditions of opacity are a good thing. India and Pakistan consider non-transparency essential for the survivability and security of their current arsenals, as well as for their future development. The outside world thinks that opacity is good to ensure that the South Asian arsenals are not legitimated, thereby weakening the nonproliferation regime. Before the 1998 tests, the effort was to make the vague concept of non-weaponized deterrence prevail, and after the tests for the equally vague concept of non-deployed deterrence to take its place.[47] In conditions of opacity, no markers could be established earlier for non-weaponization and none can now be established for non-deployment. Ashley Tellis considers that India (and by implication Pakistan) shall move steadily, over several years, from a force-in-being state (non-deployment) to a ready-arsenal state. He has defined, loosely, two way points—"robust force-in-being" and "modest ready arsenal"—on the way to ready arsenal.[48]

In discussions, though not in the literature, the Israeli parallel is sometimes invoked to advance the merits of keeping the South Asian arsenals shrouded. This ignores a fundamental difference between the Middle Eastern and South Asian situations. In the former region, where a one-sided nuclear capability is reinforced by conventional superiority, there is no danger of the ongoing conflict escalating into a nuclear one. In South Asia, where both adversaries have nuclear weapons and where one side has the sub-conventional advantage and the other the conventional one, there is a clear danger of it occurring. This is now gradually becoming better understood. There are calls for striking a better balance between ambiguity and trans-

parency so that escalation risks can be minimized.[49] Cold War deterrence stability got established, largely in the wake of the 1963 Cuban missile crisis, through increased transparency of one another's arsenals as well as their central command and control systems. Such levels of transparency are clearly not possible in South Asia, given the fears of survivability and the lack of legitimacy surrounding the region's nuclear arsenals. Yet innovative ways have to be explored to find a path through the competing needs of opacity and transparency so that escalation risks are reduced. Opacity is indeed essential to reduce vulnerability in South Asian conditions, but some transparency is also necessary to reduce misinterpretation.

Nuclear Strategies

The term nuclear strategy is used here in the broad sense of exploiting nuclear weapons for both political and military purposes. It includes component strategies for deterrence, crisis bargaining, and employment. In addition, in the case of India and Pakistan, both of which are not genuinely autonomous actors in the nuclear field, there is an important component of strategy that is aimed at influencing global opinion. In Pakistan the strategic discourse in nuclear matters has been relatively thin, particularly before the May 1998 tests.[50] In India, on the other hand, there were writings from soon after the first Chinese test of 1964. It gathered strength after India's 1974 test and assumed major proportions in the early 1990s when the CTBT began to loom, threatening India's nuclear "option." After the 1998 tests this has turned into a flood.[51] The Pakistani strategic discourse, though thin, is thematically more coherent because of its concentrated India focus. The Indian discourse is more diffused. The problem faced by India is that while it needs to emphasize the nuclear issue in global power-political terms, it is in its interests to marginalize it in the India-Pakistan context.[52]

The nuclear strategies of both countries emphasize deterrence, but there is a fundamental difference between the two in that Pakistan's strategy is aimed at deterring a conventional threat from India, while India's is aimed at deterring a nuclear one from Pakistan. Since a conventional confrontation is easier to develop and must almost invariably precede a nuclear one, Pakistan's deterrence has to function much more actively than India's. This has an impact on the force structure, the force posture, and the relationship between conventional and nuclear strategies. As the conventional military balance continues to shift in India's favor Pakistan's reliance on its nuclear capability will increase and so will its effort to lower the nuclear threshold.[53] Thus Pakistan's strategy is likely to emphasize not just "first use" but "early first use" in the coming years.

The big problem Pakistan faces here is that not only is the conventional military balance in India's favor, but so is the nuclear balance. In both cases Pakistan is handicapped with respect to each of the two critical parameters—force size and vulnerability. The first stems from resource imbalance and the second from geographic disproportion, both of which are in India's favor. Pakistan had been able to maintain conventional operational parity with India for many decades, but is now beginning to lose ground rapidly. Much the same is going to happen in the nuclear field. The coming years will see India developing not only a much larger number of weapons but also ones with higher yields than Pakistan's. India's missile force, which is behind Pakistan's now, will also overtake it in a few years. To threaten credible nuclear first use from a position of nuclear inferiority is not impossible, but it is difficult.

Nuclear deterrence works through the minds of not only those who are connected with the two NCAs but also those of the articulate public in the two countries. The contest to influence them in strategically favorable ways is only just beginning. India wants to impress Pakistan with the logic of rational deterrence theory and make it understand the significance of escalation dominance and net payoff at each level. It wants to make Pakistan do rational utility calculations by absorbing the reality that in the case of a full nuclear exchange, it is likely to lose ten times the percentage of population compared with India.[54] Pakistan, on the other hand, wants to impress India that it is absolute damage and not relative damage that matters. It wants to establish that if India loses Mumbai, Delhi, and a half-dozen other cities, it will set the country back by generations and that mere survival will not do it any good.[55] It also wants to get it accepted that under conditions of strategic stress its NCA might resort to first use even though this could amount to a Samsonian act.

Pakistan's effort would be to maximize nuclear uncertainty in times of crisis while India's would be to minimize it. If one were to use the analogies developed by Thomas Schelling and Paul Nitze, Pakistan would like to establish that nuclear risk-taking and its consequences in South Asia would resemble Russian roulette, with the outcome relying on chance, while India would want to prove that it would resemble the game of chess, with the outcome determined by rational logic and relative superiority.[56] Each country would want to make its respective mix of logic and scenario-visualization prevail not only in the mind of the rival but also in the mind of the global community. Both are conscious that major powers, particularly the U.S., will play a critical role in the run up to a nuclear exchange, and in the event of its occurrence in its aftermath. The importance of outside powers has also been made acute by the inability of the two sides to engage one another in serious dialogue.

Finally there is the employment component of the two nuclear strategies. Both countries have publicly ruled out preventive and preemptive strikes. The question of whether they might deviate from this position in a crisis situation is discussed in the section dealing with nuclear risks. Going by its declared position India will use its nuclear capability only to retaliate after one or more nuclear weapons have been launched against it.[57] But it has also implied that its response strike would be a large scale, society-destroying one. India wants Pakistan to understand that there is no scope for nuclear bargaining through limited strikes. India has therefore taken the position that it will respond with a massive nuclear strike should Pakistan use even a low-yield nuclear weapon against an Indian target, even inside Pakistani territory.[58] India wants Pakistan's choices in the event of a war to be limited to conventional defeat or nuclear obliteration.

Pakistan has not accepted this two-choice position. It wants to create more options. Towards this it has chosen an employment strategy that is different from India's, both with regard to the sequencing of strikes and the weight of strikes. It has taken the position that it will use nuclear weapons in first use against India should certain vaguely defined redlines involving territorial loss, military loss, economic strangulation, and internal stability be crossed.[59] Pakistan has also let it be known that it will use nuclear weapons in a graduated manner, starting with counter-military targets.[60] Pakistan's hope is that it can make India's retaliatory strike limited by the logic that even a full-weight Indian strike will not be able to prevent Pakistan from initiating a retaliatory strike of its own which will do India far greater damage than what had been done by Pakistan's initial strike. A key question is when and how Pakistan might initiate nuclear weapon use. Indications are that Pakistan will begin with an attack on an Indian battlefield target. It is logical to assume that such an attack would not be intended to improve battlefield fortunes but to get the great powers to intervene. This is because the

first objective would call for several weapons to be used, and the Indian retaliation to that would be catastrophic to Pakistan. But to get the world to intervene the use of a single weapon might be enough.

Pakistan's single-minded and fairly successful effort to generate military utility for its nuclear weapons has begun to impact India. There is growing realization that conceiving nuclear weapons as essentially a political symbol can be dangerous when applying military pressure on Pakistan. There is a swelling demand from the security community that India must convert its undoubted technical superiority in the field of strategic weaponry into genuine and visible operational superiority over Pakistan. Although such demands resonate well with the current government, there are major obstacles, nevertheless, to developing pragmatic plans towards meeting them. Perhaps the most important of these is the grandiose mindset of the scientific community, whose forte hitherto has been technology demonstration, not operational capability development. The Indian military is only beginning to acquire the voice to ensure that the latter is concentrated upon.

Nuclear Operations

The command and control organizations in the two countries for managing nuclear operations are quite different from one another. In Pakistan, an NCA organization chaired by the head of government was set up in February 2000 and all strategic organizations, military and technological, were brought under it the following November.[61] The NCA has an Employment Control Committee that is responsible for the operational control of weapon systems and a Development Control Committee that is responsible for the development of force structure and doctrine. Both, especially the Development Control Committee, are military dominated. A Strategic Plans Division (SPD) headed by a three-star general, nominally under the Chairman of the Joint Chiefs of Staff but effectively under the Army Chief, serves both committees.

A Strategic Force Command (SFC) of the army under another three-star general has been set up.[62] All Pakistan's strategic missiles and the warheads for them are under this. Much of the infrastructure support for these missiles is provided by the Air Defense Command of the army. The F-16 aircraft of the PAF earmarked for nuclear weapon delivery are not under this Army SFC's control although the bombs themselves are believed to be. The PAEC (Pakistan Atomic Energy Commission), which carries out most of the warhead manufacturing work and also controls the Shaheen-manufacturing NDC, is heavily involved in the maintenance and operation of Pakistan's nuclear arsenal. So is the KRL (AQ Khan Research Laboratories), which, besides performing the key task of uranium enrichment and the manufacture of some critical warhead parts, also manufactures the Ghauri missile.[63] The concerned personnel of the PAEC and the KRL function under the control of the SPD at the policy level and the SFC at the field level.

In the case of India, the NCA is the Prime Minister with a group of not clearly specified advisors. The Prime Minister's secretary doubles as the national security advisor, and he has a key role with regard to both development and employment decisions. The Cabinet Committee on Security (CCS) now has an important role in nuclear weapon matters. But the long-established pattern of the Prime Minister and his office dealing directly with the AEC (responsible for nuclear weapon fissile cores) and the DRDO (responsible for the non-fissile parts of war-

heads and the development of strategic missiles) continues. The CCS, headed by the Prime Minister, has the ministers for defense, external affairs, home affairs, and finance as its members. The National Security Council (NSC) has the same membership with the addition of the deputy chairman of the planning commission. Conceptually the NSC, supported by the bureaucratic-military Strategic Planning Group (SPG) and the non-official National Security Advisory Board (NSAB), is supposed to do long-term planning and advise the CCS and the Cabinet. But in practice the NSC, SPG, and NSAB have not been playing significant roles in the nuclear decision-making area. The key players in the ring at present are the minister-members of the CCS, the Prime Minister's Secretary-cum-NSA, the heads of AEC and DRDO, and the Chief of the Air Staff. The Chiefs of Staff Committee, with the Chief of Integrated Staff and the Strategic Force Commander (about to be created) under it, will soon play a key role.

In India the role of the military in the nuclear weapon field, and in the broader national security field, has been gradually growing since 1985, and in an accelerated fashion since a BJP-led coalition came to power in 1998.[64] The BJP, more determined than the other parties to make India a major military power, knew instinctively that this objective could not be pursued without bringing the military closer to the national-security decision-making center. Besides, a declared nuclear weapon arsenal that is growing quickly into three-digit figures could not be handled by scientific organizations.[65] Organizationally, the shift from the pre–May 1998 "non-weaponized" deterrence to the post–May 1998 "non-deployed" deterrence needed more than scaling up; it called for restructuring. The recommendation of the 2000–01 Arun Singh Committee to create a Chief of the Defense Staff (CDS) with a Strategic Force Commander (SFC) under him stemmed from this need. The CCS approved the proposal in 2001, but it has not yet been implemented because of what is generally seen as opposition from the air force.[66] The IAF was the only service involved to any serious degree in nuclear weapon matters during 1990–98, and is loath to see its special role taken away by a tri-service organization. The July 2001 decision to give the army the Agni missiles, slated to become the main strategic delivery system of the future, was deeply disappointing to the IAF.[67]

The emerging pattern in India is that the delivery systems—aircraft and missiles—will be with the military while the bombs and warheads will be with the DRDO and the AEC, with the former having custody of non-fissile assemblies and the latter of the insertable fissile "pits." Delivery capabilities will be maintained and operated largely on a single service basis, but their command and control will be with the SFC under the CDS. In the case of missiles this will not pose a problem. The Prithvis and Agnis with the army can be placed operationally under the SFC. But in the case of the air force fighter-bombers, which would play the primary weapon-delivery role for some years to come, that may not be possible.[68] There might be problems in earmarking aircraft exclusively for nuclear weapon delivery and therefore in placing them wholly under the SFC.

The SPD in Pakistan and the SFC in India will be responsible for preparing targeting plans and tasking specific units with specific targets. In Pakistan, the SPD will be overseen in its targeting and tasking roles broadly by the Employment Control Committee of the NCA, and specifically by the General Staff of the Pakistan army. In India, the CCS and the Chiefs of Staff Committee (COSC) assisted by the Chief of Integrated Staff will play the corresponding roles. But right now neither the CDS nor the SFC is in position in India and therefore the targeting and tasking role is likely to be handled by an ad hoc combination of the COSC (supported by the Chief of Integrated Staff[69]), the Air Headquarters, and the nominees of the AEC and the DRDO. In Pakistan the field-level control of all missiles (which are fast becoming Pakistan's

primary nuclear delivery system) are with the (Army) SFC. It is believed to control even the bombs that are to be delivered by PAF aircraft. In India, the SFC (when created) is likely to exercise control over missiles directly, and over nuclear delivery aircraft (India's primary delivery system for some more years) through the Air Headquarters. Unlike in Pakistan, the custody of warheads and bombs in India will be with scientific organizations—the AEC and the DRDO.

Virtually nothing is known of the field organizations of the two countries that are responsible for operating nuclear weapons and delivery systems. This is a major cause of concern since the conduct of nuclear operations is an extremely complex and demanding business.[70] While the demands on the small, force-in-being South Asian arsenals are undoubtedly less than those on the huge, ready arsenals of the NWSs, they are nevertheless large. The need to improve nuclear operations in both countries is stressed by many.[71] In both countries field operations at the military level are currently structured to be carried out essentially on a single service basis—with the respective armies responsible for missile delivery and the air forces for air delivery. A significant field-operations role is being played by technical organizations in both countries—the AEC and the DRDO in India, and the PAEC/NDC and the KRL in Pakistan. This applies to both weapons and missiles. Inadequate bug proofing of systems and inadequate technical know-how of military operators are the major reasons for this. In the case of India there is also the factor of the government wanting civilian control even at the field level.

Nuclear Risks

The nuclear risks currently present in the Indian subcontinent, and which are likely to grow and mutate in the coming years, can be broadly categorized as "arsenal risks" and "employment risks." The former stem from the very existence of nuclear arsenals in the two countries and are largely related to the areas of safety and security. The latter are concerned with the employment of nuclear weapons, either deliberately or inadvertently. The idea of "inadvertent" employment of nuclear weapons has been conceptualized both narrowly and broadly in the theoretical literature.[72] In the narrow sense it connotes the launching of a nuclear strike by one side because of systemic problems in the areas of intelligence, command and control, and decision-making. In the broader sense it also incorporates unplanned but deliberate escalation wherein despite the original intention to keep risk-taking below the nuclear threshold, matters get out of hand because of the escalatory tendency inherent in crisis and war.

The "arsenal risks" present in South Asia with regard to safety and security are difficult to evaluate. Both countries put out virtually no information on these matters in the public domain. More important, it is difficult to estimate how the 1998 shift from a "non-weaponized" posture to a "non-deployed" posture has impacted safety and security issues. The shift has not reduced the opacity of the two arsenals but it is clear that warhead and missile numbers are now rapidly increasing, limited more by production capacity than by international restraints. The speed of constituting weapon systems, in terms of both fissile core insertion in warheads and mating of warheads with missiles, is being improved. This increase in numbers and readiness levels places greater demands on safety and security. It is unclear whether adequate effort is being devoted to meet these challenges. Pakistan's difficulties in this area are likely to stem from its first-use posture and from its technological and financial constraints. India's on the

other hand are likely to emanate more from its divided forms of control and custody and an extreme form of need-to-know that could impact training and drills.[73]

The "employment risks" in South Asia, as elsewhere, can be broadly categorized as preventive, preemptive, inadvertent, and deliberate. Politically, a bolt-from-the-blue preventive strike is very difficult. Operationally, while such a strike might catch many delivery systems in their peacetime concentrations, it would not catch them all. In the case of bombs and warheads, the numbers destroyed are unlikely to be significant. The preemptive war risk is also low. Destroying the bulk of one another's arsenals after the systems have been dispersed on crisis warning is operationally impossible for both countries.[74] Definitive-seeming intelligence about the opponent's decision to launch a nuclear strike can thus pose an excruciating dilemma. On the one hand a preemptive strike will make a "probable" strike "assured." On the other hand, the level of destruction suffered is likely to be less after a preemptive strike.

An inadvertent strike from either side stemming from deficiencies in intelligence, command and control, and decision-making cannot be ruled out.[75] Since India and Pakistan have not gone in for launch-on-warning or even launch-through-attack postures (for reasons of readiness and surveillance inadequacies), defective intelligence should not pose a serious hazard. Scrambled command and control is a major potential danger especially when missiles and warheads are "projected" in a crisis. This danger will steadily trend up as missile and warhead numbers increase. It will also shoot up periodically when crises occur. Poor decision-making can also spell danger, particularly in Pakistan where narrow military considerations have tended to dominate strategic decision-making dysfunctionally.[76] To complicate the situation, Pakistan has sought to subvert rational deterrence by trying to sap all its three main components. The rationality of actors is sought to be undermined by projecting a disdain for relative cost calculations, the unitary nature of actors by the possibility of political-military and radical-conservative splits in decision-making circles, and sensitivity to costs by a supposed Islamic nonchalance towards death.

The other type of inadvertent war risk—decisions rolling out of control in an escalatory spiral—is also possible in the India-Pakistan context. There is deep hostility, mistrust, poor communications, and, most dangerously, a mutual discounting of one another's resolve and capability. Two attendant conditions exacerbate this danger. One is the opacity of arsenals, which makes it difficult to monitor changes in threat perception by observing changes in readiness level. Warning statements tend to be taken as bluffs, which indeed they often are.[77] The other problem is that both countries tend to take risks in the expectation that third countries, especially the U.S., will intervene.[78] This belief in the international community's willingness and ability to act as a safety net leads to more dangerous acts being executed on the high wire than would be the case otherwise.

The last among employment risks arises when a leadership considers deliberate nuclear initiation. This risk takes form when it begins to be seen by one party that the outcome of a war is going to be less bad, in terms of ratios of politico-military losses between the two countries, after a nuclear exchange than without one. In a conventional war with India, Pakistan could well find itself facing national humiliation (occupation of parts of the country), permanent territorial loss (parts of Pakistan-administered Kashmir), breakup of the country, or a permanent weakening of influence of the army or the Punjab (or both) in the affairs of the country. In such a situation a Pakistani leadership, especially an army one, might well decide on a nuclear strike. The thinking, under extreme strategic stress, could be that ruining India would salvage some pride even though Pakistan would be devastated in the process.

The Risk Terrain

Pakistan and India run their war risks over a varied terrain. The foothills could be said to represent sub-conventional fighting, the high ranges conventional war, and the peaks nuclear war. Pakistan might contend that the terrain starts further back with the plains that abut the foothills representing popular resistance to authority in Kashmir. Be that as it may, the fact is that there are no firebreaks between sub-conventional and conventional wars, and between conventional and nuclear wars. A variety of weapons and operational practices link the first pair, and the tactical use of nuclear weapons and conventional strikes on nuclear reactors link the second pair. Indians would disagree with the latter statement, contending that the nuclear taboo in force for nearly six decades makes for a clear zone of separation between conventional and nuclear wars. Pakistan would counter with the argument that nuclear war initiation was integral to the NATO strategy for defending Western Europe against superior Soviet conventional forces throughout the Cold War.

Pakistan has run serious risks in promoting militancy and terrorism in Kashmir. The promotion has been in clear violation of the Simla Agreement, which unequivocally forbids cross-border military activity. To many it is a matter of surprise that India did not begin substantial strikes across the LoC when, by 1993, the fighting in Kashmir had became almost wholly Pakistan-controlled. During 1980–88 Soviet and Afghan aircraft had carried out frequent attacks on camps inside Pakistan that supported mujahideen in Afghanistan. India did not follow that path for a mix of reasons. One was the wish not to erode the sanctity of the LoC and the Simla Agreement. Another was the desire not to let South Asia become a zone of nuclear danger. The third was India's pre-1999 confidence that it would be able to gradually bring the state under control especially since local participation in the fighting was steadily ebbing.

Pakistan read the situation differently and attributed India's restraint wholly to the deterrence effect of Pakistan's nuclear capability. This led to the Pakistani decision to escalate threat and risk by occupying the Kargil heights in early 1999 and escalate terrorism using foreign Islamic radicals. India's threatening mobilization beginning in December 2001 forced Pakistan to change tack. President Musharraf moved away from Pakistan's earlier position justifying "moral and political" support in Kashmir. On January 12, 2002, he promised that he would crack down on terrorists operating out of Pakistan. Four and a half months of intense confrontation later, he went further and stated on May 27 that Pakistan would prevent infiltration into Kashmir across the LoC.[79] How well the latter assurance, which is both categorical and unprecedented, will be honored in the future is difficult to judge. There are many variables at play such as the power of Islamic radicals, Pakistan's continuing usefulness to the U.S., the state of Pakistan's economy, and the balance of opinion within the Pakistan army leadership.

For internal political reasons it is improbable that India will be able to eliminate political discontent in Kashmir for some years.[80] This will give Pakistan a persisting opening to stoke violence. Even if it were able to, the Pakistani army would not want to eliminate the infrastructure that promotes terror in Kashmir, for it sees terror-laced militancy as its only lever against India. A continuing contest between Pakistani militants and Indian security forces is therefore likely. This will be accompanied by a restrained contest between the army and the jihadis in Pakistan. The army does not want to weaken the jihadis, but does want to bring them under better control. It does not want any more terrorist attacks against the West. Nor does it want terrorist acts in India that are dangerously high profile. It is possible that the

Pakistani effort to exert control would weaken the jihadis and India would be able to restore reasonable normalcy. But it is more likely that after a few months of relative quiet jihadi attacks will become serious again and India will need to search once more for effective means of retaliating.

In the past India's cross-border activity has been limited to artillery shelling (which has made it difficult for Pakistan to use some border roads such as in the Neelam river valley) and occasional raids on Pakistani positions. A low-risk escalatory option available to India is to make cross-border firing substantially more punishing by extended range systems.[81] More risky options are air strikes on jihadi camps and capture of tactically valuable military positions close to the LoC. It is unlikely that India would go in again for the kind of confrontation-by-mobilization that it resorted to in December 2001. That confrontation, which turned to good account the U.S.-led "war against terror" (and is continuing as this is being written in June 2002), was intended to serve notice on both Pakistan and the international community that India's patience had worn thin and that from now on it would respond aggressively to Pakistani actions in Indian territory.

Ideas for such action have been regularly discussed in Indian military circles as far back as the early 1990s. The basic problems confronting India in this area are two. One, it is not in India's diplomatic interest to alter the LoC by force. Two, strikes of the size that would genuinely hurt Pakistan contain the potential for response sequences that could roll out of control. It is to overcome these problems that after the May–July 1999 Kargil war India tried to develop a "limited war" concept against Pakistan.[82] This concept, however, had very little specificity.[83] The general thinking has been that a war can be kept limited by restricting the goals sought and the means employed. Some have talked about exercising control over four variables—objectives, duration, area of action, and damage caused. But in reality India can confidently control only the first. India's control over the other three would depend entirely on Pakistan's fear of India's escalation dominance. There has been little objective exploration of vital issues like Pakistan's nuclear thresholds in different circumstances, the ways in which international pressures could build up, and how an initiated limited war could be concluded.[84]

Logically viewed, the kind of "limited war" ideas that were effusively discussed in India during Operation Parakram (about ten days of intense action across the entire LoC with heavy use of air power) had to be the outer envelope of a limited war, not its starting point.[85] The problem faced by India is the large gap that exists between aggressive rhetoric and the organizational capability for action. The party in power in India today, the BJP, has a worldview shaped partly by offensive realism[86] and partly by a skewed interpretation of social history.[87] But its offensive-realist view of maximizing and exploiting power is not supported by the needed institutional capacity. For example, what India needs to cope with the sub-conventional attrition tactics employed by Pakistan is the ability to hit back routinely and hurtingly, without creating crises. To adopt such an approach it needs to relax "rules of engagement" in an effective manner. This is not possible today. For instance, the field-level army responsibility for actions across the LoC is with the Northern Command in Udhampur while that of the air force is with the Western Air Command in Delhi. Army and air force actions across the LoC can only be coordinated at the Chiefs of Staff Committee level in Delhi, and then only with the approval of the CCS. This type of institutional ponderousness makes short, sharp responses impossible. At present, India is only capable of either being on the defensive or going for a massive offensive. It is unable to exploit the productive territory there is between the two.

But there is a growing understanding of the problem. During 2000–2001, a major effort to restructure the Indian defense set up on contemporary lines was made by Arun Singh, India's

minister of state for defense during 1985–89, with the active support of Jaswant Singh, India's external affairs minister and for some months defense minister as well. The effort has had only limited success so far. But this could change because a major lesson that India is likely to learn from Operation Parakram is the need to hit Pakistan without posturing. Low-key but punishing responses are now likely to be considered. A very probable response would be long-range shelling or rocketing that Pakistan cannot match. But it could also be sharp, limited air attacks on terrorist targets using precision-guided munitions. Much less likely, but still a possibility, would be a naval blockade of Karachi.[88] Through such limited actions India could dare Pakistan to counter-escalate. The old fear of Pakistan launching a dangerous surprise offensive (taking advantage of Pakistan's shorter mobilization period) is no longer there because of India's decisive superiority on every rung of the conventional escalation ladder. India will have no problem with whatever Pakistan might do as long as the war remains conventional.

The problem will arise if Pakistan finds itself compelled to go nuclear. How quickly Pakistan might get into such a situation would depend on the way a conventional war unfolds. In today's India-Pakistan military context there are no clear "saliencies" the crossing of which can constitute escalation.[89] Given the huge frontage over which such a war will be fought and the fact that there would be deep air strikes, it would be difficult for Pakistan to judge the arrival of the point at which the war has begun to impose unacceptable costs—political or military. India's hope would be that the international community would intervene before Pakistan is able to escalate to the nuclear level, and that in the intervening period India would have inflicted substantial punishment on Pakistan's military forces. Pakistan's hope would be that in the event it is forced to use a nuclear weapon, India would find it prudent (or would be pressured by the international community) to respond with a proportionate strike—a strike that will be only marginally more destructive than Pakistan's.

If India's security management suffers from organizational infirmities, Pakistan's suffers from even greater ones. The biggest problem in Pakistan is the GHQ of the army, which is guided by a delicate balance between the Army Chief and his nine corps commanders. The GHQ has a major role in every facet of the security policy—foreign, military, and nuclear—regardless of whether the country has a military or an elected head of government.[90] The GHQ is both hugely overloaded and very narrowly advised. At the military level it is overburdened in having to deal directly with nine corps commanders without having intervening commanders in chief. In the foreign-policy field, it is incapable of factoring in adequate, expert advice. But it is at the nuclear level that its dominance is most dangerous. On the one hand its conventional and nuclear strategies are closely integrated, while on the other the nuclear strategy is inadequately tied to foreign-policy considerations and overall national objectives. As a consequence, military considerations, more than any other, are likely to drive its nuclear policy. Pakistan is therefore capable of crossing the nuclear barrier without examining adequately either the consequences of such action or the alternative courses of action that are available to it. Another danger is that the corps commanders in Pakistan are very powerful and it is in the Pakistani military tradition to delegate considerable authority to them.[91] It is conceivable that such delegation of authority could extend to nuclear weapons.[92]

It is quite likely that despite what its doctrine might say India would not respond massively to an essentially symbolic strike by Pakistan. Pakistan's surviving reserve capability will not make a massive strike logical at that stage. It could only lead to strategically purposeless mutual ruination. But it is quite possible that India's response strike would not be marginally plus but substantially plus. This is because India would want to bring the nuclear exchange to an immediate end. But such a heavy strike could well force Pakistan to respond with a similar

strike. At this point, weaknesses in damage assessment, alerting intelligence, command and control, and rational decision-making could all come into play in an extremely dangerous manner. The ability of the international community, including the United States, to influence decisions in Delhi and Islamabad (or rather in the ill-equipped national command posts where the leaders would have moved to) would be very little once the first nuclear weapon, of whatever yield, is exploded.

Conclusions

Post-1998, the operational nuclear arsenals of the two countries are expanding much faster than before. More dangerously, warheads are migrating from aircraft to ballistic missiles that are capable of hitting major cities in both countries. The survivability of both arsenals is going up, making preventive and preemptive attacks unattractive. The transition period risk is now largely behind. At the same time, both arsenals remain as opaque as they were before the tests. The arrangements for command and control as well as security and safety measures, while largely sufficient to meet peacetime demands, continue to be inadequate to meet the much higher demands that get generated during crises and hostilities. In fact the situation is likely to worsen as warhead and missile numbers increase and crisis deployments become more frequent.

Despite all the recent talk of India's coercive diplomacy, what is going on in Kashmir is two-way coercion which was actually started by Pakistan in 1989 when conditions favoring militancy came up in that state in parallel with the acquisition of nuclear weapons by the two countries. Coercion over Kashmir runs serious risks on two grounds. One, the state is hugely important to both countries even if it is only for symbolic reasons. There was no comparably critical territorial-cum-ideological stake for the nuclear adversaries of the Cold War. Two, the risks and consequences of nuclear escalation have not yet sunk into the collective minds of the two societies. Nuclear devastation still remains largely an abstract concept. As a result there is no effort to deal with the issue of nuclear-war risk independent of the Kashmir issue.

The escalation ladder now in place in the India-Pakistan context is a continuous one spanning sub-conventional, conventional, and nuclear zones. The risks originating in one zone can easily shift to the next. India is trying to erode the boundary between sub-conventional and conventional zones, and Pakistan that between conventional and nuclear zones. Neither attempt has succeeded yet. In fact, Pakistan's effort to manipulate the threat of nuclear war to gain protection for its activities in the sub-conventional zone and India's endeavor to manipulate the threat of conventional war by running risks in the nuclear zone are making both appear irresponsible in international eyes.

Nevertheless, both countries are likely to persist with the efforts to make their rival strategies prevail. The Kargil war was a Pakistani effort that failed signally. India's high-profile Operation Parakram was a countereffort, the success of which beyond the short term will be tied to how the global war on terrorism unfolds. It is likely that exploiting its superior resources India will now try to create a variety of conventional options to hurt Pakistan—options that would not run the nuclear risks that a loosely defined "limited war" well could. Pakistan's counter to this may be twofold. It might try to develop a range of low-end nuclear applications the use of which would not be seen internationally as disproportionate to a major

conventional attack by India. And it would try to create a heavy second-strike capability to prevent a massive Indian response to such nuclear initiation.

Pakistan might well be able to develop a nuclear strategy and a nuclear force structure that can deter a punishing conventional attack by India. But if India develops a strategy of low-profile, low-damage conventional strikes using extended-range artillery, rockets, and aircraft (in the manner the Soviets did along the Afghan-Pakistan border), Pakistan will find its nuclear capability ineffectual. International support in such a situation (where India is not threatening war) will be almost wholly with India. More to the point, the stress resulting from such frequent strikes will exacerbate Pakistan's already severe social, ethnic, and political tensions. It will not be able to pull out of the downward economic and social spiral it is currently stuck in. Of the four threats that Pakistan has identified as capable of invoking nuclear response,[93] only two—territorial loss and military destruction—have credibility. It is difficult to make nuclear escalation credible against the other two—economic strangulation and national destabilization. India might now focus on the latter two, and go for controlled military pressure across the LoC.

In the changed circumstances of the India-Pakistan conflict the United States, and to a degree the other Permanent Five members, have become important. Although it is not reflected in the public discourse, the four years that have passed since the 1998 tests have been a major learning period for the decision-makers of the two countries. The lessons from the 1999 Kargil war will now get reinforced and leavened by the lessons from Operation Parakram. Pakistan is beginning to comprehend much better the danger of a conventional war and India that of a nuclear one. Both are also starting to recognize their self-inflicted inability to deal with the situation bilaterally, much less unilaterally. There is potential now for a properly structured, low-key international initiative to make headway. The major difficulties facing such a venture are the persisting low level of U.S. interest in South Asia, the continuing misgivings about the U.S. within India's security community, and the considerable popular hostility there is towards the U.S. in Pakistan.

Finally, if the international community is to play a useful role in South Asia, an essential requirement is to come to terms with South Asia's nuclear arsenals. Keeping the programs of the two countries under wraps might be superficially seen as helping to uphold the NPT. But it is unlikely to prevent the two expanding their arsenals and moving towards deployment. Nor will it reduce the risk of nuclear leakage. What today's level of nuclear opacity will certainly do is prevent the evolution of any kind of genuine confidence and security building measures (CSBMs) between India and Pakistan. This is because there can be no CSBMs without discussing nuclear weapons. And without CSBMs the dangerous political tension between the two countries, fuelled by feelings of mutual vulnerability, cannot be mitigated. The time may have come to develop a new balance between the needs of war risk reduction and those of nonproliferation.

Notes

[1] The India-Pakistan Simla Agreement of July 2, 1972, not only converted the earlier "cease-fire line" into an inviolable "line of control," but also required the two countries to deal with their problems bilaterally.

[2] According to George Perkovich, in his *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: the University of California Press, 1999), pp. 294–295, in 1988 the Indian prime minister had "approved major steps—the preparation of ready-to-assemble devices, the number of such devices, movement of weapon components within the country." Raj Chengappa, in his *Weapons of Peace: The Secret Story of India's Quest to be a Nuclear Power* (New Delhi: HarperCollins, 2000), pp. 382–384, has stated, however, that the first realistic airdrop of an Indian nuclear bomb occurred only in May 1994. As for Pakistan, Perkovich has written, in his "What Makes the Indian Bomb Tick?" in D.R. SarDesai and Raju G.C. Thomas, eds., *Nuclear India in the Twenty-First Century* (New York: Palgrave-Macmillan, 2002), p. 37, that "[b]y the end of 1987 and the aftermath of the Brasstacks military crisis between India and Pakistan, Pakistan had all the components to assemble a nuclear weapon." According to General Mirza Aslam Beg, Pakistan had six nuclear devices by 1989 and fifteen by 1991 (Paolo Cotta-Ramusino and Maurizio Martellini, *Nuclear Safety, Nuclear Stability and Nuclear Strategy in Pakistan*, January 21, 2002 (available at http: //www.mi.infn.it/~landnet). The quasi-official Indian view, stated in *From Surprise to Reckoning: The Kargil Review Committee Report* (New Delhi: Sage, 2000), p. 241, is that Pakistan had acquired nuclear weapons by 1990.

[3] See Farah Zarah, "Pakistan's Elusive Search for Nuclear Parity with India," in *India's Nuclear Security*, eds. Raju G.C. Thomas and Amit Gupta (New Delhi: Vistaar, 2000), p. 154.

[4] See Thomas W. Robinson, "The Sino-Soviet Border Conflict," in *Diplomacy and Power: Soviet Armed Forces As a Political Instrument*, ed. Stephen S. Kaplan (Washington D.C.: Brookings, 1981).

[5] See Scott D. Sagan, "Perils of Proliferation in South Asia," *Asian Survey*, XLI: 6 (November/December 2001), pp. 1064–1086, and his earlier "Perils of Proliferation: Organization Theory, Deterrence Theory and the Spread of Nuclear Weapons," *International Security* 18:4 (Spring 1994). See also Lewis Dunn, *Containing Nuclear Proliferation*, Adelphi Paper 263 (London: IISS, 1991).

[6] For an educative optimist-pessimist argument on deterrence, with a special chapter on South Asia, see Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (forthcoming). For examples of deterrence optimism in South Asia, see David T. Hagerty, *The Consequences of Nuclear Proliferation* (Cambridge, Mass.: MIT Press, 1998); David J. Karl, "Proliferation Pessimism and Emerging Nuclear Powers," *International Security* 21:3 (Winter 1996/97); Brahma Chellaney, "Naivete and Hypocrisy: Why Anti-proliferation Zealotry Does Not Make Sense," *Security Studies* 4:4 (Summer 1995), pp. 779–86; and Darren C. Zook, "A Culture of Deterrence: Nuclear Myths and Cultural Chauvinism in South Asia," *World Policy Journal*, Spring 2000, pp. 39–46. For examples of pessimism see Michael Quinlan, "How Robust Is India-Pakistan Deterrence?" *Survival*, 42: 4 (Winter 2000–01); Francois Heisbourg, "The Prospects for Nuclear Stability between India and Pakistan," *Survival* 40: 4 (Winter 1998–99), pp. 77–92; Kanti Bajpai, "The Fallacy of an Indian Deterrent," in *India's Nuclear Deterrent: Pokhran II and Beyond*, ed. Amitabh Mattoo (New Delhi: Har-

Anand, 1999), pp. 150–88; the chapter "The Deterrence Delusion" in Praful Bidwai and Achin Vanaik, *South Asia on a Short Fuse: Nuclear Politics and the Future of Global Disarmament* (New Delhi: Oxford University Press, 1999), pp. 169–201; Samina Ahmed, "Security Dilemmas of Nuclear-armed Pakistan," *Third World Quarterly* (September 2000), pp. 781–93; and Zia Mia, ed., *Pakistan's Atomic Bomb and the Search for Security* (Lahore: Gautam Publishers, 1995).

[7] Pakistan-sponsored terrorist attacks in Kashmir registered a notable rise after the Kargil War.

[8] For the two countries' differing ideas on nuclear deterrence, see Gregory F. Giles and James E. Doyle, "Indian and Pakistani Views on Nuclear Deterrence," *Comparative Strategy*, 15 (April–June, 1996).

[9] See Sagan in Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed*.

[10] The two countries' strategic weapon system budgets are not known. During 1940–96, the U.S. spent $5,821 billion in 1996 dollars on its nuclear arsenal. Of this only 7 percent was spent on building the bomb, while ten times as much (70 percent) was spent on deploying, targeting, controlling and defending against the bomb. See Stephen I. Schwartz ed. *Atomic Audit: The costs and Consequences of U.S. Nuclear Weapons Since 1940* (Washington, D.C.: Brookings, 1998), Figure 1 preceding p. 1. If India and Pakistan have to incur spending at close to this proportion for the effectiveness, security and safety of their arsenals, then the financial burdens are going to be enormous.

[11] The concept was first articulated by Glenn Snyder in "The Balance of Power and the Balance of Terror" in *The Balance of Power*, ed. Paul Seabury (San Francisco: Chandler, 1965). For its application in the South Asian context, see Michael Krepon and Chris Gagne ed. *The Stability-Instability Paradox: Nuclear Weapons and Brinkmanship in South Asia*, Report 38 (Washington D.C.: Stimson Center, June 2001)

[12] It must be acknowledged however that there were some in Indian policy-making circles, especially in the nuclear establishment, who had doubted Pakistan's nuclear capability right till Pakistan tested. Some of them now insist that Pakistan does not have operational nuclear-armed missiles.

[13] General Sundarji had written in 1993, "Even if India were foolish enough to create a large conventional edge, it would be unusable for undoing Pakistan, because of the near certainty that Pakistan would then use its nuclear weapons *in extremis*." See General K. Sundarji, "India's Nuclear Weapons Policy" in *Nuclear Rivalry and International Order*, ed. Jorn Gjelstad and Olav Njolstad (London: Sage, 1996) pp. 173–203. Sundarji, as he has written elsewhere in the chapter, was only talking about India being deterred from 'undoing' Pakistan; not being deterred from conducting limited operations against it.

[14] See, for example, Waheguru Pal Singh Sidhu, "India's Nuclear Use Doctrine" in Peter R. Lavoy, Scott D. Sagan and James J. Wirtz, *Planning the Unthinkable* (Ithaca: Cornell University Press, 2000) pp. 132–34.

[15] Till it acquired nuclear weapons, Pakistan had been protecting its highly vulnerable nuclear facilities in Kahuta and elsewhere through conventional deterrence, not defense. Its high card had been the vulnerability of a big concentration of Indian nuclear assets, close to the economically central city of Mumbai, to Pakistani F-16s coming over the sea.

[16] The C-in-C of India's Western (Army) Command during Brasstacks has written, "Brasstacks was no military exercise. It was a plan to build up a situation for a fourth war with Pakistan." See P. N. Hoon, *Unmasking Secrets of Turbulence* (New Delhi; Manas, 2000) p. 102.

[17] On the use and limits of coercive diplomacy, see Alexander L. George and William E. Simons ed. *The Limits of Coercive Diplomacy*, 2nd ed. (Boulder, CO: Westview, 1994); Kenneth A. Lawrence, *Democracy and Coercive Diplomacy* (Cambridge: Cambridge University Press, 2001); Lawrence Freedman ed. *Strategic Coercion: Concepts and Cases* (New York: Oxford University Press, 1998); and Peter Viggo Jacobsen, *Western Use of Coercive Diplomacy after the Cold War: A Challenge for Theory and Practice* (Basingstoke: Macmillan, 1998).

[18] Then U.S. Deputy Secretary of State Strobe Talbott wrote in 1999, after eight rounds of post-tests talks with India and nine with Pakistan, "Having India and Pakistan stabilize their nuclear competition at the lowest possible level is both the starting point and the near-term objective of U.S. diplomatic effort…The Clinton administration does not expect either country to alter or constrain its defense programs simply because we have asked them to." ('Dealing with the Bomb in South Asia', *Foreign Affairs,* 78, March/April 1999, pp. 119–120)

[19] The best military accounts of the 1947–48 war from the Indian side are Lt. Gen. (Ret.) L. P. Sen, *Slender Was the Thread*: *Kashmir Confrontation. 1947–48* (New Delhi: Orient Longmans, 1969) and Maj. Gen. S.K. Sinha, *Operation Rescue: Military Operations in Jammu and Kashmir 1947–49* (New Delhi: Vision Books, 1977). A revealing account from Pakistan's side is Maj. Gen. Akbar Khan, *Raiders in Kashmir* (Karachi: Pak Publishers, 1970). A very good, balanced analysis of the 1965 war is Russell Brines, *The Indo-Pak Conflict* (London: Pall Mall Press, 1968). For a concise over view of India-Pakistan wars, see Sumit Ganguly, *Conflict Unending: India-Pakistan Tensions Since 1947* (New York: Columbia University Press, 2001)

[20] See Kanti Bajpai et al., *Brasstacks and Beyond: Perceptions and Management of Crisis in South Asia* (New Delhi: Manohar, 1996); Michael Krepon and Mishi Faruquee eds., *Conflict Prevention and Confidence Building Measures in South Asia: The 1990 Crisis*, Occasional Paper 17 (Washington D.C.: Stimson Center, 1994); Devin T. Hagerty, "Nuclear Deterrence in South Asia: The 1990 Indo-Pakistani Crisis," *International Security* 20 (Winter 1995–96); and Steve Fetter, "Nuclear Deterrence and the 1990 Indo-Pakistani Crisis," *International Security* 21 (Summer 1996).

[21] See Ashley J. Tellis, C. Christine Fair, Jamison Jo Medby, *Limited Conflicts under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis* (Santa Monica, CA: RAND, 2001); Ashok Krishna and P. R. Chari, eds., *Kargil: The Tables Turned* (New Delhi: Manohar, 2001); and *From Surprise to Reckoning: The Kargil Review Committee Report* (New Delhi: Sage, 2000). A new book, *Asymmetric Warfare in South Asia: Causes and Consequences of the Kargil Conflict*, edited by Peter R. Lavoy, Sumit Ganguly, and Surinder Rana, is expected.

[22] The terrorists did not strap themselves with explosives and set them off. But they carried out attacks that were unconstrained by escape plans and therefore extremely difficult to prevent or handle.

[23] An example of such views is "(T)he real problem between India and Pakistan is not the Kashmir issue or any other issue but the Pakistan army that drives Pakistan's foreign policy…The early marginalisation of Pakistan's army should be a major national priority." See Gurmeet Kanwal, *Strategic Analyses*, December 2000, p. 1620.

[24] In a top-secret directive, 4050/5/MO-1 dated August 29, 1965, Ayub Khan wrote to his commander in chief, General Musa, "As a general rule Hindu morale would not stand more

than a couple of hard blows delivered at the right time and place." See Stanley Wolpert, *Zulfi Bhutto of Pakistan: His Life and Times* (Oxford: Oxford University Press, 1993) p. 90. See also Altaf Gauhar's series of four articles "Four Wars, One Assumption" in *Nation* dated September 5 and 19 and October 17 and 31, 1999. Gauhar has written that the wars of 1947, 1965, 1971, and 1999 were launched by Pakistan "on the basis of the assumption that the Indians are too cowardly and ill organized to offer any effective military response." Also see Julian Schofield, "Militarized Decision-making for War in Pakistan: 1947–71," *Armed Forces and Society* 27:1 (Fall 2000).

[25] The 1985 Pressler amendment to the U.S. Foreign Assistance Act was specifically aimed at Pakistan and required the U.S. administration to certify annually that Pakistan was not making a nuclear bomb. Under the compulsions of the war in Afghanistan, the Reagan and Bush administrations certified so until 1990.

[26] For an idea of the difficulties encountered by Pakistan, see Ayesha Siddiqua-Agha, *Pakistan's Arms Procurement and Military Buildup 1979–99: In Search of a Policy* (Basingstoke, England: Palgrave, 2001).

[27] India's army strength is 1,100,000 against Pakistan's 550,000. Tank strengths are 3,414 and 2,300. Combat aircraft strengths are 738 and 353. India has 16 submarines and 27 major surface combatants against Pakistan's 7 and 8. See *The Military Balance 2001–02* (London: Oxford University Press for IISS, October 2001).

[28] For the broad operational parity that continues to exist in a short war, see Ashley Tellis, *Stability in South Asia, Documented Briefing for the U.S. Army* (Arroyo Center: RAND, 1997), pp. 13–25. Tellis has reiterated this view in his *India's Emerging Nuclear Posture: Between Recessed Deterrent and Ready Arsenal* (Santa Monica, CA: RAND, 2001), p. 742. See also Pravin Sawhney, *The Defense Makeover: 10 Myths that Shape India's Image* (New Delhi: Sage, 2002) pp. 174–176.

[29] This new thinking is little articulated because territory seizing is still seen as the criterion of victory. But it can be seen in views such as "The military aim could be to incapacitate or destroy as much standing military forces as possible. Capture of territory—the military aim of previous wars—is both unattainable and undesirable." (Pravin Sawhney, *The Defense Makeover*, pp. 177) and "India has therefore moved away from the 'Brasstacks' plan of bisecting Pakistan in the Sindh and threatening Islamabad with encirclement to a more modest objective of destroying as much of the Pakistani military as possible." (Sanjay Badri-Maharaj, "The Nuclear Battlefield: India vs. Pakistan," *Indian Defense Review*, April–June 1999, p. 84).

[30] The initiation of Pakistan's nuclear weapon program was at a meeting of scientists that Bhutto had organized in Multan on January 20, 1972. This was two years before India's 1974 test. In contrast to the voluminous documentation on India's nuclear program by both Indians and outsiders, there is very little writing on Pakistan's program. Two useful pieces are Shahid-ur-Rehman, *The Long Road to Chagai* (Islamabad: Printwise Publications, 1999) and Samina Ahmed, "Pakistan's Nuclear Weapons Program: Turning Points and Nuclear Choices," *International Security* 23:4 (Spring 2000), pp. 178–204.

[31] For example, on January 7 and June 7, 2000, MSNBC carried reports stating that Pakistan's nuclear capabilities were superior to India's.

[32] The ranges of weapon making capacities of India and Pakistan respectively have been variously estimated at 45–95 and 30–52 (David Albright, "India's and Pakistan's Fissile Material and Nuclear Inventories, End of 1999," Institute of Science and Security, October 11, 2000);

50–90 and 30–35 (Joseph Cirincione, *Deadly Arsenals: Tracking Weapons of Mass Destruction,* Carnegie Endowment for International Peace, June 2002); and 100 and 50 (T.S. Gopi Rethinaraj, "Nuclear Diplomacy Returns to South Asian Security Agenda," *Jane's Intelligence Review*, May 2002, pp. 40–43)

[33] Pakistan's estimate of warheads needed to achieve "credible minimum deterrence" against India is about 60–70. See, for example, Samar Mubarak-Mund's interview published in *Dawn*, June 3, 1998. Since India's "credible minimum deterrence" is aimed at both China and Pakistan, the estimates range from 60 of 125 KT (K. Subrahmanyam, "Nuclear Force Design and Minimum Deterrence Strategy for India," in *Future Imperiled: Indian Nuclear Strategy in the 1990s and Beyond*, ed. Bharat Karnad (New Delhi: Viking, 1994); 150 of 14–20 KT (K. Sundarji, "Imperatives of Indian Minimum Nuclear Deterrent," *Agni*, May 1996); 132 of 15–500 KT (Vijai K. Nair, "The Structure of an Indian Nuclear Deterrent," in *India's Nuclear Deterrent*, ed. Amitabh Mattoo, pp. 65–107); and 328 of up to 400 KT (Bharat Karnad, "A Thermonuclear Deterrent," in *India's Nuclear Deterrent*, ed. Amitabh Mattoo, pp. 108–149).

[34] For assessments of India's and Pakistan's ballistic missile capabilities, see Ben Sheppard, "Ballistic Missiles: Complicating the Nuclear Quagmire," in *Nuclear India in the Twenty-First Century*, ed. D.R. SarDesai and Raju G.C. Thomas, pp. 189–209; Joseph Cirincione, *Deadly Arsenals: Tracking Weapons of Mass Destruction;* Andrew Koch, "India and Pakistan: Nuclear arms race gets off to a slow start," *Jane's Intelligence Review*, January 2001, pp. 36–40; and Duncan Lennox, "Co-operation boosts missile proliferation," *Jane's Intelligence Review*, January 2002, pp. 39–41.

[35] See "...Beijing has not lived up to its November 2000 pledge not to assist the Pakistani missile program 'in any way' despite two meetings in China between Presidents Bush and Jiang...," in "When Policy Priorities Converge: U.S. Relations with India and Pakistan," Lee Feinstein et al., eds., *A New Equation: U.S. Policy Toward India and Pakistan after September 11* (No. 27, Global Policy Program, Carnegie Endowment, May 2002).

[36] Intended to ensure that non-programmed conventional explosion does not trigger nuclear fission.

[37] Even if the U.S. offers PAL technology it would be difficult for either country to accept it because of fears of surreptitious tracking technology being incorporated.

[38] Lt. Gen. Khalid Kidwai, Director General of Pakistan's Strategic Plans Division, has been quoted on this in Paolo Cotta-Ramusino and Maurizio Martellini, *Nuclear Safety, Nuclear Stability, and Nuclear Strategy in Pakistan*.

[39] It is possible that India might go in for submarine-launched nuclear-tipped cruise missiles. If warheads can be miniaturized to 200 Kg, then the land-attack Klub 3M-14E (India already has the 3M-54E variant) and the Yakhont derived Bra-Mos missile (under joint Russia-India development) can be used from nuclear-powered submarines that India could get from Russia, in advance of its own SSGN being commissioned. Both Klub and Bra-Mos have air-launched variants which can be used from long-range bombers like Tu-28 which too India can get. But such a nuclear operations plan, even if Russia agrees to it, will encounter huge opposition from the U.S. In this regard see also T.S. Gopi Rethinaraj and Clifford Singer, "Going global: India aims for a credible nuclear doctrine," *Jane's Intelligence Review*, February 2001, pp. 48–52.

[40] It is reported that Pakistan moved its nuclear weapons to six new secret locations in early November 2001 or earlier—at least a month before the terrorist attack on the Indian Parlia-

ment and the resultant Indian mobilization. ("Pakistan Moves Nuclear Weapons," *Washington Post*, November 11, 2001). The only threat to Pakistan's weapons at that time was from the U.S.—on account of Taliban/al Qaeda fears. There were reports of U.S. and Israeli special forces training together for this purpose. See Seymour M. Hersh, "Watching the Warheads: The Risks of Pakistan's Nuclear Arsenal," *New Yorker*, November 5, 2001.

[41] This is a theoretical conclusion. In practice it is quite possible that if assets are moved frequently, the chances of the hides getting to be known may actually go up.

[42] India's Draft Nuclear Doctrine has called for the "assured capability to shift from peacetime deployment to fully employable forces in the shortest possible time" (Clause 3.2). Jasjit Singh, one of the contributors to the doctrine, considers that India needs the capability "to launch a nuclear retaliatory strike within a very short time, say 30 minutes, if the forces are already on a degree of alert, following a certain amount of tension or precautionary measures. If not, then within a maximum of one to two hours." See "Nuclear Command and Control," *Strategic Analysis* XXV:2 (May 2001), p. 149.

[43] For the command and control challenges facing India, see Raja Menon, *A Nuclear Strategy for India*, pp. 235–283; Kapil Kak, "Command and Control of Small Nuclear Arsenals," in *Nuclear India*, ed. Jasjit Singh; and Gurmeet Kanwal, "Command and Control of Nuclear Weapons in India, *Strategic Analysis* 23:10 (January 2000). For Pakistan, see Agha Shahi, "Command and Control of Nuclear Weapons in South Asia" and Tanvir Ahmad Khan, "Command and Control: Pakistani Perspective," both in *Strategic Issues*, Special Issue: The Nuclear Debate, no. 3, March 2000. For outsider views, see Shaun Gregory, "A Formidable Challenge: Nuclear Command and Control in South Asia," *Disarmament Diplomacy* 54, February 2001; Clayton P. Bowen and Danil Wolven, "Command and Control Challenges in South Asia," *The Nonproliferation Review*, Spring/Summer 1999, pp. 25–35; and Peter D. Feaver, "Command and Control in Emerging Nuclear Nations," *International Security* 17:3 (Winter 1992/93).

[44] This assumes that India's nuclear operations will be based on its declared doctrinal position. This may not be so, for as former U.S. defense secretary James Schlesinger noted in 1974 before a Senate committee, "Doctrines control the minds of men only in periods of non-emergency" (quoted in Ashley Tellis, *India's Emerging Nuclear Posture*, p. 362).

[45] Nuclear arsenals have to be continuously "operated" even during peacetime.

[46] If adequate intelligence is available, the adversary or a third party striking with conventional forces can prevent even first use because of the "soft" physical condition of both arsenals.

[47] For the concept of "non-weaponized deterrence," see George Perkovich, "A Nuclear Third Way in South Asia," *Foreign Policy* 91 (Summer 1993). For the similar concept of "recessed deterrence," see Jasjit Singh, "Prospects for Nuclear Proliferation," in Serge Sur, ed., *Nuclear Deterrents: Problems and Prospects in the 1990s* (New York: United Nations, 1993).

[48] Ashley Tellis, *India's Emerging Nuclear Posture*, p. 724.

[49] See for example Gaurav Rajen and Kent Biringer, "Nuclear Related Agreements and Cooperation in South Asia," *Disarmament Diplomacy* 55 (March 2001).

[50] Useful pieces include Zafar Iqbal Cheema, "Pakistan's Nuclear Use Doctrine and Command and Control," in *Planning the Unthinkable: How the New Powers Will Use Nuclear, Biological, and Chemical Weapons*, ed. Peter R. Lavoy, Scott D. Sagan, and James J. Wirtz (Ithaca: Cornell University Press, 2000), pp. 158–181; Rodney W. Jones, "Pakistan's Nuclear Posture: Quest for Assured Nuclear Deterrence—A Conjecture," *Regional Studies* 18:2 (Spring 2000)

pp. 3–39; General Mirza Aslam Beg, "Pakistan's Nuclear Program: A National Security Perspective," in *Nuclear Rivalry and International Order*, ed. Jorn Gjelstad and Olav Njolstad, pp. 159–172; Aga Shahi, Zulfiqar Ali Khan, and Abdul Sattar, "Securing Nuclear Peace," *Dawn*, October 5, 1999; three earlier articles by the same authors, Abdul Sattar, "Nuclear Stability in South Asia," Air Chief Marshal (Ret.) Zulfiqar Ali Khan, " Pakistan's Security and Nuclear Option," and Agha Shahi, "Preservation of Deterrence for Security"—all in *Nuclear Issues in South Asia* (Islamabad: Islamabad Council of World Affairs, 1995); Lt. Gen. (Ret.) Sardar F.S. Lodhi, "Pakistan's Nuclear Doctrine," *Defense Journal*, April 1999; and Brig. (Ret.) Saeed Ismat, "A Conceptual Nuclear Doctrine," *Defense Journal*, March 2000.

[51] The first serious piece examining India's nuclear option in the wake of the 1964 Chinese test was D. Som Dutt, *India and the Bomb*, Adelphi Paper 30 (London: IISS, 1966). The case for a possible Indian bomb was first made in K. Subrahmanyam, "Options for India," *Institute for Defense Studies and Analyses Journal* 3 (1970). The first serious study of a nuclear strategy for India was Lt. Gen. K. Sundarji, "Strategy in the Age of Nuclear Deterrence and Its Application to Developing Countries" (Unpublished monograph, Simla, June 21, 1984). The most comprehensive examination of the nuclear issue in the 1980s is K. Subrahmanyam, ed., *India and the Nuclear Challenge* (New Delhi: Lancer, 1986). In 1992–93 Sundarji developed the nuclear path that still largely guides India's nuclear strategy in practice. See his "Nuclear Deterrence Doctrine for India, Part 1," *Trishul* 5:2 (December 1992) and "Nuclear Deterrence Doctrine for India, Part 2," *Trishul* 6:3 (July 1993). Another informative piece of this period is K. Subrahmanyam, "Nuclear Force Design and Minimum Deterrence Strategy for India," in Bharat Karnad, ed., *Future Imperiled* (New Delhi: Viking, 1994). For some incisive post-1998 tests writings see Rear Admiral Raja Menon, *A Nuclear Strategy for India* (New Delhi: Sage, 2000); K. Subrahmanyam, "India's Security Perspective," in P. R. Chari, ed., *India Towards Millennium* (New Delhi: Manohar, 1998); Jasjit Singh, "A Nuclear Strategy for India," in Jasjit Singh, ed., *Nuclear India* (New Delhi: Knowledge World, 1998); Vijai K. Nair, "The Structure of an Indian Nuclear Deterrent," in Amitabh Mattoo, ed., *India's Nuclear Deterrent: Pokhran II and Beyond*; Gurmeet Kanwal, *Nuclear Defense: Shaping the Arsenal* (New Delhi, 2002); and Bharat Karnad, *Nuclear Weapons and Indian Security: The Realist Foundations of Strategy* (New Delhi: Macmillan, 2002).

[52] This difficulty is typified by the Draft Nuclear Doctrine (DND) prepared by the NSAB and released on August 17, 1999 in the wake of the Kargil war. The government has not approved it even after nearly three years, but it continues to get quoted as reflecting official Indian views. This suits the government because the DND in many ways is a wish list and not a plan for action, at least in the short to medium term. This is obvious from DND statements such as "a triad of aircraft, mobile land-based missiles, and sea-based assets" shall be created (clause 3.1), the Indian nuclear forces "shall be designed and deployed to ensure survival against a first strike and to endure repetitive attrition attempts" (clause 4.1), that there shall be "an integrated operational plan or a series of sequential plans predicated on strategic objectives" (clause 5.2), that Indian " forces shall be in a position to execute operations in an NBC environment with minimal degradation" (clause 5.5), and that "space-based and other assets shall be created to provide early warning, communications, damage/detonation assessment" (clause 5.6).

[53] If India cranks up its defense spending, it is not difficult to visualize a situation five years from now when India will be able to defeat Pakistan decisively in a conventional war in under two weeks.

[54] This is based on the fact that Pakistan's population is only one-seventh India's, and the weight of a full-scale Indian strike is likely to be at least one-and-a-half times that of Pakistan's.

[55] Indian defense minister Fernandes had said, "We could take a strike, survive and then hit back, Pakistan would be finished." (*The Hindu*, December 30, 2001)

[56] See Thomas C. Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966), chapters 1–3, and Paul Nitze, "Atoms, Strategy and Policy," *Foreign Affairs*, January 1956. See also Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington D.C.: Brookings, 1987).

[57] The Prime Minister has stated so in parliament. The Draft Nuclear Doctrine's position, however, is that "no first use" will only apply to non-nuclear powers, and that too to those who are not aligned with nuclear powers.

[58] The Draft Nuclear Doctrine states "any nuclear attack on India and its forces shall result in punitive retaliation with nuclear weapons" (clause 2.3). This position with regard to "forces" has been reiterated by Defense Minister Fernandes ("Military Option if Diplomacy Fails," *The Hindu*, January 3, 2002) and Army Chief General Padmanabhan ("Army Ready for War, Says Chief," *The Statesmen*, January12, 2002).

[59] Lt. Gen. Khalid Kidwai, Director General of Pakistan's Strategic Plans Division, has been quoted on this. See Paolo Cotta-Ramusino and Maurizio Martellini, *Nuclear Safety, Nuclear Stability and Nuclear Strategy in Pakistan*.

[60] Stephen P. Cohen, writing before the nuclear tests, stated that Pakistan has developed a five-step nuclear escalation ladder. The first two steps (private warnings and demonstration explosion) are no longer relevant since Pakistan has now displayed its nuclear capability. The remaining three steps according to Cohen are "a few nuclear weapons on Pakistan's own soil, against Indian attacking forces," followed by attacks "against critical but purely military targets in India across the border from Pakistan, thinly populated areas which are 'desert or semi-desert' with little infrastructure," and finally (in response to an Indian counter-value strike) the use of "some of Pakistan's nuclear weapons [that] could be held in reserve for the counter value role." See Stephen P. Cohen, *The Pakistan Army, 1998 Edition* (Karachi: Oxford University Press, 1998), pp. 177–78.

[61] Zafar Nawaz Jaspal, "Reassessing Pakistan's Nuclear Strategy," *Defense Journal*, July 2001.

[62] Lt. Gen. S.M. Amjad was appointed to head the SFC. See Shahid Ahmed Khan, "Top Pak Commander Forced to Retire," *The Asian Age*, October 10, 1999.

[63] The KRL is currently under a cloud because of the Taliban/al Qaeda connections of some of its staff, but the organization has an important continuing operational role at least in the case of the Ghauri IRBM, Pakistan's longest-range missile.

[64] Senior military leaders, until then quite peripheral except during crises and wars, began to play a growing role in national security and defense planning fields when Prime Minister Rajiv Gandhi appointed Arun Singh as the de facto defense minister in 1985. After the BJP-led government came to power in 1998, the service chiefs are invariably present when the CCS is discussing strategic issues. This was not the case during the long years of Congress party rule. The CCS is largely a forum for discussing short-term issues. Longer-range issues are expected to be considered by the NSC and its advisory bodies, the SPG and the NSAB. The NSC and the SPG have been largely dormant. The non-official NSAB, after a burst of media prominence following its creation in parallel with the nuclear tests, is now quieter.

[65] For an explanation of why effective Indian nuclear forces cannot be created as an extension of AEC and DRDO, see Verghese Koithara, *Society, State and Security: The Indian Experience* (New Delhi: Sage, 1999), pp. 345–50.

[66] It is possible that there is some opposition from the AEC and the DRDO as well, as their current primacy in the nuclear deterrence field will get reduced if a CDS and an SFC are in position.

[67] For arguments on who should control India's missiles, see Jasjit Singh, "Nuclear Command and Control," *Strategic Analysis*, May 2001, pp. 147–159, in favor of the air force, and Gurmeet Kanwal, "Command and Control of Nuclear Weapons in India," *Strategic Analysis*, January 2000, pp. 1707–31, in favor of the army.

[68] "For a long time (and in the shorter period of the next five–six years, the only) delivery system for nuclear weapons operationally available would be strike aircraft." Jasjit Singh, "Nuclear Command and Control," *Strategic Analysis*, May 2001, p. 156.

[69] The Chief of Integrated Staff is a halfway house created in 2001 between the Director General, Defense Planning Staff set up in 1986, and the Vice Chief of the Defense Staff recommended to be created with the Chief of the Defense Staff.

[70] See Ashton B. Carter, John D. Steinbruner, and Charles A. Zracket, *Managing Nuclear Operations* (Washington D.C.: Brookings, 1987).

[71] See for example Neil Joeck, *Maintaining Nuclear Stability in South Asia*, Adelphi Paper 312 (Oxford: Oxford University Press for IISS, 1997).

[72] For the inadvertent nuclear risks facing small nuclear powers, see Hakan Wiberg, Ib Damgaard Petersen, and Paul Smoker, eds., *Inadvertent Nuclear War: Implications of the Changing Global Order* (Oxford: Pergamon, 1993).

[73] For the dangers present in this area, although largely in the Cold War setting, see Scott D. Sagan, *The Limits of Safety: Organizations, Accidents and Nuclear Weapons* (Princeton, N.J.: Princeton University Press, 1993) and Bruce G. Blair, *The Logic of Accidental War* (Washington D.C.: Brookings, 1993).

[74] "India's and Pakistan's invulnerable nuclear capabilities make it unlikely that either would plan a pre-emptive strike," Neil Joeck, *Maintaining Nuclear Stability in South Asia*, p. 56. It is also noteworthy that not a single mobile Scud launcher could be destroyed during the Gulf War, according to Mark Hiller of Johns Hopkins University quoted in Stewart M. Powell, "Scud War, Round Three," *Air Force Magazine*, October 1992, p. 33.

[75] For inadvertent war risks see Barry P. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, N.Y.: Cornell University Press, 1999); Robert Jervis, *The Meaning of Nuclear Revolution: Statecraft and the Prospect of Nuclear Armageddon* (Ithaca, N.Y.: Cornell University Press, 1989); and Richard Smoke, *Controlling Escalation* (Cambridge, MA: Harvard University Press, 1977).

[76] See Timothy D. Hoyt, "Pakistan's Nuclear Doctrine and the Dangers of Strategic Myopia," *Asian Survey* XLI: 6 (November/December 2001), pp. 1064–86; Ahmed Faruqui, "Pakistan's Strategic Myopia," *RUSI Journal*, April 2000; Altaf Gauhar, "Four Wars, One Assumption"; and Julian Schofield, "Militarized Decision-making for War in Pakistan: 1947–71."

[77] "[During the Kargil War] Indian and Pakistani officials and leaders exchanged direct or indirect nuclear threats no fewer than thirteen times between May 26 and June 30," Praful

Bidwai, "India-Pakistan: Kargil Raises Risks of Nuclearisation," Inter Press Service, New Delhi, July 27, 1999.

[78] During Operation Parakram, highly regarded K. Subrahmanyam wrote several articles assuring Indians that the U.S. would prevent Pakistan from using its nuclear weapons. See for example his "Containing Pakistan," *Times of India*, December 31, 2001, and "Indo-Pakistan Nuclear Conflict Unlikely," *Times of India*, January 2, 2002.

[79] Dawn, January 13 and May 28, 2002.

[80] The BJP, which heads the Indian government, is in near-total control of the country's foreign, defense, and domestic security policies. The party's longstanding policy is to eliminate, not enlarge, the autonomy of Jammu and Kashmir—the only way there can be any hope of bringing peace to that state.

[81] For example India might well use South African velocity-enhanced VLAP 155 mm ordnance with a range of 50 km. Or it could use Russian 155/152mm rocket-assisted projectiles with a range of 40 km. Much more hurting would be the use of the Russian 9K58 Smerch MBRL system using 300 mm rockets with a range of 70 km.

[82] See the speeches of Defense Minister George Fernandes and Army Chief General V.P. Malik at the seminar "Challenges of Limited War: Parameters and Options," organized by the Institute for Defense Studies and Analyses, six months after the Kargil war (*The Hindu*, January 6, 1999).

[83] See Jasjit Singh, "Dynamics of Limited War," *Strategic Analysis*, October 2000, pp. 1205–20, and V.R. Raghavan, "Limited War and Nuclear Escalation in South Asia," *The Nonproliferation Review*, Fall–Winter 2001, pp. 82–98. For a general appreciation of the limited war concept, see Christopher M. Gacek, *The Logic of Force: The Dilemma of Limited War in American Policy* (New York: Columbia University Press, 1994) and Robert E. Osgood, *Limited War Revisited* (Boulder, Colo.: Westview, 1979).

[84] Lt. Gen. Satish Nambiar has suggested that India's "operational plans should be focused on the Pakistani province of Punjab. Pakistan must be punished there, for Punjab is its center of gravity." See "Beyond Kargil," *Journal of the United Service Institution of India*, July–September 1999, p. 335. Contrast this with the view of another prominent commentator, Lt. Gen. V.R. Raghavan, that if the Punjabi heartland of Pakistan is threatened "an escalation from a conventional war to a nuclear war, within one or two days of the outbreak of war, is not implausible." See V.R. Raghavan, "Limited War and Nuclear Escalation in South Asia," *The Nonproliferation Review*, p. 92.

[85] See for example Rahul Bedi, "The Military Dynamics," *Frontline*, June 8–12, 2002.

[86] For the differences between defensive realism and offensive (aggressive) realism, see Jack Snyder, *Myths of Empire: Domestic Politics and International Ambition* (Ithaca, N.Y.: Cornell University Press, 1991). For the difficulties that can emanate from making one's adversary insecure through aggressive realism, see Charles L. Glaser, "The Security Dilemma Revisited," *World Politics* 50:1 (October 1997), pp. 171–201.

[87] The BJP is extraordinarily burdened by history. To understand the BJP's policies, therefore, it is necessary to examine them not only through the lens of realism, but also through that of constructivism. See Alexander Wendt, *Social Theory of International Politics* (Cambridge: Cambridge University Press, 1999).

[88] In bilateral military terms, India is very capable of enforcing such a blockade. But obviously it would not be possible to enforce one without international support, which is unlikely to be forthcoming in most circumstances.

[89] For the concept of saliencies in relation to escalation, see Richard Smoke, *Controlling Escalation*.

[90] During the Kargil war the Pakistan army is reported to have alerted its nuclear forces without the Prime Minister's knowledge. See Bruce Riedel, "American Diplomacy and the 1999 Kargil Summit at the Blair House," Center for Advanced Study of India, University of Pennsylvania, Policy Paper Series, 2002.

[91] An example of this is the report that the entire Kargil operation was planned, and also executed in the initial stages, by 10 Corps Hqrs of the Pakistan Army with only very few in the know in the GHQ. See Shaukat Qadir, "An Analysis of the Kargil Conflict 1999," *RUSI Journal* 147:2 (April 2002).

[92] "Delegation of authority to use the nuclear option would therefore be essential. It may eventually be given to the commander of forces in the field under specified circumstances..." Lt. Gen. (Ret.) Sardar F.S. Lodi, "Pakistan's Nuclear Doctrine," *Defence Journal*, April 1999.

[93] Lt. Gen. Khalid Kidwai quoted in Paolo Cotta-Ramusino and Maurizio Martellini, *Nuclear Safety, Nuclear Stability and Nuclear Strategy in Pakistan*.