PAKISTAN'S NUCLEAR STRATEGY AND DETERRENCE STABILITY

By

Michael Krepon

This essay is highly conjectural. The guardians of Pakistan's nuclear arsenal are trained to keep secrets. They publicize few details of their nuclear programs. The analysis below is therefore based on a limited public record, inferences, and twenty years of visiting Pakistan and following Pakistan's nuclear program. The essay begins with a brief recapitulation of what most Pakistanis view as a success story, and how, over time, Pakistan's military has gained control over Pakistan's nuclear weapon-related programs. I next turn to some of the ramifications of this success story, particularly how difficult it has become to alter the current growth trajectory of Pakistan's nuclear arsenal. Next, I discuss four main pillars of Pakistan's nuclear doctrine, after which I offer speculation about Pakistan's nuclear targeting. I then turn to the small circle of individuals who decide Pakistan's stockpile requirements, and end with a discussion of the implications of my analysis for deterrence stability on the subcontinent.[1]

A Rare Success Story

Most Pakistanis proudly view their nuclear weapon programs as a rare success story. Their country is beset by many problems.[2] Economic growth lags behind

[1] The author wishes to thank Stephen Cohen, Toby Dalton, Gregory Jones, Dan Markey, Polly Nayak, George Perkovich, David Smith, Bruno Tertrais and others who shall remain nameless for their comments and editorial suggestions. The author also wishes to thank Nate Cohn, Julia Thompson, and Drew Stommes for their assistance. Any remaining errors or weakness in analysis are the sole responsibility of the author.

[2] For recent assessments, see, for example, Maleeha Lodhi, ed., *Pakistan: Beyond the "Crisis State"* (New York: Columbia University Press, 2011); Pamela Constable. *Playing with Fire: Pakistan at War with Itself* (New York: Random House, 2011); John R. Schmidt, *The Unraveling: Pakistan in the Age of Jihad* (New York: Farrar, Straus & Giroux, 2011); Ahmed Rashid, *Pakistan on the Brink: The Future of America, Pakistan, and Afghanistan* (New York: Viking, 2012); Bruce O. Riedel, *Deadly Embrace: Pakistan, America and the Future of the Global Jihad* (Washington: Brookings Institution Press, 2012); Irfan Husain, *Fatal Faultlines: Pakistan, Islam and the West* (Rockville, MD: Arc Manor, 2011); Imtiaz Gul, *The Most Dangerous Place: Pakistan's Lawless Frontier* (New York: Penguin, 2011); James P. Farwell, *The Pakistan Cauldron: Conspiracy, Assassination & Instability* (Dulles, VA: Potomac Books, Inc., 2011); Zahid Hussain, *The Scorpion's Tail: The Relentless Rise of Islamic Militants in Pakistan – And How It Threatens America* (New York: Free Press, 2010);

population growth. Pakistan's relations with two of its neighbors – India and Afghanistan – are strained, and a third border, with Iran, marks the Sunni-Shia divide within Islam. Domestic social services are in decline. Governance is widely conceded to be poor at both the national and provincial level. Many extremist groups have found shelter in Pakistan. Some fight the military, others have colluded with it. Over the past five years, Pakistan ranks second (only to Iraq) in the incidence of mass-casualty deaths due to sectarian and politically-inspired domestic violence.[3]

Amidst these indicators of national decline – and in the face of concerted efforts by the United States and other nations to prevent Pakistan from crossing key production thresholds - Pakistan now possesses a considerable and growing nuclear arsenal, which is publicly estimated to include perhaps 90-110 weapons.[4] It is hard to identify another governmental or military enterprise in contemporary Pakistan that has been more successful in identifying goals and implementing them than Pakistan's nuclear weapon-related programs. Most Pakistanis who bemoan the problems they face in everyday life feel pride in the accomplishments of testing and producing nuclear weapons. They begrudge governmental corruption and incompetence, but not money spent on the Bomb.

Pakistan's serious pursuit of nuclear weapons began with Zulfikar Ali Bhutto, who famously declared in 1965 - well before taking charge of the country and the program - that his compatriots would "eat grass" and suffer other deprivations in order to possess nuclear weapons. This priority became more focused after the 1971 war with India that resulted in Pakistan's grave humiliation, vivisection, and Bhutto's ascendancy as President, and subsequently, as Prime Minister. Ghulam Ishaq Khan, a powerful political figure who became President of Pakistan from 1988 to 1993, provided continuity of oversight over the nuclear program after Bhutto's demise and during a period of revolving Prime Ministers. As with other nuclear programs in other

---

Rohan Gunaratna and Khuram Iqbal, *Pakistan: Terrorism Ground Zero* (London: Reaktion Books, 2011); and Stephen Philip Cohen, *The Future of Pakistan* (Washington: Brookings Institution Press, 2011).

[3] See Nathan Cohn, "Mass-Casualty Attacks in Pakistan, Appendix IV," in Michael Krepon and Nathan Cohn, eds., *Crises in South Asia: Trends and Potential Consequences* (Washington: The Henry L. Stimson Center, 2011), pp. 71-92.

[4] Karen DeYoung, "New Estimates Put Pakistan's Nuclear Arsenal at More Than 100," *Washington Post*, January 31, 2011, < http://www.washingtonpost.com/wp-dyn/content/article/2011/01/30/AR2011013004136.html>; Robert Norris and Hans Kristensen, "Nuclear Notebook: Pakistan's Nuclear Forces, 2011," *Bulletin of the Atomic Scientists*, July/August 2011, pp. 91-99; Paul K. Kerr and Mary Beth Nikitin, "Pakistan's Nuclear Weapons: Proliferation and Security Issues," Congressional Research Service, May 10, 2010, <http://www.fas.org/sgp/crs/nuke/RL34248.pdf>.

countries, "first generation" scientists in defense establishments also played key roles in nuclear development programs, most notably Munir Khan and Samar Mubarakmand of Pakistan's Atomic Energy Commission and A.Q. Khan of the Khan Research Laboratories.

The transfer of Pakistan's nuclear weapon-related programs to military control was realized in stages, beginning with the imprisonment in 1977 and subsequent execution of Zulfikar Ali Bhutto by General Zia ul-Haq. Military supremacy in all military-related nuclear matters was reaffirmed after Ghulam Ishaq Khan's forced resignation from the Presidency in 1993, and was consolidated further when, in February, 2000, then-Chief Executive and Chief of Army Staff, Gen. Pervez Musharraf, implemented plans for a directorate to focus on operational issues - the Strategic Plans Division (SPD) at Joint Staff Headquarters - that the recently deposed Prime Minister Nawaz Sharif had dawdled over.[5]

Operationalizing Pakistan's nuclear deterrent meant placing it even more firmly in military hands. Military control was progressively strengthened with the death or retirement of critically important scientists and civilian political leaders involved in Pakistan's nuclear programs, as well as the revelations of A.Q. Khan's nuclear commerce and lax security procedures at the laboratories that bear his name, after which the SPD assumed responsibility for security at sensitive production sites.[6]

---

[5] For a revealing history of Pakistan's nuclear-related programs, see Feroz Hassan Khan, *Eating Grass: The Making of the Pakistani Bomb*, (Palo Alto, CA: Stanford University Press, 2012). Also see Naeem Salek, *The Genesis of South Asian Nuclear Deterrent: A Pakistani Perspective* (Oxford: Oxford University Press, 2009), pp. 234-239; Feroz Hassan Khan and Peter R. Lavoy, "Pakistan: The Dilemma of Nuclear deterrence," in Muthiah Alagappa, ed., *The Long Shadow: Nuclear Weapons and Security in 21st Century Asia* (Palo Alto, CA.: Stanford University Press, 2008), pp. 215-240; Vipin Narang, "Posturing for Peace? Pakistan's Nuclear Postures and South Asian Stability," *International Security*, Vol. 34, No. 3 (Winter 2009/10), pp. 38-78; Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements," in Henry D. Sokolski (ed.), *Pakistan's Nuclear Future: Worries Beyond War,* pp. 87-129; and Bruno tertrais, "Pakistan's nuclear programme: a net assessment, Fondation por la Recherche Stratégique, recherches & documents, no. 04/2012, June 13, 2012.

[6] There are several assessments of A.Q. Khan's dealings, and whether they were sanctioned by civilian and military leaders. His "confession" to military de-briefers, later recanted, can be found at http://www.foxnews.com/world/2011/09/15/aq-khans-thirteen-page-confession/#ixzz1YR3rK6Ud. Also see Mark Fitzpatrick, ed., *Nuclear Black Markets: Pakistan, A.Q. Khan and the rise of proliferation networks* (London: International Institute for Strategic Studies, 2007); David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies* (New York: Free Press, 2010); Bruno Tertrais, "Khan's Nuclear Exports: Was There a State Strategy?" in Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries Beyond War* (Carlisle, PA: Strategic Studies Institute, 2008), pp. 13-57; and Gordon Corera. *Shopping for Bombs: Nuclear Proliferation, Global Insecurity, and the Rise and Fall of the A.Q. Khan Network.* (New York: Oxford University Press, 2006).

Scientists still play critical roles in development programs, and civilians are included in, and nominally sit atop the National Command Authority (NCA) that oversees crucial nuclear decision-making, but there can be little doubt that real decision-making authority lies with men in uniform and one retired military officer.

Ramifications of Success

Pakistan's national security decisions are usually choreographed between senior active duty military officers in Rawalpindi and government officials in Islamabad. If military leaders feel strongly about a particular policy or initiative, they can usually count on the consent of government officials. Conversely, if political leaders do not have military support, their favored initiatives are likely to fail. Consequently, there is little daylight between Rawalpindi and Islamabad with respect to nuclear weapons. While outsiders see nuclear weapon programs as a drain on resources for domestic needs, as excessive to presumed requirements of minimal deterrence, and as susceptible to diversion and tragic events, most Pakistanis perceive these programs as providing essential capabilities at acceptable cost and at a small fraction of the size of the US arsenal. They view harsh external critics as being guilty of hypocrisy, the warnings of outsiders as being alarmist, and as serving hidden agendas to target or disable Pakistan's deterrent.

Pakistan's stockpile is likely to grow as long as key constituencies within the country view their nuclear programs as a success story, domestic critics can be easily dismissed, relations with India remain contentious, and the sense of Pakistan's international isolation grows. Perceived nuclear requirements could be revised downward as a result of the advent of new Pakistani leaders with unconventional views about nuclear weapons, improved relations with India that have significant domestic backing, severe economic perturbations within Pakistan, and/or a perception-shattering event that causes nuclear advocates to re-think their assumptions.

India's nuclear stockpile, like that of Pakistan, has approximately doubled over the last decade to perhaps 80-100 warheads.[7] The pace of New Delhi's efforts has seemed satisfactory to Indian political leaders who have viewed nuclear weapons as political, message-sending instruments, rather than as weapons to carry out war plans. The ambivalent Indian approach to nuclear weapons was been well-chronicled and is

[7] Robert Norris and Hans Kristensen, "Nuclear Notebook: Indian Nuclear Forces, 2012," *Bulletin of the Atomic Scientists*, July/August 2012 vol. 68 no. 4 **96-101** http://bos.sagepub.com/content/68/4/96.full

deeply rooted.[8] Pakistan's programs, unlike India's, are controlled by military officers who view nuclear weapons as military, as well as political, instruments. As Feroz Khan has noted,

> Pakistani leaders also believe that nuclear weapons have to be configured for war-fighting roles if only to retain their deterrent value. Pakistan therefore has developed and deploys nuclear forces separate from its conventional forces, but has integrated war plans which include targeting policies for conventional and nuclear weapons.[9]

Indian elites resent being compared to Pakistan because, by almost every indicator, Pakistan is receding in India's rear-view mirror. This is not true with respect to Pakistan's nuclear weapon-related accomplishments. If reports are true that Pakistan is leading India in warhead numbers and operationally-ready missiles, and if the stewards of Pakistan's nuclear arsenal continue along current programming trajectories, New Delhi is likely to accelerate stockpile growth and hasten the transfer of missile programs from the Defense Research and Development Organization (DRDO) to the military services. India certainly has the nuclear infrastructure to compete successfully with Pakistan, which is one of the reasons why the stewards of Pakistan's nuclear arsenal strive so hard. Still, the tempos of making and implementing decisions in New Delhi are not easily accelerated.[10]

Pakistani government officials and senior military officers initially asserted that they would not repeat the Soviet Union's mistake by engaging in, or being bankrupted by, an arms race. These messages were conveyed most strongly after Pakistan tested nuclear devices in 1998. For example, speaking at a think tank-sponsored seminar in Islamabad in November, 1999, Foreign Minister Abdul Sattar emphasized that, "[W]e shall not engage in any nuclear competition or arms race."[11] Similarly, at a May, 2000

---

[8] See, for example, George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 1999); Ashley J. Tellis, *India's Emerging Nuclear Posture: Between Recessed Deterrent and Ready Arsenal.* (Santa Monica: RAND, 2001); and Itty Abraham, *The Making of the Indian Atomic Bomb: Science, Secrecy and the Postcolonial State* (Hyderabad: Orient Longman, 1998).

[9] Feroz Hassan Khan, "Pakistan's Perspective on the Global Elimination of Nuclear Weapons," in Barry M. Blechman and Alexander K. Bollfrass, eds., National Perspectives on Nuclear Disarmament (Washington: Stimson Center, 2010), p. 218.

[10] See Verghese Koithara, *Managing India's Nuclear Forces* (Washington: The Brookings Institution, 2012.)

[11] "Strategic Issues," Institute of Strategic Studies, Islamabad, March 2000, pp. 2-3.

presentation at the National Defense College, Abdul Sattar declared that, "Our policy of minimum credible deterrence will obviate any strategic arms race."[12]

Pakistan's economic distress runs at cross-purposes with open-ended and rising nuclear weapon-related requirements linked to the growing role of nuclear deterrence in Pakistan's defense posture. Either the costs of Pakistan's nuclear deterrent will rise, both in real and proportional terms, at the expense of other domestic and military needs, or projected nuclear requirements will level off.[13] Of late, there are no signs that Pakistan's nuclear requirements might be curtailed. Indeed, Pakistani officials have begun to qualify their certainty about avoiding an arms race, pointing to the US-India nuclear agreement, the possibility of Indian ballistic missile defense deployments, and growing Indian conventional capabilities as especially worrisome developments.[14] Zamir Akrim, Pakistan's Ambassador to the United Nations Conference on Disarmament, contends that these developments "have radically altered the strategic environment in South Asia." Alongside the talking point of "minimal credible deterrence," Pakistani interlocutors have begun using the formulation of "full spectrum deterrence" or deterrence "at all levels of the threat spectrum," requiring "flexible deterrence options."[15]

In domestic discourse, Pakistan's nuclear programs have been widely credited with foiling Indian designs on Pakistani territory and forcing New Delhi to stand down during crises. In 1999, Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar wrote that Pakistan's "recessed" nuclear capabilities helped to avert wars with India in the mid-1980s, during in 1986-1987 "Brasstacks" crisis, and in another crisis three years later.[16] In this commonly-held view, when Pakistan's nuclear deterrent shifted from recessed to overt, it became a more formidable brake on Indian designs. After the 2001-02 "Twin Peaks crisis, Gen. Pervez Musharraf declared that, "We have defeated an enemy

---

[12] Salik, *Genesis,* p. 232.

[13] See Feroz Hassan Khan, "Pakistan's Perspective on the Global Elimination of Nuclear Weapons," in Barry M. Blechman and Alexander K. Bollfrass, eds., National Perspectives on Nuclear Disarmament (Washington: Stimson Center, 2010), p.15.

[14] See Adil Sultan, "Pakistan's emerging nuclear posture: impact of drivers and technology on nuclear doctrine," *Strategic Studies,* Institute of Strategic Studies, Islamabad, vol. XXXI & XXXII, Winter 2011 & Spring 2012, nos. 4 & 1, pp. 147-167, http://www.issi.org.pk/publication-files/1340000409_86108059.pdf, and "The South Asian Nuclear Balance: An Interview With Pakistani Ambassador to the CD Zamir Akram," *Arms Control Today,* December 2011. <http://www.armscontrol.org/act/2011_12/Interview_With_Pakistani_Ambassador_to_the_CD_Zamir_Akram>.

[15] Inter Services Public Relations, "Press Release," No. PR130/2012-ISPR, May 29, 2012, <http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2074>. Also see Adil Sultan, "Pakistan's emerging nuclear posture," p. 163.

[16] Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, "Securing nuclear peace," *The News*, October 5, 1999.

without fighting a war.[17] Likewise, Shamshad Ahmad, Foreign Secretary during the period of the 1998 nuclear tests, asserted that an overt capability "averted the risk of a disastrous conflict that could have resulted from any misadventure by India."[18] Given this widely heralded success story within Pakistan, it is hard for skeptics to argue against expansive requirements for nuclear deterrence – especially as these requirements are determined in private by very few individuals, as will be discussed below.

Four Main Pillars of Pakistan's Nuclear Doctrine

Nuclear doctrine, as Brigadier (Ret.) Naeem Salik has written, "is the principle of belief or bedrock on which organizational and force structures are built. It provides the guidelines for force configuration and the nature, type and number of weapons and delivery systems that would be needed to implement the doctrine."[19] Among the principles of nuclear doctrine affirmed by senior Pakistani government officials and military officers, four appear to be of overriding importance. First, they assert that Pakistan's nuclear deterrent is India-specific. Second, Pakistan has embraced a doctrine of credible, minimum deterrence, as noted above. Third, the requirements for credible, minimal deterrence are not fixed; instead, they are determined by a dynamic threat environment. And fourth, given India's conventional military advantages, Pakistan reserves the option to use nuclear weapons first in extremis.

Beyond these central tenets, senior Pakistani officials and military officers provide little information about their nuclear doctrine. Unlike the Government of India, which has released and revised a doctrinal statement, Pakistani officials have repeatedly indicated that they do not intend to do so, believing that ambiguity best serves national interests on nuclear matters. The origins of New Delhi's nuclear doctrine had an unusual derivation, based on a report issued by a National Security Advisory Board (NSAB) of former officials, retired officers, journalists, academics, and non-governmental analysts.[20] Their "draft" doctrine was unveiled by then-Indian National Security Adviser Brajesh Mishra, thereby giving it an official imprimatur;

---

[17] "Warning forced India to pull back troops, says President," *Dawn*, December 31, 2002. Musharraf also refers to the value of Pakiustan's nuclear deterrent in his memoir. (Pervez Musharraf, *In the Line of Fire,* (New York: Free Press, 2006) pp. 286.

[18] Shamshad Ahmad, "A South Asian Reality," *The News*, May 28, 2012, http://www.thenews.com.pk/Todays-News-9-110930-A-South-Asian-reality.

[19] Naeem Salik, *Genesis*, p. 219.

[20] See Arvind Kumar, ed., "Report on a Workshop on The Draft Indian Nuclear Doctrine"(National Institute of Advanced Studies, Bangalore, India, 2001); P.R. Chari, "India's Nuclear Doctrine: Confused Ambitions," *Nonproliferation Review* 7, no. 3 (Fall–Winter 2000), p. 125, <http://cns.miis.edu/npr/pdfs/73chari.pdf>.

subsequent modifications were noted in a succinct government release.[21] An unclassified version of India's nuclear doctrine has not been released, and there have been no reports of further modifications to it.

The closest parallel in Pakistan to the Indian NSAB exercise was a long newspaper op-ed by three distinguished commentators – former Foreign Secretary and Foreign Minister Agha Shahi, retired Air Marshal, Zulfiqar Ali Khan, and former Foreign Secretary (and soon to be appointed Foreign Minister) Abdul Sattar – published after the NSAB document was released.[22] A draft of this essay was presumably circulated for comment to government officials and military officers. The co-authors of this essay posited their recommendations as a "counter-strategy" to that of the NSAB which, they asserted, envisaged "in the guise of 'credible, minimal deterrence' a massive expansion of strategic and conventional forces."[23] Succinct authoritative reaffirmations of doctrine are usually embedded in press releases by the military's Inter Services Public Relations (ISPR) Directorate after missile flight tests or after meetings of Pakistan's National Command Authority (NCA). Confused messages are rare occurrences. One example was in 2008 when newly-installed President Asif Ali Zardari expressed support for a "No First Use" (NFU) policy.[24] Pakistan's military leadership never endorsed Zardari's statement and Zardari subsequently noted that the adoption of a NFU posture would require significant steps by New Delhi.[25]

With the exception of the first use option, all of the central tenets of Pakistan's nuclear doctrine have some malleability. For example, Pakistan's nuclear arsenal is not entirely "India specific." Pakistani officials have occasionally expressed concerns about Israeli and US designs against their nuclear capabilities – designs that presumably also require deterrence in some fashion. Concerns about Israeli strikes directed against Pakistan's fledgling uranium enrichment facilities at Kahuta found expression in the

---

[21] Rupert Cornwell, "India unveils nuclear weapon policy," *The Independent,* August 18, 1999; "Draft Report of National Security Advisory Board on Indian Nuclear Doctrine", Pugwash Conferences on Science and World Affairs, August 17, 1999, <http://www.pugwash.org/reports/nw/nw7a.htm>.
[22] Agha Shahi, Zulfiqar Ali Khan, and Abdul Sattar, "Securing Nuclear Peace," *The News,* October 5, 1999.
[23] Ibid.
[24] Jawed Naqvi, "Zardari suggests accord to avoid nuclear conflict in S. Asia," *Dawn*, November 23, 2008. <http://archives.dawn.com/2008/11/23/top1.htm>; also see James Lamont and Farhan Bokhari, "Pakistan in trade and arms offer to India," *Financial Times*, November 23, 2008; and, "Interview with President Asif Ali Zardari," CNN Larry King Live, December 2, 2008.
[25] Shubhajit Roy, "Won't use nukes first, says Zardari, but adds a rider," *The Indian Express*, November 22, 2008, <http://www.indianexpress.com/news/wont-use-nukes-first-says-zardari-but-adds-a-rider/389304/>.

Pakistani media in the mid-1980s, as well as prior to Pakistan's nuclear tests in 1998.[26] Gen. Pervez Musharraf explained his decision to lend Pakistan's support for President George W. Bush's "war on terror" partly on the grounds of safeguarding Pakistan's nuclear deterrent, arguing that the Americans undoubtedly would have taken the opportunity of an invasion to destroy such weapons."[27] Concerns over US designs against Pakistan's nuclear deterrent were especially heightened after the US Special Forces operation in May 2011 that killed Osama bin Laden in Abbottabad. Consequently, a recent Pakistani formulation is "to deter all forms of aggression, *mainly* from India." (Emphasis added.)[28]

The requirements of credible, minimal deterrence are particularly malleable. As Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar wrote, "Obviously our deterrence force will have to be upgraded in proportion to the heightened threat of preemption and interception."[29] The phraseology used in this regard is not always consistent. For example, after a December, 2010 meeting of the NCA, the ISPR issued a release that,"[A]ll requisite steps will be taken to ensure Pakistan's national security and to maintain credible deterrence."[30] The absence of the modifier, "minimal," prompted speculation about expansive requirements, and was subsequently reinserted in public statements.[31] Qualitative upgrades and increased capabilities are consistent with Pakistani views regarding minimal, credible deterrence. Consequently, if Pakistan's nuclear build up or India's deteriorating relations with Beijing prompt New Delhi to pick up the pace of the nuclear competition, Rawalpindi's instinct probably will be to compete even harder.

The op-ed by Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar was clear on this point: "Of course, minimum [credible deterrence] cannot be defined in static numbers. In the absence of mutual restraints, the size of Pakistan's arsenal and its deployment pattern have to be adjusted to ward off dangers of pre-emption and interception."[32] Newly appointed Foreign Minister Abdul Sattar reaffirmed this corollary almost

---

[26] Feroz Hassan Khan, "Nuclear Security in Pakistan: Separating Myth from Reality," *Arms Control Today*, July/August 2009, < http://www.armscontrol.org/act/2009_07-08/khan>. There is debate whether these concerns were genuine or expressed to serve other domestic purposes.
[27] Pervez Musharraf, *In the Line of Fire,* (New York: Free Press, 2006) p. 202.
[28] Adil Sultan, "Pakistan's emerging nuclear posture," p. 147.
[29] Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, Securing nuclear peace. The News. October 5, 1990.
[30] Inter Services Public Relations, "Press Release," No. PR506/2010-ISPR, December 14, 2010. <http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2010/12/14>.
[31] Zahir Kazmi, "Neo-nuclear apartheid," *Dawn*, December 31, 2010, <http://www.dawn.com/2010/12/31/neo-nuclear-apartheid.html>.
[32] Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, "Securing Nuclear peace," *The News*, October 5, 1990.

verbatim in his November, 1999 talk at the Institute of Strategic Studies in Islamabad.[33] Former Indian Foreign Minister Jaswant Singh expressed similar sentiments in an interview with *India Today*[34] asserting that Indian nuclear requirements were minimal, but not a "fixity;" instead, they are adjustable, as indicated by external threats.[35] "Minimal" numbers for credible deterrence in Pakistan also depends on Rawalpindi's targeting strategy, which remains deliberately opaque. Consequently, important aspects of this analysis are conjectural, and are labeled as such.

The circumstances under which Pakistani authorities would resort to the first use of nuclear weapons are also deliberately imprecise, reflecting Rawalpindi's view that to clarify red lines might embolden Indian military actions just beneath them. Gen. Kidwai's characterizations of red lines were released in an odd fashion, embedded in a trip report that included a summary of a conversation with two Italian non-governmental researchers.[36] Before publication, the Italian co-authors sent their report for review to Foreign Minister Abdul Sattar, who did not object to their characterization of Gen. Kidwai's remarks.[37] Pakistani officials subsequently distanced themselves from this report, noting that it was not an official statement, nor a precise summary. The key passage in the trip report is as follows:

> Pakistani nuclear weapons will be used, according to Gen. Kidwai, only "if the very existence of Pakistan as a state is at stake." As reported by the Italian researchers, Gen. Kidwai offered the following explication:
>
> Nuclear weapons are aimed solely at India. In case that deterrence fails, they will be used if:

---

[33] Abdul Sattar, "Pakistan's Nuclear Strategy," inaugural address at a seminar on 'Pakistan's Response to the Indian Nuclear Doctrine,' organized by Islamabad Council for Foreign Affairs and Institute of Strategic Studies, Islamabad, November 25, 1999. (printed in 'The Nuclear Debate,' Strategic Issues (Islamabad: Institute of Strategic Studies, March 2000), p. 3; Inter Services Public Relations, "Press Release," No. PR166/2011-ISPR, July 14, 2011, <http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1796>; Khawar Ghumman, "N-deterrence to be pursued," *Dawn*, July 15th, 2011. <http://dawn.com/2011/07/15/n-deterrence-to-be-pursued/>.

[34] "An Interview with Shri Jaswant Singh, Minister for External Affairs", *India Today,* January 11, 1999, <http://www.indianembassy.org/inews/February99/feature.html>.

[35] Also see "India Not to Engage in a Nuclear Arms Race: Jaswant Singh, External Affairs Minister," *The Hindu,* November 29, 1999, reprinted in http://www.indianembassy.org/inews/indianews_dec_99.pdf.

[36] Paulo Cotta-Ramusino and Maurizio Martellini,"Nuclear safety, nuclear stability and nuclear strategy in Pakistan," January 21, 2002, <http://www.centrovolta.it/landau/content/binary/pakistan%20Januray%202002.pdf>.

[37] Email correspondence with Paulo Cotta-Ramusino, May 19, 2012.

a. India attacks Pakistan and conquers a large part of its territory (space threshold)

b. India destroys a large part either of its land or air forces (military threshold)

c. India proceeds to the economic strangling of Pakistan (economic strangling)

d. India pushes Pakistan into political destabilization or creates a large scale internal subversion in Pakistan (domestic destabilization)

The authors clarify in footnotes their impression of the conversation with Gen. Kidwai that, "Examples of economic strangling of Pakistan included a naval blockade and the stopping of the waters of the Indus River," and that, "The political destabilization and the internal subversion scenarios are considered as distinct possibilities."[38]

The Pakistani red lines enumerated in the Italian report range from specific to general, and from likely to improbable. One notable aspect of these red lines is that almost all of them are far more relevant to the past – particularly Pakistan's 1971 war with India in which Kidwai fought – than to the present or the future. The prospect of the first use of nuclear weapons due to an economic blockade seems unlikely, both because triggering events would presumably be more dramatic and because wars on the subcontinent are typically of short duration. The first use of nuclear weapons as a result of domestic political destabilization is also improbable, if for no other reason than the sources of Pakistan's domestic instability do not require impetus from India.

The loss of "a large part" of Pakistani territory is a puzzling formulation, and may not have reflected Gen. Kidwai's thinking, or that of other key officers, because smaller territorial losses in key sectors could be deemed catastrophic. Indian government officials seem sensitive to this issue, as "proactive defense" plans developed since the "Twin Peaks" crisis in 2001-02 - alternatively labeled as "Cold Start" - appear to focus on small, punitive gains rather than deep incursions.[39] Indian Prime Ministers A.B. Vajpayee and Manmohan Singh have previously demonstrated a disinclination to authorize conventional strikes against Pakistan, even after grievous

[38] Cotta-Ramusino and Martellini, Ibid.
[39] See, for example, Walter C. Ladwig III, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security* 32, no. 3 (Winter 2007/2008), pp. 158-190; Vipin Narang, "Posturing for Peace: Pakistan's Nuclear Postures and South Asian Stability," *International Security* 34, no. 3 (Winter 2009/10), p. 51; and Neil Joeck, "Cold Start and Limited Nuclear War," unpublished manuscript, June, 2008.

provocation.[40] In South Asia, it is generally easier to defend territory than to seize it, if the defenders have sufficient notice of an impending offensive, and if the forces that seek gains are ill-equipped and lack experience in joint operations. Consequently, if a future Indian Prime Minister authorizes the Indian Army to seize and hold Pakistani territory, the Indian Army may be hard-pressed to do so, at least in the near term.

Over time, the disparity in Pakistani and Indian conventional forces could lend even greater sensitivity to the "space threshold." In the meantime, the most likely threshold for first use relates to significant losses of Pakistani combat aircraft in the event of hostilities. There are several reasons for this conjecture. The disparity in purchasing power between the Indian and Pakistani Air Forces is particularly evident, and the timelines for growing disparity in this sector are shorter than with respect to ground forces. Moreover, Indian leaders may be more inclined to use airpower than ground forces if faced with another highly provocative mass-casualty attack by members of a group with a history of connectivity to Pakistan's intelligence services. Air strikes take far less preparation time than ground offensives, and plans are more easily scalable. Nonetheless, the risks associated with choosing the rejoinder of air strikes are considerable. Any use of Indian airpower across the Kashmir divide, and especially against targets elsewhere, such as in Punjab, the base for many violent, extremist groups, would almost certainly result in retaliatory sorties by Pakistan's Air Force. Previous India-Pakistan wars do not provide insight into the outcome of air-to-air combat between the two Air Forces, but on paper, the Indian Air Force enjoys many – and growing - advantages.

This analysis posits that deliberate decisions by Pakistani authorities to cross the nuclear threshold would most likely be triggered by a limited set of circumstances. This chain of events might be sparked by extremist groups based in Pakistan that carry out mass-casualty attacks at iconic Indian targets, prompting New Delhi to authorize retaliatory strikes on Pakistani targets. This scenario has, so far, resulted in severe crises but not in Indian military responses.[41] The probability of Indian military ripostes and Pakistan's first use of nuclear weapons would be reduced considerably if Pakistan's military and intelligence services undertook greater efforts to prevent triggering events.

---

[40] See Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis*, (Washington: The Henry L. Stimson Center, 2006), <http://www.stimson.org/images/uploads/research-pdfs/USCrisisManagementFull.pdf> and Polly Nayak and Michael Krepon, *The Unfinished Crisis: US Crisis Management after the 2008 Mumbai Attacks*, (Washington: Stimson Center, 2012), < http://www.stimson.org/images/uploads/research-pdfs/Mumbai-Final_1.pdf>.

[41] Ibid.

Absent this, additional crises with India can be expected, along with heightened concerns about escalation control. Every crisis that results in the increased readiness to use nuclear weapons also increases the likelihood of accidents and loss of control over nuclear assets.[42] The probability of first use as a result of accidents and unauthorized use, which will be discussed below, appears greater than a deliberate command decision to cross the nuclear threshold.

Meeting the Dynamic Requirements of Minimal, Credible Deterrence

Pakistan's nuclear weapon-related programs reflect conservative military planning against growing Indian conventional and nuclear capabilities. A small number of active duty Pakistani military officers and one retired officer, Gen. Kidwai, have the primary authority to set nuclear requirements and then implement them. Political figures are supportive of military decision making in this regard, and absent production bottlenecks, requirements are systematically met. The extent of Pakistani efforts since the 1998 nuclear tests indicate that, either original requirements for minimal, credible deterrence were set quite high, or that these requirements have expanded alongside India's economic and military growth. This essay's conjectural conclusion is that both hypotheses are true.

As a highly competent organization, the SPD engages in long-range planning. Presumably, the SPD's planning horizons include five and ten year time lines, and perhaps longer. As with other competent organizations, it is reasonable to expect that the SPD's plans are not fixed. Instead, they presumably can be adjusted to address important developments, but are usually not subject to radical overhauls. The SPD's first plans were likely drawn up in the 1999-2000 timeframe, when the organization was stood up. If this assumption is correct, this means that around the half-way point in the SPD's first ten-year plan, the George W. Bush administration publicly pledged a civil-nuclear cooperation agreement with India, alongside a commitment to secure an exception to the rules of nuclear commerce from the Nuclear Suppliers Group.[43] No such agreement was offered to Pakistan which, unlike India, continues to be denied access to commercial nuclear markets.

---

[42] See Christopher Clary, "Thinking about Pakistan's Nuclear Security in Peacetime, Crisis and War," IDSA Occasional Paper No. 12, Institute for Defence Studies and Analyses, New Delhi, September 2010, pp. 26-28. http://www.idsa.in/occasionalpapers/PakistanNuclearSecurity_2010

[43] Office of the Press Secretary, "Joint Statement Between President George W. Bush and Prime Minister Manmohan Singh," The White House, July 18, 2005, < http://georgewbush-whitehouse.archives.gov/news/releases/2005/07/20050718-6.html>.

The US-India civil nuclear agreement came as a blow to Pakistan because it offered New Delhi an international escort into the nuclear club, while continuing to stigmatize Pakistan with exclusion. Moreover, the prospect of foreign direct investment in India's nuclear power sector was worrisome, as this could free up limited domestic fissile material production capacity for nuclear weapon-related purposes. The Bush administration asked very little of India in return for these favors: New Delhi placed no fewer than eight domestically produced power reactors outside the scope of the International Atomic Energy Agency's safeguards, India's breeder reactor plans remained unconstrained, and New Delhi was not prompted to sign the Comprehensive Test Ban Treaty or to entertain a moratorium on production of fissile material for nuclear weapons.

Conservative military planners within the SPD could hardly have remained unaffected by the prospective implementation of the US-India nuclear deal. Consequently, half-way into a ten-year planning cycle, the stewards of Pakistan's nuclear weapon programs probably began to revise their substantial initial requirements upward. Two indicators support this conjectural analysis. One is that Islamabad dropped its previous support for negotiating a Fissile Material Cutoff Treaty in the Conference on Disarmament in February, 2010, after other states were finally lined up to proceed. While the decision to cast the sole veto against the start of FMCT negotiations could have been the result of pique, or to prompt a bargaining process for Pakistan's benefit, these reasons seem insufficient to warrant being singled out for this impasse. The Pakistani Foreign Ministry's stated rationale for blocking the FMCT focuses primarily on India's increased potential to utilize fissile material for warhead production as a result of the NSG's waiver.[44]

The second indicator of increased nuclear weapon-related requirements relates to growth in Pakistan's nuclear infrastructure. Prior to the announcement of the US-India nuclear cooperation agreement, Pakistan had begun construction on two new plutonium production reactors, a new heavy water plant, and a new reprocessing facility to accompany older plutonium production, reprocessing and uranium enrichment facilities. Published reports indicate that construction of a third plutonium production reactor at Khushab began in 2006. All of these facilities, with the possible exception of the third plutonium production reactor, are consistent with a ten-year planning cycle. Construction on a fourth plutonium production reactor began in 2011,

[44] "The South Asian Nuclear Balance: An Interview With Pakistani Ambassador to the CD Zamir Akram", *Arms Control Today,* December 2011. <http://www.armscontrol.org/act/2011_12/Interview_With_Pakistani_Ambassador_to_the_CD_Zamir_Akram>.

after the US civil-nuclear deal was approved by the US Congress and Indian Parliament.[45]

It is possible that the fourth plutonium production reactor was envisioned as part of an initial ten-year plan. More likely, at least in this conjectural view, the newest production reactor reflected added Pakistani concerns over the US-India civil nuclear agreement, as well as heightened concerns about India's improved ties with the United States and Pakistan's growing internal and external troubles. Peter R. Lavoy has reached a similar conclusion, tracing the expansion of Pakistan's plutonium production infrastructure to an April, 2006 meeting of the NCA.[46]

Pakistan will not be able to match India in a long-haul nuclear competition, assuming that New Delhi accelerates the pace of its growth in delivery vehicles and warheads. For now, however, the stewards of Pakistan's nuclear program appear resolved to do their best to prevent the growing imbalance in conventional capabilities to be reinforced by Indian superiority in nuclear forces.

The pacing and output of these programs suggest that it will be increasingly difficult for Pakistani (and Indian) spokespersons to assert that they will not engage in an arms race. The Pakistan-India dynamic is certainly the most pronounced nuclear competition since the Cold War ended, made even more complicated because New Delhi must factor in China's nuclear weapon-related capabilities. Since Beijing's nuclear posture can be affected by US ballistic missile defense programs, the interactive nature of the nuclear competition in southern Asia is even more complex and difficult to dampen than during the Cold War.

By any definition, Pakistani and Indian programs constitute, at a minimum, a serious competition, and one that could well be intensified in the near future. Key elements of this accelerated, bilateral competition were already in view before the US-India civil nuclear agreement, including ballistic missiles of varying ranges, new cruise missile programs, and the pursuit of sea-, air-, and ground-based capabilities to deliver nuclear weapons. The harder Rawalpindi competes to offset conventional disparities

---

[45] See David Albright and Paul Brannan, "Pakistan Appears to be Building a Fourth Military Reactor at the Khushab Nuclear Site," February 9, 2011, <http://isis-online.org/isis-reports/detail/pakistan-appears-to-be-building-a-fourth-military-reactor-at-the-khushab-nu/12>.

[46] Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries Beyond War* (Carlisle, PA.: Strategic Studies Institute, Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries Beyond War* (Carlisle, PA.: Strategic Studies Institute , January, 2008), p. 156.

with nuclear capabilities, the more likely it is that New Delhi will pick up the pace of its nuclear programs.

Pakistan's Targeting Requirements

The central purpose of Pakistan's nuclear arsenal, as defined by those who set nuclear requirements, is to protect Pakistan from a predatory neighbor that seeks either its demise or its submissiveness. In this view, New Delhi seeks superior conventional and nuclear capabilities to achieve "hegemonic" goals.[47] This widely held view within military circles remains fixed, even as Pakistan has become increasingly peripheral to India's national ambitions. To acknowledge that a "hegemonic" neighbor has more pressing interests than to punish Pakistan would only magnify a sense of Pakistan's national decline. Besides, Pakistanis who hold deep grievances will not allow India to forget them. Extremist groups within Pakistan have the means to place India on the "back foot" by means of mass-casualty attacks at sensitive, poorly guarded sites. A core objective of Pakistan's nuclear deterrent is to dissuade Indian leaders from taking retaliatory military action after these attacks, to prevent New Delhi from coercing Pakistan, especially during crises, and to wreak devastation on India in the event that deterrence fails.

The particulars of Rawalpindi's targeting objectives are closely held. This analysis, which is highly conjectural, concludes that Pakistani requirements for nuclear weapons reflect a low-, medium- and high-end mix of targeting objectives.[48] The low end of this mix might include the selective or demonstrative use of tactical nuclear weapons. One or very few nuclear detonations could serve two immediate purposes: to signal New Delhi to cease limited offensive operations, and to hasten international efforts to intervene and to pressure New Delhi to desist. A medium set of targeting options could employ the use of many tactical nuclear weapons to counter Indian advances at points where "Cold Start" operations could be conducted along fighting corridors. Any low- and medium-mix targeting could quickly slide into high-end options, i.e., the destruction of critical infrastructure, leadership-related targets, and cities, with the overarching objective to destroy India as a functioning society.

---

[47] For example, see: Asif Ezdi, "Road to hegemony," *The News*, August 15, 2011, <http://www.thenews.com.pk/Todays-News-9-62913-Road-to-hegemony>; Afzaal Mahmood, "Indo-US nuclear alliance," *Dawn*, October 29, 2005, <http://archives.dawn.com/2005/10/29/op.htm>; Afzaal Mahmood, "India's big power ambition," *Dawn*, July 12, 2003, <http://archives.dawn.com/2003/07/12/op.htm>.

[48] For other speculative assessments, see Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements," in Henry D. Sokolski (ed.), *Pakistan's Nuclear Future: Worries Beyond War,* pp. 87-129, and Neil Joeck, "Cold Start and Limited Nuclear War," unpublished manuscript, June, 2008.

In determining these targeting requirements, Pakistani planners must consider and compensate for the loss of nuclear weapons and their delivery vehicles to an Indian first strike.[49] Rawalpindi places very little credence in India's "No First Use" (NFU) doctrine, which was characterized by Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar as "a cost-free exercise in sanctimonious propaganda."[50] These authors wrote that, "As a rule of thumb, if 50 percent of the counterforce becomes vulnerable, its size should have to be doubled" – at least until mobile missiles become the backbone of Pakistan's nuclear deterrent.[51] Hawkish Indian analysts who argue for pre-emptive strikes against Pakistan feed into Rawalpindi's tendency toward worst case nuclear requirements.[52] To counter concerns over Indian preemptive strikes, Rawalpindi must move warheads from storage sites and missiles from main operating bases during severe crises.

Since the managers of Pakistan's nuclear deterrent do not place credence in India's NFU policy, they must take seriously the possible first use of nuclear weapons in extreme circumstances - regardless of their number - could invite an overwhelming Indian response. The stark choice of using or losing strategic assets - whether at the low, medium, or high end - could grow further as Indian surveillance and targeting capabilities improve, placing more of Rawalpindi's nuclear forces at risk.[53] Robert Jervis has written that, "It is rational to start a war one does not expect to win… if it is believed that the likely consequences of not fighting are even worse."[54] Pakistani decision makers may well find themselves in reluctant agreement with this view.

Tactical Nuclear Weapons

As conjectured here, the low and medium options for Pakistani first use of nuclear weapons involve battlefield systems. Pakistan's shorter-range missile flight tests suggest targeting objectives against military targets, either to signal the urgent need to halt a military campaign or for strikes on advancing armored formations and their logistical support on either side of international border or Line of Control dividing Kashmir. The March 5, 2012 flight test of the 180 kilometer Hatf II (Abdali) was advertised by the ISPR as providing an "operational" as well as "tactical-level" military

[49] See Clary, "Thinking about Pakistan's Nuclear Security," pp. 6-7.
[50] Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, "Securing Nuclear Peace" *The News*, October 5, 1990.
[51] Ibid.
[52] See, for example, Bharat Karnad, *India's Nuclear Policy* (Westport, CT.: Praeger, 2008), p. 12.
[53] See Peter Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in *Pakistan's Nuclear Future:Worries Beyond War*, Henry Sokolski, Ed. (Carlisle, PA: Strategic Studies Institute) January 2008. p. 129 and 158.
[54] Robert Jervis, "The Political Effects of Nuclear Weapons," in Sean M. Lynn-Jones, Steven E. Miller and Stephen Van Evera (eds.), *Nuclear Diplomacy and Crisis Management* (Cambridge, MA.: The MIT Press, 1990), p. 29

capability.[55] The 60-kilometer range Hatf IX (Nasr) was first flight tested in April, 2011, clarifying, in Gen. Kidwai's view, "a very important milestone in consolidating Pakistan's strategic deterrence capability at all levels of the threat spectrum."[56]

The impulse for low- and medium-end nuclear targeting was probably reinforced heightened after the 2001-02 "Twin Peaks" crisis, which began with attacks on the Indian Parliament by Pakistani nationals belonging to extremist groups, after which the Indian and Pakistani armed forces mobilized for war. In the three weeks it took the Indian Army to assume its battle-ready positions, the Pakistan Army assumed defensive positions, making Indian ground gains uncertain.[57] New Delhi's frustration at the absence of adaptive and timely military options during this crisis led to the development of "proactive defense" plans,[58] known in Pakistan as India's "Cold Start" doctrine.[59]

"Cold Start" has subsequently become a lightning rod for Pakistani concerns that India seeks to seize and hold Pakistani territory, or force submissive behavior in a crisis.[60] Pakistani concerns were reaffirmed when senior Indian government officials and military officers spoke of the need to deter future attacks by extremist groups with ties to Pakistan's military and intelligence services by being able to fight limited

---

[55] Inter Services Public Relations, "Press Release," No. PR34/2012-ISPR, March 5, 2012, <http://www.ispr.gov.pk/front/main.asp?o=t-press_release&date=2012/3/5>.
[56] Inter Services Public Relations, "Press Release," No. PR94/2011-ISPR, April 19, 2011, <http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1721>; also see Inter Services Public Relations, "Press Release," No. PR94/2011-ISPR, May 29, 2012, <http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=2075#pr_link2075>.
[57] See Polly Nayak and Michael Krepon, *US Crisis Management in South Asia's Twin Peaks Crisis*, (Washington: The Henry L. Stimson Center, 2006), <http://www.stimson.org/images/uploads/research-pdfs/>. Polly Nayak and Michael Krepon, *The Unfinished Crisis: US Crisis Management after the 2008 Mumbai Attacks*, (Washington: Stimson Center, 2012), <http://www.stimson.org/images/uploads/research-pdfs/Mumbai-Final_1.pdf>; Brig. Gurmeet Kanwall. "Lost opportunities in Operation Parakram", *Indian Defence Review,* December 13, 2011. <http://www.indiandefencereview.com/spotlights/lost-opportunities-in-operation-parakram/>.
[58] Sandeep Unnithan, "Hind Shakti to fine tune proactive strategy: Army chief," *India Today,* May 6, 2009, <http://indiatoday.intoday.in/story/Hind%20Shakti%20to%20fine%20tune%20proactive%20strategy:%20Army%20chief/1/40638.html>.
[59] For an alternative view, see Christopher Clary, "Thinking about Pakistan's Nuclear Security," 2010.
[60] S Iftikhar Murshed, "The Mohali wisdom," The News, April 17, 2011, <http://www.thenews.com.pk/Todays-News-9-42076-The-Mohali-wisdom>; Ikram Sehgal, "Pakistan and the FMCT," The News, July 28, 2011, <http://www.thenews.com.pk/Todays-News-9-59950-Pakistan-and-the-FMCT>; Inter Services Public Relations, "Press Release," No. PR11/2010-ISPR, January 13, 2010, <http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1110&search=1>.

conventional wars under the nuclear umbrella.[61] The flight tests of ballistic missiles such as the Abdali and the Nasr, other nuclear modernization programs, and the extent of Pakistan's nuclear weapons' infrastructure, suggests the conclusion that reliance on a "pure" counter-city, or "counter-value" targeting philosophy is insufficient.

Pakistani officials and commentators expressed no interest in acquiring "tactical," or battlefield nuclear weapons delivered by means of short-range missiles after the 1998 tests of nuclear devices. Instead, interlocutors argued that all nuclear weapons were "strategic" in the context of the subcontinent, i.e., any use of a nuclear weapon, regardless of range, would have strategic consequences. This line of argument suggested that longer-range missiles, being harder for India to target and providing more secure command and control, were preferable to short-range systems. Pakistani statements that initially diminished the value of tactical nuclear weapons also suggested that troubling conventional military imbalances were not so adverse as to require short-range missiles to shore up deterrence against Indian ground forces. It is possible that tactical nuclear weapons have been part of the SPD's plans all along. Their role is now indisputable. Overt moves such as the flight testing of the Abdali and the Nasr suggest that the prospect of India's growing conventional capabilities and more proactive military plans have combined to generate shorter range Pakistani nuclear targeting requirements. The flight testing by India of the 150 kilometer Prahaar missile system in July 2011, likely reinforced this reassessment.[62]

The requirements of Pakistani targeting against Indian armor and logistical concentrations that support advancing units are anything but straightforward. A great many weapons would be needed to kill properly spaced tanks. Zia Mian and A.H. Nayyar estimated that,

> For a tank spacing of 100 meters, one 15 kiloton weapon could destroy about 55 tanks. To destroy this many tanks if they were spaced 300 meters part would take eight weapons of 15 kiloton yield each. To destroy by blast alone roughly

[61] C. Raja Mohan, "Fernandes unveils 'limited war' doctrine," *The Hindu,* January 24, 2000, <http://www.hindu.com/2000/01/25/stories/01250001.htm>; "India puts its no nonsense face forward," *The Times of India,* January 11, 2002, <http://articles.timesofindia.indiatimes.com/2002-01-11/india/27135351_1_general-padmanabhan-indian-army-training-camps>.

[62] "Short-range 'Prahar' missile test successful," *Times of India,* July 21, 2011, <http://articles.timesofindia.indiatimes.com/2011-07-21/india/29799575_1_short-range-missile-single-stage-missile-missile-test>.

half of a force of 1,000 tanks that were well dispersed would require on the order of 100 nuclear weapons of 15 kiloton yield.[63]

These illustrative spacing calculations might not be correct, but however one calculates the lay-down of tactical nuclear weapons against tanks in the field, requirements appear to be expansive, as well as a poor allocation of plutonium, even for Pakistan's expanded production capacity. Moreover, Pakistan lacks the real-time surveillance capabilities to destroy armored columns, except where they are funneling into bridge crossings of water barriers. Another target for tactical nuclear weapons might be key logistical nodes on Indian or Pakistani soil in support of advancing units. Using tactical nuclear weapons against advancing Indian armor on Pakistani territory would constitute a significant psychological hurdle, since the purpose of the Pakistan military is not to detonate nuclear weapons on national territory, even to counter an Indian advance. Nor would a very limited first use on Pakistani soil provide insurance against uncontrolled escalation, since Indian doctrine asserts that the use of nuclear weapons against Indian forces, wherever they may be situated, would prompt massive retaliation.[64]

While the credibility of threatening massive retaliation against very limited use of nuclear weapons has always been subject to question, this threat becomes more credible if Pakistani detonations occur on Indian soil. The likelihood of massive Indian retaliation would grow if tactical nuclear weapons were used all along the forward edge of battle against advancing Indian formations. Alternatively, the use of one or a few nuclear detonations could signal the urgency of halting an Indian military campaign. Only one weapon would be required for signaling purposes, and longer-range systems would seem far better suited for this role, as they could be used away from the forward edge of the battle and could be targeted at an aim point at sea.

Pakistani commentary on tactical nuclear weapons is sparse, and does not venture into the dilemmas posed by forward deployments, accidents, breakdowns of command and control, and unintended escalation.[65] Short-range, nuclear weapon delivery vehicles introduce particularly serious command and control issues for

---

[63] A.H. Nayyar and Zia Mian, "The Limited Military Utility of Pakistan's Battlefield Use of Nuclear Weapons in Response to Large Scale Indian Conventional Attack," *Pakistan Security Research Unit,* Brief Number 61(November 2010) p. 7. <
http://spaces.brad.ac.uk:8080/download/attachments/748/Brief61doc.pdf>.

[64] See Arvind Kumar, ed., "Report on a Workshop on The Draft Indian Nuclear Doctrine," National Institute of Advanced Studies, Bangalore, 2001.

[65] Adil Sultan, "Pakistan's emerging nuclear posture," p. 159-164; and Zahir Kazmi, "Weapons of Peace," *The Express Tribune,* June 26, 2012, http://tribune.com.pk/story/399425/weapons-of-peace/.

Pakistan, whose doctrine embraces first use and whose authorities have asserted that they do not intend to pre-delegate authority to field commanders. How the introduction of short-range systems affects another safeguard - the separation of warheads and launchers – is an open question.[66] These measures, which have served to prevent unauthorized use and unintended escalation, are least likely to be implemented with confidence if tactical nuclear weapons and their launchers are deployed close to the forward edge of battle.

Rather than addressing these issues, Pakistani commentaries focus on deterrent effects, the perceived need to counter adventurous Indian military doctrine, and by inference, the lack of utility of longer-range missile systems to address localized threats and by Pakistani discomfort in skipping all lesser rungs on the escalation ladder.[67] Pakistani decision makers understand that escalation control, even in the event of a single use of a tactical nuclear weapon, would be immensely problematic and could well have profoundly tragic consequences. Nonetheless, they appear to view this option as being less problematic than relying solely on large-scale, long-range nuclear strikes, especially as the conventional military balance with India grows more adverse. Pakistani analysts believe that these dilemmas will become moot because their advertised possession of tactical nuclear weapons will further dissuade Indian leaders from authorizing limited incursions into Pakistani territory.

It is possible that, because tactical nuclear weapons pose so many operational dilemmas, and because scenarios for their successful use are hard to identify, they might not feature prominently in Pakistani targeting requirements. On the other hand, the stewards of Pakistan's nuclear arsenal have not skimped on requirements for other nuclear weapon-related capabilities. Inferential requirements for tactical nuclear warheads will become somewhat less opaque with evidence of the extent of production runs for short-range, nuclear-capable launchers.

High-End Nuclear Strikes

While high-end Pakistani nuclear strike packages probably include some military targets, the standard way for new nuclear-weapon states to define minimal, credible deterrence is by means of counter-value targeting, i.e., being able to destroy an adversary's large metropolitan areas. There are ten cities in India with populations over

[66] B. Muralidhar Reddy, "No chance for accidental n-war with India," *The Hindu,* January 11, 2003, <http://www.hindu.com/2003/01/11/stories/2003011103291200.htm>.
[67] See, for example, Adil Sultan, "Pakistan's emerging nuclear posture," p. 159-164.

three million: Mumbai, Delhi, Bangalore, Hyderabad, Ahmedabad, Chennai, Kolkata, Surat, Pune, and Jaipur. Mumbai is a center of commerce, culture, and nuclear infrastructure. New Delhi is the seat of government. Chennai and Kolkata are significant regional hubs. Bangalore and Hyderabad represent the new, "rising" India, fueling India's economic growth. Placing these cities, some of which contain very significant Muslim populations, at risk is one way to check perceived Indian designs on Pakistan's territorial integrity.

The United States and the Soviet Union allocated very large numbers of nuclear weapons against military targets in built-up areas, without regard for the overlapping effects these detonations would have, especially with respect to firestorms.[68] Consequently, if Superpower targeting plans had been executed during the Cold War, major metropolitan areas would have been destroyed many times over.

This analysis hypothesizes very modest requirements for Pakistani counter-value targeting.[69] Assuming ten cities and three weapons per city, thirty weapons delivered on targets would be required. These numbers are notional; they may vary from city to city and could be revised upward or downward. Those responsible in Pakistan for planning counter-value targeting against Indian cities would also have to assume losses of nuclear weapon delivery vehicles and storage sites to Indian pre-emptive or retaliatory strikes. Consequently, if there is a fixed requirement for the laydown of a certain number of weapons against Indian cities, a multiple of this number would presumably be applied to compensate for expected losses. In any event, counter-value strikes against Indian cities could entail a very substantial use of nuclear weapons. All of these planning factors are closely held, so this assessment is highly conjectural.

Indian leaders and hawkish analysts have expressed the view that their country could survive a nuclear war, whereas Pakistan would not. As former Defense Minister George Fernandes said in a 2002 interview, "[I]f he should finally take that kind of step, perhaps out of desperation, he should realize that India can survive a nuclear attack, but Pakistan cannot."[70] Army Chief S. Padmanabhan echoed these sentiments when he

---

[68] See Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation,* Ithaca: Cornell University Press, 2004.

[69] For a more exacting view of Pakistani counter-value targeting, see Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements," in Henry D. Sokolski, ed., *Pakistan's Nuclear future: Worries Beyond War,* Carlisle, PA: Strategic Studies Institute, January, 2008, pp. 87-128. Also see Naeem Salik, Appendix 3, A Suggested Model for Minimum Nuclear Deterrence," in *The Genesis of South Asian Nuclear Deterrence: Pakistan's Perspective* (Oxford: Oxford University Press, 2009), pp. 303-305.

[70] Michael Richardson, "Q&A George Fernandes: India and Pakistan are not 'imprudent' on nuclear option," *International Herald Tribune,* June 3, 2002, < http://www.nytimes.com/2002/06/03/news/03iht-t4_1.html>

reportedly said that "India would severely punish any state that is 'mad enough to use nuclear weapons against any of our assets.' Padmanabhan added, 'the perpetrator shall be so severely punished that his very existence will be in doubt. We are ready for a second strike.'"[71] Likewise, hawkish analyst Bharat Karnad wrote, "The problem here is not one of preventing nuclear war, but with believing that Pakistan can annihilate India, which is not possible, even as the reverse is eminently true."[72]

These assertions have not gone unnoticed by those who set Pakistan's requirements for nuclear weapons. It would be out of character for Pakistan's military leadership to accept the survival of India and the death of Pakistan in a nuclear war. Thus, in this conjectural analysis, Rawalpindi is likely to pursue a "victory denial" strategy in the event of a complete breakdown in deterrence.[73] The growth of Pakistan's nuclear stockpile is commensurate with a targeting objective to exact overwhelming damage sufficient to prevent India from recovering as a functioning society. Denying India "victory" in a nuclear war would constitute the high end of Pakistan's targeting objectives. These might include, in addition to India's largest cities, its leadership, key industrial facilities, ports, nuclear power plants, dams, and other critical infrastructure that are not necessarily situated in large metropolitan areas.

This targeting strategy would not be unique to Pakistan. The first, notional US targeting plan against the Soviet Union had the objective of "immediately crippling the ability of the enemy to wage war." This plan, conceived less than two months after the atomic bombs dropped on Hiroshima and Nagasaki ended World War II, hypothesized the need for a minimum of 123, and preferably 466 weapons in what Alex Wellerstein has characterized as "a nuclear knock-out punch designed to beat another nation immediately into the stone age." According to the first US nuclear targeting plan, fifteen Soviet cities with significant industrial capacity were top-tier targets, and 66 other cities "of strategic importance" were identified. US planners decided initially on a notional requirement of three weapons per city.[74]

---

[71] Praful Bidwai, "India sharpens nuclear claws," *Asia Times,* January 31, 2002, < http://atimes.com/ind-pak/DA31Df03.html>

[72] Bharat Karnad, Nuclear Weapons & Indian Security: The Realist Foundations of Strategy (New Delhi: Macmillan, 2002), p. 558.

[73] Also see Feroz Hassan Khan, "Pakistan's Perspective on the Global Elimination of Nuclear Weapons," in Barry M. Blechman and Alexander K. Bollfrass, eds., *National Perspectives on Nuclear Disarmament* (Washington: Stimson Center, 2010), p. 215.

[74] Alex Wellerstein, "The First Atomic Stockpile Requirements (September 1945)," <http://nuclearsecrecy.com/blog/2012/05/09/weekly-document-the-first-atomic-stockpile-requirements-september-1945/>, posted May 9, 2012.

A targeting doctrine to deny India victory in a nuclear slug-fest would be an unusual and exacting way to define minimal, credible deterrence, but it could well explain Pakistan's production capacity for nuclear weapons and the prospective growth of its stockpile. Peter R. Lavoy has argued that Pakistan's nuclear deterrence strategy is predicated on a commitment to "escalation dominance."[75] In western strategic analysis, escalation dominance was often linked to "ladders" of applied capability; at each rung of the ladder, the side taking the initiative would seek to clarify its leverage at higher rungs, as well.[76] It is beyond Pakistan's grasp to achieve these capabilities at the conventional level, which might make this objective appear more compelling with respect to nuclear forces. This analysis suggests that escalation dominance, in a Pakistani military perspective, may well entail skipping many rungs in the escalation ladder.

During the Cold War, hawkish US strategists held the view that victory was still possible in nuclear exchanges, even at great cost.[77] Failing that, an adversary's victory could still be denied - and deterrence reaffirmed - by means of expansive nuclear inventories and targeting capabilities. Do the managers of Pakistan's nuclear deterrent believe that they can fight and win a nuclear war with India? In their foundational essay, Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar wrote that Pakistan was "not so unrealistic as to entertain" thoughts of the "use of nuclear weapons for war-fighting or seek to develop capability for preemptive attack." These authors argue that, "India is too large and too well armed to be vulnerable to a disabling strike."[78] This line of reasoning is reaffirmed as long as India's strategic assets grow, are properly diversified, become more operationalized for deterrence purposes, and if New Delhi becomes more serious about command and control arrangements. It would not require Herculean efforts for Indian leaders to dissuade Rawalpindi that a Pakistani victory in the event of a nuclear war is not achievable. A strong case can be made, however, that New Delhi has been lax in assuring retaliatory capabilities and proper force management.[79] While the achievement of victory by Pakistan in a nuclear war with India seems far-fetched, the denial of an Indian victory is another matter. The build-up of Pakistan's nuclear forces is entirely consistent with this objective.

---

[75] Peter R. Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in Sokolski (ed.), Pakistan's Nuclear Future: Worries Beyond War, pp. 133-4.
[76] The classic text in this regard is Herman Kahn, On Esclation; Metaphors and Scenarios (New York; Frederick A. Praeger, 1965).
[77] See, for example, Paul Nitze, "Assuring Strategic Stability in an Era of Détente," *Foreign Affairs* 54, No. 2 (January 1976), pp. 208-232 and Colin S. Gray and Keith Payne, "Victory is Possible," *Foreign Policy,* No. 39 (Summer 1980), pp. 14-27.
[78] Agha Shahi, Zulfiqar Ali Khan and Abdul Sattar, *The News*, October 5, 1999.
[79] See Verghese Koithara, *Managing India's Nuclear Forces* (Washington; Brookings Institution Press, 2012.)

Pakistan's Deciders

Pakistan's nuclear requirements are set by very few military officers and one retired officer, Gen. Kidwai, with very little civilian oversight or ability to question military requirements. This absence of checks and balances is reminiscent of the Pentagon's nuclear planning until the arrival of Secretary of Defense Robert McNamara, Deputy Assistant Secretary of Defense Alain Enthoven, and the "whiz kids" in 1961. The civilian whiz kids have yet to arrive in Pakistan.

Those who have been instrumental in Pakistan's successful nuclear weapons programs are likely to be given broad leeway to pursue production requirements that they deem essential. Pakistan has its own version of Admiral Hyman Rickover, the man whose services to the US nuclear navy were deemed so essential by his supporters on Capitol Hill that his retirement from active duty was postponed until the ripe old age of 81. The Rickover equivalent in Pakistan is Lt. General (ret.) Khalid Kidwai, the Director-General of the SPD since its inception in 2000. Rickover's steel will ruled over questions of submarine design, personnel, and related matters. Rickover was imperious; he would circumvent his military superiors when he suspected or opposed their judgment. In contrast, Gen. Kidwai is a man of low-key demeanor with a sense of humility who works through military channels. Gen. Kidwai, like Adm. Rickover, inspires the view that he is indispensable. Unlike Adm. Rickover, Gen. Kidwai believes otherwise.

Time in service is an important factor in considering promotions and retirements in the Pakistan Army, as with other military services. After taking charge of the SPD, Gen. Kidwai, was promoted to Lt. General in October, 2001, and then received an extension in service in 2004 to stay at its helm – a highly unusual personnel action. Gen. Kidwai faced retirement in 2005 because his time on active duty would extend beyond those who were about to out-rank him.[80] His boss, Chief of Army Staff (and President of Pakistan) Pervez Musharraf decided on his retirement, while keeping him in place at the SPD. While many retired military officers have been given plum assignments overseeing civilian institutions in Pakistan, the appointment of a retired military officer to be in charge of a most sensitive joint staff assignment is unprecedented. Gen. Musharraf's decision survived his banishment from Pakistan. Gen. Kidwai's extended tenure at the SPD has meant that his views regarding Pakistan's nuclear requirements will be very hard to overrule.

[80] Arshad Sharif, "Changes in ministry of defence soon," *Dawn,* March 28, 2005, <http://archives.dawn.com/2005/03/28/nat1.htm>.

How many other individuals help determine the requirements to implement nuclear doctrine is a matter of conjecture. Presumably, a small core group of very senior military officers are instrumental in making such decisions, beginning with the Chief of Army Staff, the Chairman of the Joint Chiefs of Staff Committee, the head of the Strategic Forces Command, and the Chiefs of the Air Force and Navy. A larger group of military officers, scientists, and civil servants provides input to these decisions and implements them.

Sitting atop Pakistan's National Command Authority, which was initially promulgated as an administrative regulation[81] at the outset of Gen. Musharraf's rule, and then codified into an ordinance nearing the end of his tenure,[82] is the Head of Government. With Musharraf's exit, the Head of Government became a civilian in the person of President, Asif Ali Zardari. In November, 2009, President Zardari revised this ordnance, placing the Prime Minister, then Yusuf Reza Gilani, at the top of the NCA. This passing of the baton was orchestrated in the context of clarifying the transition from a Presidential- to a Prime Ministerial-led government. Under the Musharraf set up, the Prime Minister served as Vice Chairman of the NCA. Now it appears that the Vice Chairmanship is vacant. Two subsidiary bodies of the NCA – an Employment Control Committee and a Development Control Committee, have Deputy Chairmen. The Deputy Chairman of the all-important Employment Control Committee is the Foreign Minister, a position currently held by Hina Rabbani Khar. The Deputy Chairman of the Development Control Committee is the Chairman of the Joint Chiefs of Staff Committee. Three civilian Cabinet Ministers also serve on the Employment Control Committee: the Minister for Defense; the Minister for Interior, and the Minister for Finance.

According to an interview Gen. Kidwai gave in 2002, when Gen. Musharraf sat atop the NCA, "practically all (99%) of the nuclear decisions pertain[ed] to the Head of Government."[83] One can certainly envision that when the Army Chief of Staff sat atop the NCA, he held the ultimate authority in determining employment and developmental decisions relating to nuclear weapons. It would strain credulity to

---

[81] Paul K. Kerr and Mary Beth Nikitin, "Pakistan's Nuclear Weapons: Proliferation and Security Issues," Congressional Research Service, July 20, 2011, <http://fpc.state.gov/documents/organization/169328.pdf>.

[82] National Assembly of Pakistan, "An Ordinance to provide for the constitution and establishment of National Command Authority," Ordinance No. LXX of 2007, December 13, 2007, <http://www.na.gov.pk/uploads/documents/1302673639_661.pdf>.

[83] Paulo Cotta-Ramusino and Maurizio Martellini, "Nuclear safety, nuclear stability and nuclear strategy in Pakistan," January 21, 2002, <http://www.centrovolta.it/landau/content/binary/pakistan%20Januray%202002.pdf>.

assert that this remains the case under a civilian Head of Government – Prime Minister Gilani, his successor, Raja Pervaiz Ashraf, and under the Deputy Chairmanship of Foreign Minister Khar. While notional authority now resides in the office of the Prime Minister, and while Cabinet Ministers on the NCA are involved in these decisions, real authority lies with the Chief of Army Staff, the Chairman of the Joint Chiefs of Staff, Gen. Kidwai, and few others, some of whom may not be involved in decision making under extreme duress.

Implications for Deterrence Stability

An intensified nuclear arms competition between Pakistan and India has troubling ramifications for deterrence stability, particularly within the context of crises sparked by spectacular acts of terrorism by groups with long histories of association with Pakistan's military and intelligence services. As long as Rawalpindi declines to take sustained preventive action against future attacks by extremist groups, the presumption of continued collusion will remain. Future crises could occur because bilateral ties with India remain badly frayed or, conversely, by official efforts to improve ties that extremist groups wish to stymie. The primary reason for escalation control during past nuclear-tinged crises has been that Indian leaders have chosen not to respond militarily to severe provocation. Instead, they have given the pursuit of economic growth a higher priority than the pursuit of the perpetrators of mass-casualty attacks. New Delhi has also been concerned about escalation control in the event of retaliatory strikes. If this calculus of decision remains firm, deterrence stability can withstand future challenges. If not, deterrence stability and escalation control will become increasingly challenging.

India and Pakistan have signaled resolve during severe crises by increasing the launch readiness of their ballistic missiles and by carrying out missile flight tests.[84] Key indicators of a decision to attack during full-scale mobilizations are well understood. Critical troop movements and preparations can be monitored by human intelligence and by technical means.[85] In addition, the United States has relayed information

[84] See, for example, Feroz Hassan Khan, "Nuclear Signaling, Missiles, and Escalation Control in South Asia," in Michael Krepon, Rodney W. Jones and Ziad Haider (eds.), *Escalation Control and the Nuclear Option in South Asia* (Washington: The Henry L. Stimson Center, 2003, pp. 75-100), and Rahul Roy-Chaudhury, "Nuclear Doctrine, Declaratory Policy, and Escalation Control in Krepon, et. al. (eds), *Escalation Control and the Nuclear Option in South Asia* (Washington: The Henry L. Stimson Center, 2003, pp. 101-118.) <http://www.stimson.org/images/uploads/research-pdfs/ESCCONTROLCHAPTER4.pdf>.

[85] India has launched its own monitoring satellites and both countries can make use of imagery derived from commercial observation satellites.

derived from high-level visits, defense attachés and national technical means to dampen apprehensions during crises by rebutting false rumors and confirming de-escalatory steps.[86] Because authorities in India and Pakistan have wished to avoid major wars, have been familiar with the choreography of full-scale mobilizations, and have mutually agreed to accept a significant US crisis management role, severe crises since 1990 have been managed, albeit with difficulty.

Several of the conditions for war avoidance and crisis management have changed or may no longer apply, making deterrence stability more difficult to reinforce in crises. To begin with, Pakistani and Indian nuclear weapon-related capabilities have diversified and grown. Added capability does not automatically equate to added deterrence stability; to the contrary, more nuclear weapons repositioned or forward-deployed in a crisis could result in less deterrence stability.[87] In the US-Soviet context, the growth in number and sophistication of nuclear arsenals – including assured retaliatory capabilities -was not mutually reassuring. Instead, these nuclear build ups heightened a mutual lack of trust and aggravated serious, unresolved grievances. This is likely to be true for the subcontinent, as well.

Moreover, Pakistan and India possess new nuclear capabilities that have not figured prominently or at all during prior crises, including tactical nuclear weapons, cruise missiles, and nuclear weapons at sea. There has been one reported instance of the forward deployment of Indian short-range missiles – the Prithvi I - in late May or early June, 1997.[88] [89] At the suggestion of the Clinton administration, Prime Minister I.K. Gujral quietly directed that these missiles be moved back to their base at

[86] For analyses of US crisis management activities, see: Michael Krepon and Mishi Faruqee, eds., "Confidence-Building Measures in South Asia: The 1990 Crisis," (The Henry L. Stimson Center, April 1994), <http://www.stimson.org/images/uploads/research-pdfs/occasionalpaper17-web.pdf>; Polly Nayak and Michael Krepon, "US Crisis Management in South Asia's Twin Peaks Crisis," Stimson Center, <http://www.stimson.org/images/uploads/research-pdfs/USCrisisManagement.pdf>; Polly Nayak and Michael Krepon, "The Unfinished Crisis: US Crisis Management After the 2008 Mumbai Attacks," The Stimson Center, February 2012, < http://www.stimson.org/images/uploads/research-pdfs/Mumbai-Final_1.pdf >. Also see Michael Krepon, ed., *Nuclear Risk Reduction in South Asia* (New York: Palgrave Macmillan, 2004).

[87] See Christopher Clary, "Thinking about Pakistan's Nuclear Security in Peacetime, Crisis and War," IDSA Occasional Paper No. 12, Institute for Defence Studies and Analyses, New Delhi, September 2010, pp. 27-35. http://www.idsa.in/occasionalpapers/PakistanNuclearSecurity_2010.

[88] R. Jeffrey Smith, "India Moves Missiles Near Pakistani Border," *Washington Post,* June 3, 1997.

[89] Feroz Hassan Khan, *Eating Grass,* pp. 266-7.

Secunderabad.[90] The movement of short-range ballistic missiles in a future crisis would be a significant signaling device.

The introduction by India and Pakistan of cruise missiles and sea-based deterrents add further difficulties for deterrence stability and escalation control. Detection capabilities for ballistic and especially cruise missile launches would be challenging, let alone the prospect of successful intercepts. The movement of cruise and ballistic missiles to sea could provide harsh tests for command and control. The nuclear deterrents of India and Pakistan consist primarily of ballistic missiles, which makes deterrence in South Asia Army-centric. The two Air Forces have played an important, but secondary role, in the past. This could change significantly, if New Delhi chooses to respond to attacks by extremist groups with a punish-and-leave, as opposed to a seize-and-hold strategy. The two Navies will remain hard to employ for nuclear signaling purposes, although both are on the path to become the newest leg of their respective triads. Pakistan is on a path to deploy cruise missiles at sea,[91] while India intends to deploy both cruise and ballistic missiles at sea.[92]

With diversified nuclear deterrents, integration, joint operations, and command and control across military commands and services become of even greater importance. The armed forces of Pakistan and India have been particularly resistant to joint operations and integrated war fighting. One prominent example was the 1999 Kargil operation, in which a small group of officers within the Pakistan Army planned and executed an initiative with high escalatory potential, without the knowledge of the Air Force and Navy Chiefs of Staff.[93] Another example is the position of Chief of Defense Staff of the Indian Armed Forces, whose creation a Group of Ministers strongly recommended in 2001, and which has yet to be filled.[94]

---

[90] Raja Menon, *A Nuclear Strategy for India* (New Delhi: Sage Publications, 2000), p. 202. <http://www.stimson.org/images/uploads/research-pdfs/NRRMBiringer.pdf>

[91] Usman Ansari, "Pakistan Acknowledges Sea-Based Nuclear Deterrent," *Defense News*, May 23, 2012, <http://www.defensenews.com/article/20120523/DEFREG03/305230004/Pakistan-Acknowledges-Sea-Based-Nuclear-Deterrent>.

[92] "India to achieve N-arm triad in February," *Times of India,* January 2, 2012, <http://articles.timesofindia.indiatimes.com/2012-01-02/india/30580966_1_ins-arihant-first-indigenous-nuclear-submarine-akula-ii>; T.S. Subramanian, "Nuclear submarine Arihant to be fitted with K-15 ballistic missiles," *The Hindu*, July 27, 2009, <http://www.hindu.com/2009/07/27/stories/2009072755801000.htm>.

[93] See Peter R. Lavoy, *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict,* (Cambridge: Cambridge University Press, 2009).

[94] Arun Prakash, "Missing chief of defence staff," *The Indian Express,* August 27, 2007, <http://www.indianexpress.com/news/missing-chief-of-defence-staff/212867/1>; Rajat Pandit,

Sea-based and short-range, ground-based nuclear weapons raise new operational questions for Pakistan and India, including whether or how warheads would be maintained separately from launchers. This separation has been one way in which both countries have favorably distinguished themselves from other nuclear weapon-states that rely on a high level of readiness to launch nuclear strikes. In the past, the timeline required for launch readiness has provided space for signaling, monitoring and crisis management. All of these vital benefits would be very hard to maintain at sea with surface navies, and even harder for submarines. The ability to maintain "secure second strike" capabilities can be a positive development for deterrence stability – but only if proper arrangements are in place to avoid an early crossing of the nuclear threshold.

Another negative development for deterrence stability is that Washington's credibility as an "honest broker" between India and Pakistan has become more problematic as US ties with India have improved and those with Pakistan have deteriorated.[95] The steady worsening of US-Pakistan relations could have an upside if, as a consequence, Rawalpindi decides that improved relations with India are required as a compensatory step. If, however, another severe crisis erupts with India, Pakistani security managers will be faced with the potential for military engagements along two borders with little prospect for back-up from either Washington or Beijing, which has been notably cool to Pakistani requests for assistance during previous crises. While Pakistani leaders no longer trust the United States as an intermediary with India, no substitute to Washington is in clear view. Crisis management could therefore become even more challenging in the event of more spectacular attacks on Indian targets by individuals based and trained in Pakistan.

Conclusion

Pakistan's nuclear weapon-related programs have successfully met requirements established by a small group of decision makers. After surmounting many barriers to acquire these capabilities, Rawalpindi has accumulated a large, growing, and diversified arsenal of warheads and delivery vehicles. It appears that the requirements

---

"Leadership not ready for Chief of Defence Staff," *The Times of India,* August 20, 2002, <http://articles.timesofindia.indiatimes.com/2002-08-20/india/27324524_1_cds-post-integrated-defence-staff-higher-defence-management>; Pradip R. Sagar, "National task force digs up 10-year-old security ideas," *Daily News & Analysis,* May 25, 2012, <http://www.dnaindia.com/india/report_dna-exclusive-national-task-force-digs-up-10-year-old-security-ideas_1693337>.

[95] For a longer treatment of this development, Polly Nayak and Michael Krepon, "The Unfinished Crisis: US Crisis Management After the 2008 Mumbai Attacks," The Stimson Center, February 2012, p. 62-69, < http://www.stimson.org/images/uploads/research-pdfs/Mumbai-Final_1.pdf >.

set for minimal, credible deterrence were high at the outset, and have grown higher still after the US-India civil nuclear agreement and after the adoption of a more proactive Indian military posture. Earlier Pakistani claims that their doctrine of minimal, credible deterrence was incompatible with an arms race are now increasingly subject to question. At present, Rawalpindi's nuclear requirements emphasize credibility rather than minimalism. Pakistan is on course to produce a large nuclear arsenal to support ambitious nuclear targeting objectives. At the low end of these requirements, Rawalpindi has developed the capability to signal New Delhi and the international community that hostilities must end promptly. At a medium level, Pakistan appears set to acquire a large number of tactical nuclear warheads for use against Indian integrated battle groups. At the high end, Rawalpindi appears able to engage in significant counter-value targeting, and to deny India victory in the event of a complete breakdown in deterrence.

Altering Pakistan's current growth trajectory in nuclear weapon-related capabilities would require a different orientation toward India by Pakistan's military leaders, severe perturbations in Pakistan's economy, and/or a perception-shattering event that causes nuclear advocates to re-think their assumptions. New leaders are capable of surprising shifts in longstanding nuclear and national policies, as exemplified by Mikhail Gorbachev, Ronald Reagan, and Deng Xiaoping. Army Chiefs in Pakistan have been a diverse lot; it is possible for one to be appointed who believes that a more relaxed nuclear posture toward India is warranted. Pakistan's continued economic woes might be a factor in this decision, but shrinking budgets could just as easily result in more emphasis being placed on nuclear deterrence as conventional capabilities atrophy. The leaders of the three major political parties in Pakistan have vocalized their interest in improved relations with India, especially with respect to trade, but the extent to which they are able to bring Rawalpindi on board is in question. No matter who forms the next Pakistani government, the Prime Minister, along with his Indian counterpart, will find it difficult to normalize bilateral relations in the likely event that extremist groups seek to blow up progress.

Perception-shattering events on the subcontinent could have negative or positive effects. A settlement of the Kashmir dispute is hard to envision, and even if it were to occur, it is unlikely to affect the agendas of extremist groups based in Pakistan. An accident at a nuclear facility on the subcontinent would surely impact domestic plans for growth in this sector and could generate public opposition to military programs, as well. Political upheavals in Pakistan that usher into power religious parties and jihadist groups remain unlikely. Of all the perception-shattering events one can envision in

Pakistan, the most likely would be an economic collapse, rather than a continued, steady economic decline. This scenario, more than any other, could significantly alter the role of the military in Pakistan's society and its outsized share of budget allocations – including those for nuclear weapon-related pursuits. This scenario could also spell great difficulties for maintaining the safety and security of Pakistan's nuclear arsenal.

The safest route to reducing nuclear dangers remains patient, persistent, top-down efforts to normalize relations between Pakistan and India. Success in this pursuit is dependent on the recognition by Pakistan's military leaders that they possess a sufficient arsenal to secure their objectives, that their current path does not strengthen or stabilize deterrence, and that Indian leaders seek a properly functioning Pakistan more than a submissive one. Is this scenario realistic? Perhaps not, but deterrence built on very weak economic foundations is unsustainable. Given the large economic stake that Pakistan's military holds, and the jeopardy it faces in the event of continued economic decline, sustained efforts to increase cross-border trade and investment appear to be the path of least resistance to normalize relations on the subcontinent.