

DETERRENCE STABILITY AND THE CONVENTIONAL BALANCE OF FORCES IN SOUTH ASIA

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After the 1999 Kargil conflict, in which Indian soldiers had to beat back the surprise intrusion of Pakistani forces at elevations up to 17,000 feet, then-Indian defense minister George Fernandes boasted that, “If India can beat a professional military force equipped with modern firepower at the ground, and at a time of Pakistan's choice, with the initiative also in their hands, India can beat Pakistan anytime, anywhere.”² Pakistan’s past failures in conventional conflict are commonly cited as motivations for its nuclear weapons program. As Bruce Riedel, a former US intelligence official who has advised the Obama administration on South Asia policy, wrote, “Having lost four wars to India since 1947, the Pakistani military sees the bomb as an equalizer and deterrent against its bigger neighbor....”³

The fear of conventional defeat may drive Pakistan’s military leaders to threaten or actually employ nuclear weapons in the event of a breakdown in deterrence with India. If Pakistan’s conventional forces cannot stop India’s, then either nuclear threats or Indian restraint would be necessary to avoid a possible nuclear exchange. Even in short, limited conflicts, India’s advantage might quickly lead to unintended escalation. Walter Ladwig worried in a late 2007 analysis that, “As the Indian Army enhances its ability to achieve a quick decision against Pakistan, political leaders in New Delhi may be more inclined to employ force in a future conflict—with potentially catastrophic results.”⁴

This essay seeks to question the often implicit assumptions that undergird these analyses of the conventional military balance in South Asia. I begin with a short revisionist narrative challenging the conventional wisdom of the military balance in South Asia. Second, I then lay

out several scenarios whereby some triggers lead to unintended escalation and, from there, how unintended escalation could lead to nuclear weapons use. The narrative proceeds by examining how developments in the force balance across all three services—Army, Navy, and Air Force—affect the likelihood that a conventional conflict might proceed down a risky path. The analysis presented here focuses on the near-term (less than five years) because the situation in Pakistan is far too fluid for fine-grained assessments more than a few years into the future. This essay will conclude with policy suggestions for all involved governments to consider in the next several years.

To preview the conclusions, this essay argues that while Pakistan faces a conventional imbalance against India, the degree of that imbalance has been overstated—or at least confident assessments of imbalance require adjustment to incorporate a much greater degree of uncertainty. At one level, this constitutes a bow to empirical modesty that is inherent to the study of war, an uncertain endeavor even under the best of circumstances. Clausewitz again and again stressed to readers to avoid “absolute, so-called mathematical, factors” in thinking of war and instead emphasized “an interplay of possibilities, probabilities, good luck and bad” that were critical to military outcomes in his estimation.⁵ This call for modesty is reinforced by the lack of information on the full-scale combat capabilities of either India or Pakistan, neither of which has engaged in a conventional war in over four decades. The intervening years have witnessed major shifts in the nature of military technology. The extent that either or both militaries have internalized these shifts through successful modernization efforts is only hinted at by their recent performance in military exercises, crisis, and limited conflict. The fact that both the Indian and Pakistani armies have been engaged in counterinsurgency missions for the last ten to twenty years further suggests that modernization may be uneven.

Past precedent and current force balances, while favoring India, do not suggest that India will necessarily prevail easily over Pakistan in the context of a large-scale conventional conflict. In the last decade, Indian officials have been relatively relaxed about conventional arms acquisitions, while the Pakistan military has been acutely focused on them. This has meant that India has consistently “punched below its weight” in the conventional force balance, underperforming compared to its impressive military spending advantage over Pakistan. Consequently, the current balance does not suggest that India could easily defeat the Pakistan military at any time or place.

This conclusion is not an endorsement of complacency: Pakistan’s ability to deny India a conventional “victory on the cheap” is unlikely to prove durable. In the medium-to-long run, India will “win” the conventional race. So long as India continues to grow faster than Pakistan and continues to spend at rates comparable to historical averages (two to three per cent of Gross Domestic Product), there is no doubt that Pakistan will be unable to maintain even a patina of conventional parity over time. The challenge for both governments—and those that seek to promote deterrence stability on the subcontinent—is how to manage this transition from a regime where conventional *and* nuclear deterrence operate, to one in which Pakistan is *primarily* reliant on its nuclear arsenal.

History as Guide for India-Pakistan Conflict

India’s considerable military edge over Pakistan is normally taken as a given, from which analysts typically focus on how Indian political and military leaders might employ military force and whether they would accidentally cross a Pakistani “redline.” Within Pakistan, analysts scrutinize whether and how its leadership would choose to employ nuclear weapons (or threats of

their use) in the face of impending Indian conventional military victory. Often this assumption—jumping to the end of the story—is justified by pointing to past precedent. After all, India has not lost any of its four wars with Pakistan. Even some within Pakistan occasionally jest that “the Pakistan Army is the best army to have never won a war.” At a certain level of abstraction, these historical references are certainly true, but past conflicts tell us very little about the contours of a future fight.

First, the track record is more muddled than a binary win-loss tally would indicate. In the 1947-48 war, Pakistan seized a sizeable portion of the old princely state of Jammu and Kashmir, even if it failed to take Srinagar and the Vale, as intended. In 1965, Pakistan’s military leaders certainly made a disastrously bad decision when they decided to launch Operation Grand Slam. But the result of the three-plus weeks of fighting in 1965 was largely a stalemate. Analysts remember that Indian infantry advanced as far as the outskirts of Lahore in 1965, but not enough emphasis is given to the fact that they were stopped. Perhaps, as some Indian histories suggest, Indian troops never sought to actually cross the canal east of Lahore, but only sought to advance up to it. Neither of these conflicts offers much insight about a future India-Pakistan war. In 1947-48, fighting by very different, much smaller armed forces was confined solely to the Kashmir theater. In 1965, major battles of the war were fought along a relatively small portion of the nearly 2,000-kilometer boundary between the two states. The two armored forces were dramatically smaller than today’s forces. About 750 Pakistani tanks and 650 Indian tanks confronted each other in 1965, compared to perhaps three times that number for both militaries today.⁶

Second, while the 1971 war was a disaster for Pakistan on multiple levels, its history contains little information about how a contemporary, full-scale India-Pakistan fight might

unfold. East Pakistan was surrounded by India on all sides, resulting in a more than 4,000-kilometer border between present-day Bangladesh and India. In such circumstances, shorter interior lines of communication can sometimes compensate for inferior numbers. In this case, the quantitative overmatch by Indian forces was overwhelming. Indian forces in the eastern theater included six full divisions, portions of an additional mountain division and several brigades, and the equivalent of three armored regiments. Pakistan faced this force with three infantry divisions (two of which were without their normal accompaniment of artillery and vehicles), two additional “divisions” formed on an *ad hoc* basis out of spare brigades and division headquarter staffs, and one regiment of light tanks. (The terrain of East Pakistan substantially discounted the utility of tanks.) At the theater level, it is easy to argue India enjoyed 2:1 superiority – even without assuming any combat power for the 50,000-100,000 Bangladeshi guerrilla forces operating in Pakistan’s eastern wing or on its periphery, a small portion of which had been organized into formal units by Indian trainers. Because Pakistani officials were wary that New Delhi would seize a portion of East Pakistan, from which they would announce a free Bangladesh state, the inferior Pakistan military force was arrayed along the perimeter of the eastern wing, rather than concentrating their forces in a smaller inner ring.⁷ The results were understandably catastrophic.

The picture on the western front in 1971 was substantially different, partially because of the short two-week nature of the conflict, which constrained the degree of escalation and attrition. This was due to India’s limited, mostly defensive objectives along its border with West Pakistan, but it was also a product of the professionalism of the Pakistan Army, which demonstrated competence when there were not decisive odds stacked against it. Indian forces advanced very slowly in the face of concentrated Pakistani opposition in the north, near the city

of Sialkot. After fourteen days of fighting, Indian forces were still only on the eastern outskirts of the town of Shakargarh, meaning they had gained territory only at a pace of about one kilometer a day. The Indian Army did take large areas in the deserts along the southern border, capturing 7,500-plus square kilometers of Pakistani territory. Even so, the Indian Army penetrated approximately 50 kilometers during the two-week conflict, or a rate of four kilometers per day. Most of the territory was gained against essentially no Pakistani opposition and the strength of the Indian attack had dissipated considerably by the end of the war when it finally did face Pakistani forces. It is doubtful that future gains would have been at a similar rate. Even in the south, the Indian offensive was stopped well before it reached the valuable irrigated “green belt” areas to the east of the Pakistani city of Hyderabad.

Finally, warfare has changed since the last full-scale war four decades ago. It is unclear how two major developments in combined arms warfare impact the military balance. The first is the advent of anti-tank guided missiles (ATGMs), which both nations have in abundance.⁸ The first anti-tank missile capabilities appeared on the battlefield between near-peer opponents in the 1973 Arab-Israeli war. These munitions are widely seen to heavily favor the defender, although their defensive strength can be mitigated through offensive artillery coordinated with armor and infantry advance. The combined use of intense combat power (and concomitant greater supplies of ammunition to the forward edge of battle) could, at a minimum, slow the rate of advance even if the offensive force were able to neutralize the ATGM threat.⁹

The second development is the role that airpower will play in any future India-Pakistan conflict, both in its close air support mission and against other targets further away from the forward edge of battle. During the 1999 Kargil conflict, the Indian Air Force was just transitioning to precision-guided munitions, and had to arrange for urgent imports of laser-

guided bombs because it exhausted its supplies in relatively limited operations against the Pakistani intrusion.¹⁰ Terrain limited the effectiveness of airpower, even with precision-guided munitions, although there is some disagreement between the Indian Army and Indian Air Force about the impact the air arm had on the high-altitude conflict.¹¹ Airpower's application in air-land operations is appropriately viewed as a "game-changing" capability, while the advent of ATGMs is viewed as a less important technological shift. Nonetheless, as this essay will argue, airpower's implications for ground operations might be less dramatic if air dominance is still contested. In other words, so long as air forces must remain primarily concerned with adversary air assets and air defenses, they will have a lesser effect on the land fight.

Pathways to War

What might serve as a trigger for unintended escalation, a process that could terminate at full-scale war and perhaps the use of nuclear weapons? How might unintended escalation unfold? One possibility—present in the 1965 Rann of Kutch affair, the 1984 Siachen Glacier seizure, and the 1999 Kargil conflict—is that a border skirmish or limited land grab by one side leads to a localized conflict. This seems less likely now than before, in part because after sixty years of hostility there are very few pieces of territory that are vulnerable to surprise seizure by the adversary. Both countries have thought extensively about their areas of weakness, particularly after Kargil.

The second possibility is an "accidental" war growing out of a major military exercise or a false alarm. This model is evident from crises in 1984, 1987, and 1990. This pathway to uncontrolled escalation also seems less likely now. Two of those crises (1984 and 1987) were driven by fear of an Indian preemptive strike against Pakistani nuclear facilities—a concern that

also played into the more complicated 1990 crisis. Both countries now have larger, more dispersed nuclear arsenals that should be quite resistant to preemptive attacks, whether by nuclear or conventional means. Additionally, bilateral confidence-building measures put in place to prohibit attacks on nuclear facilities, to provide advance notice of major exercises, and to prevent airspace violations should also reveal indications and warnings of the possibility of impending attacks masked by major military exercises.¹²

The standard template, then, for most analysts concerned about uncontrolled escalation in South Asia is that a future India-Pakistan conflict will begin with a major terrorist attack in India that can be traced back to Pakistan. The December 13, 2001 attack on the Indian parliament and the November 26, 2008 attacks in Mumbai are archetypical examples of possible triggers of conflict. A third attack, the coordinated bombing of the Mumbai commuter rail system on July 11, 2006, also merits inclusion as an example of a possible initiator of unintended conflict, since these attacks were stunningly effective, killing 209 and injuring 900 more.¹³ Notably, none of these despicable attacks triggered an actual war or even limited hostilities between the two militaries. One could nonetheless imagine, under plausible scenarios, that certain mass casualty acts against iconic targets might lead to a decision by a future Indian Cabinet Committee on Security to initiate hostilities against Pakistan.

Two such scenarios seem most compelling. The first is that multiple major attacks occur during a compressed timeframe. Such sequential events were pivotal during the 2001-2002 military stand-off, with the December 13, 2001 attack on the Indian parliament preceded by an October 1, 2001 attack on the Jammu and Kashmir legislative assembly in Srinagar. When a third terrorist attack occurred on May 14, 2002, this time involving the families of Indian Army personnel mobilized in Jammu and Kashmir, concern over military conflict peaked again.

Another, not mutually exclusive scenario, is that the central government in New Delhi is either particularly hawkish or particularly weak. Under this scenario, the governments of A.B. Vajpayee and Manmohan Singh are viewed as aberrations in being able to resist calls for military actions. A future central government in New Delhi might not feel so constrained and might feel compelled to act militarily.

If a terrorist attack does precipitate hostilities – whether or not Pakistan’s military leaders were complicit in the planning and execution of the attack – Rawalpindi will have strategic warning of possible hostilities, During the 2001-2002 military stand-off, it took approximately 24 hours before the New Delhi police publicly linked Pakistan to the attack and five days before Prime Minister Vajpayee ordered military mobilization.¹⁴ Even a less deliberative leader would likely take 24 or 48 hours following a terrorist strike to order a punitive attack. The planning for such an attack would likely take additional time still.

Once a conflict begins, it is fairly easy to imagine how it might escalate vertically (in terms of severity) or horizontally (in terms of geographic scope). A few possibilities for limited conflict are often mentioned. The first would be a limited air strike against terrorist-related targets across the Line of Control dividing Kashmir. It is unclear whether such a strike would achieve much purpose. Terrorists could employ mobility to avoid targeting. Also, Indian airstrikes would likely occur after Pakistan had heightened its air defenses. Additionally, there is no reason to suspect airstrikes would be “clean.” Unless the Indian Air Force relies solely on maneuver and electronic warfare to evade Pakistani air defenses, attacks against camps would require some targeting of Pakistani air defenses and might also require air-to-air dogfights between the two air forces. The acquisition by the Indian Air Force of standoff attack capabilities might make this scenario more attractive to New Delhi, both because it might not be necessary

for manned aircraft to cross the Kashmir divide and also because attacks could focus on terrorist-related facilities with less concern for Pakistan's air defenses.

A similar, but more escalatory, scenario involves airstrikes against targets that lay outside of Kashmir. Historically, the contested nature of Kashmir has meant that violence confined within the borders of the old Princely State is perceived as less escalatory than violence that crosses the established international border. Journalists and analysts commonly mention the Lashkar-e-Taiba/Jamaat-ud-Dawa headquarters at Muridke, a suburb of Lahore, as a possible target.¹⁵ In addition to the heightened political salience of any attack on Pakistan proper, an attack against Muridke would carry with it the possibility of greater collateral damage given its urban surroundings.

Even a limited Indian attack against terrorist camps in Kashmiri territory controlled by Pakistan would generate strong pressures for a vigorous Pakistani response. When discussing possible scenarios, retired Pakistani officers have only identified one possible exit without a Pakistani counterstrike: if the IAF were to fail to deliver punishing blows and lose aircraft to Pakistani air defenses, Pakistan might be able to "declare victory." Public pressures can be unpredictable, however, as the response to the May 2, 2011 U.S. raid on Osama bin Laden's residence in Abbottabad, Pakistan suggests. Barring IAF incompetence, it seems likely that the Pakistan military would attempt limited reprisal attacks. At the lowest end of the escalatory spectrum, it might seek to dramatically increase the rate of artillery fire and infiltration along the Line of Control. At the middle of the spectrum, it might attempt an air strike of its own, although this would also face the task of flying into an active and prepared Indian air defense system. At the high end of the spectrum, it might choose to use conventionally-armed ballistic or cruise missile systems against Indian targets, e.g., a nearby Indian air field that would be hard to miss

and would have symbolic value. At each stage in the tit-for-tat cycle, leaders in both countries would confront the choice of whether to continue or escalate hostilities. It certainly seems plausible that even limited air strikes—the most contained military option available to Indian planners—could quickly escalate irrespective of Indian intent. Past episodes of successful crisis management in South Asia notably involved episodes free of cross-border air operations; crisis diplomacy would be substantially complicated if both countries close their air spaces or attempted to jam the communications systems of the other. Past efforts involved frequent phone calls, shuttle diplomacy, and high-profile visits.¹⁶ All might be difficult even in the face of modest air combat.

Escalatory pressures will be even more severe in the context of ground combat. Imagine, for example, if the Indian army attempted to capture Pakistani-held terrain along a narrow area of the border or Line of Control—in effect, a “Kargil in-reverse.” Would that force be defended by Indian air cover, even on the Pakistani side of the Line of Control or international border? If so, how might the air fight remain limited? If not, India’s forces would be exposed to continual Pakistani air force sorties, just as Pakistani Northern Light Infantry suffered in Kargil in 1999. Air strikes can be manageable in high altitude, rugged terrain where a bomb that misses by one meter horizontally may well miss by 20 meters vertically. Mountainous terrain is very difficult to capture in the first place, a feat only accomplished by Pakistan in 1999 and India on the Siachen glacier in 1984 because they used surprise to hold unoccupied terrain. In the most mountainous parts of the India-Pakistan border, precisely because of 1984 and 1999, there is not unoccupied terrain of this sort left.

If a small Indian force establishes a penetration across the Line of Control or International Border, then all nearby Pakistan Army units can concentrate their firepower on

dislodging them. A cycle of slow-motion attrition could be started where both adversaries dispatch additional reinforcements into the contested area. Indian forces were able to win this sort of fight above Kargil, in no small part because Pakistani military leaders were unable to reinforce their troops because doing so would expose the fact that Pakistani troops had seized this territory, not *mujahedeen* as claimed.¹⁷ New Delhi might somewhat limit Rawalpindi's ability to concentrate superior forces by threatening maneuvers elsewhere along the Line of Control or International Border between the two countries, attempting to signal some sort of escalation dominance and forcing the Pakistan Army to maintain forces in defensive roles rather than freeing them up for counterattack. If an Indian force could maintain territorial gains, this would generate incentives for Pakistani military leaders to order an attack elsewhere at a place geographically advantageous to Pakistan.

If Indian armed forces were to attempt broad, shallow thrusts along large portions of the Line of Control and the International Border, they would need to fully mobilize. Whether Indian forces do so or not, the Pakistan military has incentives to ready its full combat power against the Indian force, since Rawalpindi may need to do so to repel Indian advances and since Pakistan's military leaders cannot be sure of the scope of Indian ambitions, having difficulty discerning whether Indian mobilization for a limited war is merely a prelude to full-scale conflict. Indian political and military leaders would then face the choice of mobilizing fully—looking very much ready for a full-scale war—or face the more difficult prospect of attempting to defeat the fully mobilized Pakistani force with only a portion of India's total firepower.

In public fora, retired Indian officers have discussed using India's longer-range systems to prevent Pakistan from reinforcing its frontline units. In this view, reliance on some combination of Indian airpower and long-range ground systems, such as the Smerch multiple

rocket launch system, could disrupt efforts by Pakistan to move its armored reserves to the battlefield.¹⁸ If successful, these tactics might allow the Indian Army to somewhat diminish opposing military capabilities engaged along the front. Even so, substantial portions of both militaries would be engaged on the ground, Pakistani reserves would face rocket and air bombardment, and presumably both air forces would be engaged in air battle all along the front.

Even this cursory review of India's limited warfare options highlights the difficulties of escalation control in limited warfare. A variety of triggers could move India and Pakistan from a crisis to a period of full-scale war, or some junction in between. These pathways do not require great leaps of imagination.

The Conventional Military Balance

This section will review the current and near-term future state of the military balance, reviewing the naval, air, and ground balances in sequence. The sections centered on the air forces and to a much lesser extent naval forces will necessarily spill over to include the effect of those services on ground combat.

The Naval Balance

By far the biggest imbalance between forces exists between the Pakistan Navy and its Indian counterpart. As *Jane's* publications note, the Pakistan Navy is both the "most neglected" and the "smallest" of Pakistan's armed services.¹⁹ The Pakistan Navy surface fleet consists primarily of:

- Six United Kingdom-origin Type 21 frigates (*Amazon-* or *Tariq-*class), four of which are fitted with the relatively short-range RGM-84D variant of the Harpoon anti-ship missile

(124 kilometer range) and at least two of which are fitted with the LY-60 surface-to-air missile system, which given the short range of the system (25 kilometer) provides little defense against modern air-launched anti-ship cruise missiles;²⁰

- One U.S.-origin Oliver Hazard Perry-class frigate, retrofitted to be able to launch Harpoon anti-ship cruise missiles;²¹
- Three Chinese-origin Type 054 frigates carrying YJ-83 anti-ship cruise missiles (150-200 kilometer range) and HQ-7 surface-to-air missiles (12-15 kilometer range);²² and
- Six small missile boats of varying classes, carrying either Harpoon anti-ship cruise missiles or CSS-N-8 anti-ship cruise missiles.²³

The surface vessels are bolstered by a small, but capable submarine force.²⁴ Notably:

- Two French-origin Agosta 70 submarines, with the capability to carry Harpoon anti-ship cruise missiles (124 kilometer), torpedoes, and Stonefish influence mines;²⁵
- Three French-origin Agosta 90B submarines, fitted (or to be fitted) with Mesma air-independent-propulsion systems dramatically increasing the range of the submarine while dived, and carrying Exocet anti-ship cruise missiles (50 kilometer range), torpedoes, and Stonefish mines;²⁶ and
- Three Italian-origin MG110 midget submarines, ostensibly for the insertion of special force teams, but with potential naval roles of mine laying and the capability to launch torpedoes.²⁷

The Pakistan Navy additionally operates several air assets capable of detecting and in some cases engaging surface and sub-surface combatants. Three Atlantic maritime patrol aircraft are capable of carrying torpedoes, mines, and Exocet anti-ship cruise missiles.²⁸ Pakistan currently has at least four P-3C Orions, a longer-range, more capable maritime patrol craft than the Atlantics,

able to carry anti-surface and antisubmarine weapons. The precise number of operational P-3s is in flux since two of Pakistan's Orions were destroyed in a May 23, 2011 terrorist attack on the Mehran Naval Station in Karachi, an additional aircraft may have been damaged, several aircraft are regularly in the United States for repairs or refurbishment, and Pakistan is still receiving deliveries of additional P-3Cs.²⁹ Six Focker-27-200 maritime patrol aircraft can detect enemy vessels in the event of hostilities, but this modified civilian aircraft does not have any weaponry aboard to allow it to engage targets. They could cue perhaps twenty-five of Pakistan's Mirage-5 aircraft that possess sea strike capability, armed with the Exocet cruise missiles.³⁰

Pakistan's Navy and maritime components of the Pakistan Air Force have considerable ability to complicate any Indian Navy effort to decisively affect a war from the sea alone, but the Indian Navy's has impressive capabilities, enjoying quantitative and often qualitative superiority in every category of ship. India has twelve frigates to Pakistan's ten, eleven destroyers where Pakistan has none, twenty corvettes with anti-ship missiles compared to Pakistan's six smaller missile boats, thirteen diesel-electric submarines compared to Pakistan's five (excluding Pakistan's midget subs), one nuclear submarine (leased from Russia), and an aging aircraft carrier.³¹

For the purposes of this essay, the relevant question is not which navy would win a maritime war, but rather whether the Indian Navy could beat its Pakistani counterpart so decisively and quickly that it might alter the outcome of war on land. After all, a very successful effort by the Indian Navy might be viewed as an effort at the "economic strangulation" of Pakistan, one of the hypothetical Pakistani nuclear redlines identified by Director General Khalid Kidwai of Pakistan's Strategic Plans Division in an interview with Italian researchers in 2002.³²

It is reasonable to question the speed and success of the Indian Navy in preventing the flow of materiel and other resources to Pakistan during a fight. First, maritime military campaigns even when successful are slow, while wars between India and Pakistan have been resolved quickly. Large-scale fighting lasted one month in 1965, two weeks in 1971, and two months in the 1999 Kargil conflict. As the British strategist Julian Corbett noted in his 1911 masterpiece on maritime strategy, one does not win maritime war on points:

[I]t scarcely needs saying that it is almost impossible that a war can be decided by naval action alone. Unaided, naval pressure can only work by a process of exhaustion. Its effects must always be slow, and so galling both to our own commercial community and to neutrals, that the tendency is always to accept terms for peace that are far from conclusive.³³

Second, enforcing a successful blockade is more difficult than evading one.³⁴ The Pakistan Navy has opened up two additional naval facilities at Ormara and Gwadar to decrease its reliance on Karachi and to dramatically widen the area that the Indian Navy must close off to shipping. Ormara is more than 230 kilometers west of Karachi and Gwadar is an additional 215 kilometers west of Ormara. Consequently, a successful blockade of Pakistan now requires the successful blockade of a very long Pakistani coastline. To close off this area to neutral shipping could prove particularly difficult since Gwadar and the edge of Pakistani waters are very close to the Gulf of Oman, host to the international shipping lanes for vessels exiting the Persian Gulf. Additionally, China's recurrent interest and involvement in the creation and management of Gwadar port would add geopolitical complications to any Indian actions against the port. Former Indian Navy Chief J. G. Nadkarni noted in 2000 that the opening of Ormara would considerably complicate the Indian Navy's ability to blockade Pakistan. At the time, Nadkarni argued that

Ormara's opening had somewhat less strategic significance because of the lack of rail and road links to the Pakistani population centers in the east.³⁵ Since then, in 2004, Pakistan completed construction of the Makran Coastal Highway, a modern road connecting Gwadar, Ormara, and Karachi.³⁶ Even modest supplies through Gwadar and Ormara could prolong a conflict and diminish the utility of a naval blockade as a coercive lever. If Gwadar and Ormara's imports were supplemented by overland trade with China, this could further decrease the effectiveness of a naval blockade. In 2011, the Chinese and Pakistani governments completed a joint study of constructing a rail link through the Khunjerab pass, which already hosts a paved road link to China.³⁷

Third, technological advances over the last thirty years—notably quieter diesel electric submarines and the diffusion of anti-ship cruise missiles that can be launched from air, sea, and underwater—have likely made it easier for Pakistan, which desires to deny India control of its sea lines of communications, than for India, which seeks to maintain positive sea control. Modern weaponry has made it easier for air and subsurface vessels to engage surface ships successfully from standoff distances, outside of the reach of many of the surface ships' defensive capabilities. Most dramatically, two Argentine Super Étendards armed with Exocet missiles fired upon the British destroyer *HMS Sheffield* during the 1982 Falklands Crisis. Even though only one of the two Exocets struck the *Sheffield* and even though the warhead on that missile may not have detonated properly, the impact damage and subsequent fires led to twenty dead, the need to abandon the ship, and its eventual sinking.³⁸ Similarly, cruise missiles can threaten even large capital ships. In another engagement during the Falklands war, two Super Étendards fired two Exocets, striking and sinking the large roll-on/roll-off container ship *Atlantic Conveyor*.³⁹ By comparison, the *Atlantic Conveyor* was larger than India's amphibious transport ship, the

Jalashwa (former *USS Trenton*) and about the size as India's former aircraft carrier, the *Vikrant*. Granted, the *Atlantic Conveyer* was a merchant marine vessel, probably having inferior equipment and crew training for responding to a cruise missile attack than a comparably sized military naval platform. Nonetheless, naval warfare during the Falklands War provides cautionary lessons about the difficulties of sea control against an adversary possessing anti-ship cruise missiles.

When India finally receives delivery of the *Vikramaditya* (formerly the *Admiral Gorshkov*), that platform's MiG-29Ks and Ka-31 airborne early warning helicopters should have a reasonable chance of defending the area around the carrier from aerial attack. The delivery of this carrier will provide much wider area coverage by naval air defenses than the *Viraat*, and its accompanying Sea Harriers, mostly because of the age of both the carrier and its aircraft combined with maintenance and training decisions of the Indian Navy. As a 2010 audit of the Indian Navy's aviation arm by India's Comptroller and Auditor General (similar to the U.S. Government Accountability Office) concluded,

[The] Indian Navy's Air Combat capability has weakened drastically as the available aircraft carrier is almost half a century old and is running on borrowed time since it was to be decommissioned in 2007-08.... Attack capability of the already depleted fighter aircraft fleet on-board the carrier is significantly eroded as they have not been kept in full combat readiness in the absence of a fully functional fitted radar and limited firing of practice missiles.⁴⁰

As this report noted, the Sea Harriers had not practiced employing their Magic 2 air-to-air missiles since 2003, making it questionable that pilots have maintained proficiency with the weapon.⁴¹ The Indian Air Force aircraft can be assigned a maritime air defense role in the event

of full-scale hostilities, but without an organic capability and without a strong system of joint operations, the Indian Navy will be reliant on the Indian Air Force. It will also be forced either to deploy close enough to India that naval forces do not outreach the “legs” of the land-based aircraft, or to deploy at sea without adequate air cover. In either event, the efficacy of Indian sea control efforts is called into serious doubt.

Even with adequate air cover, the threat of torpedoes from relatively quiet modern diesel-electric submarines would remain.⁴² To make one final comparison with an analogy from the Falklands War, the British nuclear submarine *Conquerer* was able to sink the Argentine light cruiser *Belgrano*, a ship approximately the size of the *Jalashwa*, using relatively un-advanced torpedoes (the design first entered British service in 1932). The sinking of the *Belgrano* cost Argentina its flagship vessel and the lives of 321 sailors, while the *Conquerer* was able to successfully evade efforts to detect and destroy it.⁴³

These technological trends make it easier for India to sink Pakistani vessels, but this is not as damaging to Pakistani interests for two reasons. First, Pakistan has more modest goals at sea—to be able to maintain some small amount of shipping of necessary supplies—whereas Indian goals are more maximalist, i.e., to cut off almost all of Pakistan’s vital supplies. Second, India’s ability to successfully interdict vessels should weaken further west, because of the decrease in air cover and because of the dangers of hitting neutral shipping coming out of the Gulf of Oman. This declining success gradient is also incompatible with India’s more maximalist goals.

There is no doubt, however, that even the *prospect* of an Indian blockade will likely dissuade many neutral ships from traveling to Pakistani ports. Even so, there is no reason to suspect that the pain will be so acute as to quickly affect events on land. Pakistan imports only

some of its most pressing needs. It is a consistent net exporter of rice and many other food products (though it imports large quantities of edible oils). It is admittedly reliant on imports for its energy needs, since it only produces 15.5 percent of its normal daily consumption.⁴⁴ Aware of its vulnerability to market-driven supply shocks, let alone war-generated ones, the Pakistan government announced plans to stockpile twenty days' worth of petroleum products as a result of fuel shortages experienced in 2010.⁴⁵ To the extent shortages emerge, illicit and licit overland trade from Iran is also likely to grow rapidly and, depending on the time of year, the small overland route to China (via the Karakoram Highway) might also support modest trade flows in key goods.

Thus, it seems unlikely that a threatened or administered blockade would trigger such a rapid cessation in the flow of goods to Pakistan as to quickly alter the contours of a major conflict. India-Pakistan wars have largely been fought with the equipment on hand at the time hostilities commenced, as there is little time to arrange for emergency shipments of parts and spares even with unobstructed shipping before the cessation of combat. Time and space combine to make decisive naval combat unlikely. The timescale would likely be so long as to be impractical. Moreover, Pakistan would have to become an international pariah—likely requiring Chinese acquiescence, given its UN Security Council veto—for India to receive diplomatic support for a prolonged blockade.

More importantly, escalation control would be difficult at sea, as well as on land. Indian Navy and Indian Air Force aircraft would have to prevent Pakistani maritime patrol aircraft and sea-strike fighters from threatening Indian capital ships, resulting in likely engagements with Pakistan's Air Force. Indian air power would also have strong incentives to bomb the facilities from which Pakistan maritime aviation assets take off. Since runways are relatively easy to

repair given competent personnel, air strikes against ground facilities would likely have to be recurrent to keep runways out of operation and to destroy Pakistani aircraft. In other words, naval battles can quickly lead to fighting that affects Pakistani territory and airspace.

To sum up this section, while the trend lines at sea favor India, they are unlikely to be so decisive as to determine the war's outcome. Maritime developments neither open space to India to engage successfully in limited war, nor do they appear to allow India to easily and decisively use maritime power to affect developments on land. While India's naval power might contribute to a Pakistani military defeat, developments at sea are likely to be largely confined to that medium. The air balance permeates all aspects of the battlefield to a much greater extent.

The Air Balance

Two important developments in the air balance are worth highlighting. The first is that while India continues to improve its advantages in the air, faster Pakistani procurement efforts relative to India have led to a temporary narrowing in the capabilities gap over the last decade, as will be explained below. The Indian Air Force's acquisitions have suffered from procedural bottlenecks, rather than inadequate funding. If these bottlenecks were to be removed, or if large pending procurements were delivered promptly, the gap would widen, conceivably quite rapidly. In the near-term, however, India almost certainly can win air supremacy in a protracted conflict, but for much of the fight it will have to be satisfied with air superiority and, in the early stages, it may encounter a period of air parity in portions of Pakistani airspace.⁴⁶ Air dominance will have to be won by hard fighting, which in part means that the Indian Air Force may be unable to turn fully to the task of altering dynamics on the land until after several days or perhaps weeks of fighting. As Walter Ladwig notes in his analysis of Indian limited war options, "The [Indian]

strike corps would operate under the protection of the Indian Air Force, which would be expected to *first* gain air superiority over Pakistan and *then* provide close air support to ground operations.”⁴⁷

The second notable development involves the procurement of certain weapons systems that may have reopened some space for limited Indian attacks on Pakistani soil with slightly less escalatory potential than before. Such precision strikes do not eliminate the risks of escalation, but the risks vary from those that accompany traditional land, sea, or air combat.

Why, then, might it be more difficult for India to gain air dominance than is typically assumed? First, the Pakistan Air Force has undergone substantial modernization since 2001, when it exited from a decade of U.S.-imposed sanctions in exchange for Pakistani support in the George W. Bush administration’s “global war on terrorism.” In 2001, the best fighters Pakistan had in its inventory were 32 F-16A/Bs.⁴⁸ The planes, whose delivery to Pakistan began in 1983, had been kept operating through creativity and by cannibalizing other planes for spares after the United States imposed nuclear-related sanctions in 1990. None of Pakistan’s aircraft in 2001 had the ability to engage enemy fighters beyond visual range (BVR).⁴⁹ Today, after a decade without U.S. sanctions and with substantial U.S. subsidies and aid for the Pakistan military, Pakistan has 45 F-16A/Bs, all of which have undergone or are undergoing mid-life updates to improve the avionics and electronics of the planes and allow them to support BVR air-to-air missiles.⁵⁰ In addition, Pakistan has 18 F-16C/Ds (also with BVR capability), and perhaps 30 JF-17 Chinese-origin fighters with an additional 150 to 210 of these planes on order.⁵¹ While the JF-17 has not been widely fielded by air forces globally, these aircraft reportedly have armaments and electronics to support BVR capability.⁵² In the 2000s, Pakistan and India both acquired airborne early warning and control platforms (AEW&C). Pakistan acquired four Swedish Erieye systems

a few years after India acquired the Israeli PHALCON system (two delivered and one more on order).⁵³ More recently, Pakistan has also begun to acquire the ZDK-03 AEW&C aircraft from China, with the first delivery of perhaps up to four aircraft reported in January 2011.⁵⁴ Consequently, while Pakistani analysts were concerned about glaring deficiencies in their Air Force with regards to BVR and AEW&C capabilities,⁵⁵ today that qualitative gap has narrowed substantially.

This order of battle does not diminish the extremely capable Indian Air Force, which has demonstrated near-peer status with even the U.S. Air Force in air-to-air exercise settings.⁵⁶ Instead, it suggests that the task of establishing air supremacy over Pakistan, often viewed as a prerequisite for extensive air-to-ground operations, will be quite challenging. India is unlikely to be able to counter Pakistani air assets through clever planning. As noted earlier, it seems very probable that there will be some period of strategic warning prior to any Indian attack. The triggering event not only might provoke an Indian response, it would also warn Pakistan that such a response could be coming. This makes the air-to-air fight and the suppression of enemy air defense missions difficult to execute by preemptive strikes, as Israel was able to execute against Egypt during the 1967 Arab-Israeli war.

The Indian Air Force will either have to spend considerable effort suppressing Pakistani air defenses or it will have to rely solely on precision-guided munitions that can be launched from higher altitudes. The offense-defense competition between aircraft and ground-based defenses has shifted considerably. Like many countries, Pakistani air defenses are quite formidable below 15,000 feet (or approximately 4,000 meters) altitude. French-made Crotale, European-produced Mistral, and Swedish-made RBS-70 surface-to-air missiles all can engage targets up to 4,000 meters. All three systems are mobile—either towed or man-portable. At lower

altitudes (up to approximately 2,500 meters), the man-portable SA-16s and an indigenously produced system, the Anza, threaten aircraft. Pakistani ground-based air defenses present little threat at higher altitudes, where only a handful of Chinese-origin CSA-1s (a SA-2 variant) threaten high-flying targets.⁵⁷ The Indian Air Force Su-30MKI, Mirage-2000s, and Jaguars likely have the capability to drop laser-guided bombs, which could engage ground targets at altitudes above the reach of all but the few CSA-1s. Whether India has sufficient numbers of kits to use laser-guided munitions in a close-support role, directly affecting the course of the armor battle, is less clear. In the 1999 Kargil conflict, India had to arrange for urgent imports of bomb kits from Israel after exhausting its stores, but has likely expanded its inventory considerably in the intervening years.⁵⁸

India is transitioning to much greater reliance on precision-strike weapons, but it is difficult to assess based on open-sources the pace and extent of this transition. It will certainly occur, but perhaps not in the short term. The United States made this transition over two decades, going from about eight per cent guided munitions during the first Gulf War in 1991, to about 29 percent during Operational Allied Freedom in Kosovo in 1999, to approximately 64 percent guided munitions during the opening air campaign of Operation Iraqi Freedom in 2003.⁵⁹

If and when India does establish air superiority, the Indian Air Force may still have difficulty significantly affecting the conduct of the ground war. Historically, air forces played at best a modest supporting role in each of the four major conflicts between India and Pakistan. In previous wars, air forces played a significant role in shaping the fight in only one battle—in the desert outside of the Indian town of Longewala in 1971. Even here, it appears the Indian Air Force largely harassed a Pakistan force that had already been repulsed by Indian ground forces, resulting in more casualties but not altering the outcome of the ground fight.⁶⁰

Despite attempts to synchronize Indian Army and Indian Air Force efforts in war games, integration of action across services still appears problematic and incomplete.⁶¹ Even when an air force has total air dominance and considerable expertise at integrated air-ground combat, there are reasons to suspect that the effects of airpower on armored units are far less than some airpower advocates suggest. Daryl Press, for instance, has argued that airpower's utility against defensive armored units—exactly the relevant interaction for a warfare scenario in South Asia—has been overstated substantially.⁶² Moreover, the Indian Air Force has shown a strong aversion to close air support missions, much preferring deep strikes against strategic targets. In 2009, Air Vice Marshal (retd.) Kapil Kak, deputy director of the IAF-funded Centre for Air Power Studies, stated, “There is no question of the air force fitting itself into a doctrine propounded by the army. That is a concept dead at inception.”⁶³ Even if the Indian Air Force secured air dominance, this would push Pakistan to rely on its missile forces, a development that might have more strategic costs than military benefits.

Another significant technological development is the development and induction into the Indian military of the Indian-Russian BrahMos supersonic cruise missile in land attack modes, as well as the potential acquisition of the U.S.-produced Joint Standoff Weapon (JSOW). Stand-off capabilities may alter the strategic environment in South Asia by potentially opening up a small window for military options that, while still risky, could have less escalatory potential.

The BrahMos has been inducted into the Indian Army and Navy. The Indian Air Force may field a BrahMos variant, but the weight of the missile requires substantial modifications to the Su-30MKI, and the air-launched variant is unlikely to be fielded before 2015.⁶⁴ Even with additional delays, it is likely that the Army and Navy variants of the BrahMos will be ready for operational use in the next five years, and perhaps the Air Force variant as well. The BrahMos

has an advertised range of 290 kilometers, just below the 300-kilometer Missile Technology Control Regime threshold. Even so, it could easily reach targets across the Kashmir divide. For example, the major city of Muzaffarabad is a mere 25 kilometers from the Line of Control.

The JSOW is a precision-guided munition that has an advertised maximum range of 130 kilometers and can carry cluster sub-munitions for dispersed targets (like terrorist camps) or unitary warheads for hardened targets (like concrete bunkers). Since Raytheon was able to carry out a test involving Indian Air Force personnel of the JSOW-C (unitary warhead design) in July 2009, it almost certainly means that the U.S. government has approved the JSOW for export to India.⁶⁵

Both weapons systems would allow India to threaten a variety of targets in Pakistan—and especially across the Kashmir divide—without violating Pakistani airspace with manned platforms. In the foreseeable future, India would then have the means to emulate U.S. utilization of cruise missiles and drone aircraft strikes. The violation of Pakistani airspace by Indian cruise missiles or drones would be a greater affront than U.S. trespasses, particularly since many of the unmanned U.S. drone strikes appear to have had the approval of Pakistani leaders.⁶⁶ The utilization of cruise missiles and drones rather than manned aircraft would obviate the Indian need to destroy Pakistani fighters and ground-based air defenses to allow for the success of the raid, offering the prospect of less risky—if not “clean”—strikes. The basic dynamics of tit-for-tat escalation would remain, however, with Pakistani leaders still having strong domestic political and reputational incentives to respond to Indian cruise missile or drone strikes. In the view of Pakistan’s security managers, allowing India to attack without cost would make future Indian attacks more likely. If, however, Indian decision makers perceive that the introduction of cruise

missiles and drones to provide mildly less escalatory risk than other military options, it could make Indian military action in response to severe provocations more likely.

The Ground Balance

After the “Twin Peaks” crisis of 2001-2002, the Indian military—particularly the Indian Army—began a series of changes in doctrine often referred to as the Indian Army’s “Cold Start” strategy.⁶⁷ The Indian Army has tended to prefer the title of “a pro-active strategy,”⁶⁸ or less commonly, “active defense.”⁶⁹ Current Indian Army operational and contingency planning is still obscured in the public domain, despite speculation about the post-2002 doctrinal shifts and accompanying changes in force structure.⁷⁰ It is clear, however, that the post-2002 reforms have sought to be able to launch punitive strikes against Pakistan quickly, without requiring full mobilization. This implies multiple, shallower thrusts rather than a more concentrated, deeply aimed offensive strike.

It seems likely that the Army has created contingency plans for one scenario that involve attacks solely across the Kashmir divide, as it reportedly considered in the early stages of the 2001-2002 standoff. The Line of Control in Kashmir is a particularly difficult locale to conduct offensive operations. The mountainous terrain in some sectors heavily favors the defense. Moreover, because of the active nature of the border dispute, this terrain is heavily defended. Because offensive attacks are unlikely to seize large swaths of terrain or threaten Pakistan’s existence, they might be considered politically plausible. In addition to punitive goals, limited offensives across the Kashmir divide might capture terrain and complicate future infiltration of militants from the Pakistan side.⁷¹ If undertaken, however, Indian forces would likely have to expend considerable resources to achieve only minor gains.

In light of the challenges of cross-LoC operations, it seems quite likely that the Army has also generated contingency plans for shallow strikes along the International Border. Much of the public commentary of changes in Indian Army force structure and peacetime deployment—the creation of new brigade-size Integrated Battle Groups deployed more closely to the border, for instance—remains speculative. Recent fieldwork suggests that while the old “holding corps” have been converted into “pivot corps” with enhanced offensive power, the Indian Army has largely abandoned other force structure changes commonly associated with Cold Start.⁷² What is clear is that the Indian Army has thought considerably about how to attack without fully mobilizing first and how to signal that such an attack does not threaten Pakistan’s existence to reduce the risks of severe, uncontrolled escalation.

The biggest challenge for Indian military planning is geography. Simply put, Pakistan’s military and population centers are close to the border with India, which denies Pakistan strategic depth to be able to absorb an Indian blow, but also gives the Pakistan Army an important mobilization advantage in the event of a short-notice conflict. Basic geography is very difficult to surmount through planning alone. As Retired Pakistan Army Brigadier Shaukat Qadir recalls,

[E]ven if one can assume that the Indian troop movements will not be sabotaged by internal fissiparous elements, nor by Pakistani agents, natural delays in the movement of large forces can make time relationships tenuous and dangerous. I have known an overturned truck to delay a convoy by almost sixteen hours and a delay of only eight hours can seriously imbalance the entire system of forces—not just the force it was supposed to reinforce but all other offensives as there is a strategic relationship of time between all of them.⁷³

India's ability to quickly prosecute limited ground offenses is predicated on being able to launch an attack quickly by mobilizing units close to the border, and then to mobilize additional units further in the rear into the fight. Pakistan has more units close to the border and, given its smaller size, has inherent advantages in mobilizing reserves. As Qadir notes, "When I was serving, it used to take Pakistan seven days to assemble its forces while India took 21. Though both sides may have reduced their mobilisation period since then, the ratio of time would be about the same."⁷⁴ The ability of a "proactive" Indian strategy to overcome this mobilization asymmetry is mitigated considerably because such attacks are not likely to come as a surprise. Instead, they will be observable to Pakistani decision makers.

The issue for the Pakistan army in the near term is whether it will have difficulty remobilizing forces seconded west for counterinsurgency operations back to the fighting corridors with India, and whether this difficulty would be severe enough to destabilize the ground force balance. Public source estimates for the number of Pakistani troops on the western border are rare, but it seems unlikely that number today or in the near future is greater than 147,000 personnel, a number provided in a 2011 White House report on Afghanistan and Pakistan. Pakistan's paramilitary Frontier Corps likely constituted a substantial portion of that 147,000, with the number of Pakistan Army personnel perhaps 100,000, of which perhaps 50,000-70,000 were redeployed from their typical duties on the Indo-Pakistani border.⁷⁵

If this analysis is correct, the total number of troops that might be subject to redeployment is around ten per cent of the total active duty Pakistan army—a significant, but not overwhelming movement of troops from the eastern border. These troops would have deployed with some, but by no means all of their equipment. It seems reasonable to assume that most of Pakistan's tanks, armored vehicles, and artillery, many of Pakistan's larger mortars, and the vast

majority of its antitank missiles would stay prepositioned along the border with India, accompanied by thinned out infantry units or whole armor or artillery units. The bulk of these units that stayed in their normal locations along the eastern border would in some ways be more capable of defense on the first day of a short-notice conflict than they had been in the 2001-2002 crisis, since the Pakistan Army kept many units and considerable equipment deployed in forward locations after that mobilization. After warning of imminent Indian hostilities, Pakistan would have to quickly attempt to redeploy from west to east. This redeployment might take slightly longer than in past crises because the Pakistan army is spread out in counterinsurgency operations rather than stationed in garrisons ready to mobilize.

The Twin Peaks crisis in 2001-2002 provides a baseline of mobilization timelines, even though both countries have made logistical and peacetime deployment changes since then. This crisis began with a terrorist attack on the Indian parliament building on December 13, 2001. In an address to the nation the night of the attack, Prime Minister Vajpayee stated, “For the past two decades, we have been fighting terrorism, now the battle has reached its final phase.... The fight has now reached a decisive stage.”⁷⁶ On December 14, Delhi police identified the Pakistan-backed and –based terrorist groups Lashker-e-Toiba and Jaish-e-Mohammad as being responsible for the attacks. On December 18, Prime Minister Vajpayee ordered the Indian armed services to prepare for war with Pakistan, triggering the first full-scale mobilization of the Indian Army since the 1971 war.⁷⁷ Since October 2001, the Pakistan Army had been focused on deploying two Army corps and most of the paramilitary Frontier Corps force to seal the border between Pakistan and Afghanistan in support of the early stages of Operation Enduring Freedom in Afghanistan. Widespread leave during the Muslim Eid holidays from December 17 to 19, 2001, also slowed the Pakistan Army’s awareness and response of the Indian mobilization. It was

not until December 21, when the Pakistan Army became aware of the Indian Army moving units from the eastern theater (facing China) toward Pakistan and the cancellation of leave for Indian military personnel, that Pakistan Army senior leadership realized the gravity of the situation.⁷⁸ A race to mobilization then began.

India won the mobilization race, but was not quick enough to outpace the political clock. Pakistan faced a three-day delay in starting its counter-mobilization, redeploying the troops along the Afghan border back to the east. Indian Army chief Gen. S. Padmanabhan announced publicly on January 11—in an attempt to pressure Indian political leaders—that the Indian mobilization was complete and only political authorization was needed.⁷⁹ Padmanabhan’s statement may in fact have been issued several days after the mobilization was complete, or only after Indian Army leadership became worried that political authorization might not be forthcoming. Maj. Gen. (retd.) Ashok Mehta reports that mobilization was complete by January 7 and journalist Pravin Sawhney states India’s redeployment was complete by the “first week of January.”⁸⁰

Pakistani officials skillfully bought time, however. On January 8, President Pervez Musharraf informed visiting U.S. senators John McCain and Joseph Lieberman that he would speak on the night of January 12 and present a “bold and principled” initiative to respond to Indian concerns about Pakistani sponsorship of terrorism. Senators McCain and Lieberman used media appearances to urge Indian officials to wait and respond to the content of that speech.⁸¹ Musharraf’s speech promised that Pakistan would no longer allow groups operating from its territory “to carry out terrorism on the pretext of Kashmir.”⁸² By the day of the speech, the Pakistan army’s redeployment from its western to eastern border was essentially complete.⁸³ The speech thus deprived India of the initiative and the military advantage it had gained a few days

earlier. The total time from a decision to redeploy to full mobilization on the eastern border was almost three weeks for Pakistan. India had managed to be ready for conflict earlier, although it took approximately the same or slightly more time to reach a comparable state of readiness.

Despite considerable doctrinal review and war game preparation in India since 2002, there is reason to suspect that the infrastructure and logistical preparations for Cold Start-type operations remain unfinished. Moving Indian Army units closer to the border requires many new cantonments to be built, new railheads to be established, land to be purchased, and units to be redeployed. These efforts have apparently lagged. Similarly, the Indian army's apparent poor readiness after the 2008 Mumbai attacks also calls into question the ambitions of a speedy proactive strategy. Indian journalist Manoj Joshi, who was appointed to a high-powered Indian government committee looking into defense reforms, reported in 2009 that, "In the wake of the Mumbai attack, the Indian Air Force and the Indian Navy were ready to strike, but the army was not... [T]he Indian Army told the government that it would take them several weeks before it could prudently commence operations."⁸⁴

A ground war between India and Pakistan might unfold in three phases. In the first phase, the Indian Army would face quantitative disadvantages as its Pakistani counterpart is able to mobilize those troops normally stationed near the border more rapidly than India.⁸⁵ During this phase, the Indian Army would be forced to do more with less, and rely on qualitative edges to achieve gains. In a second phase, perhaps two weeks into a conflict, the Indian army might achieve a mobilization advantage over Pakistani ground forces so long as Pakistan continues to deploy several divisions along the Afghan border. This advantage might last for perhaps a week (approximately D-Day plus 21 days) until the conflict entered its third phase and both armies, fully mobilized, would be fighting.

The takeaways from this analysis are that the initial ground fighting might be more difficult for the Indian army than is typically assumed because of basic geographic disadvantages not amenable to logistical and doctrinal solutions. If Indian political leaders desire to keep a war limited, both to reduce nuclear risks and to deflect international pressures, prompt military action is required. Prompt action will, however, put in motion mobilizations that look very much like a full-scale war, not a limited punitive conflict. Analysts disagreeing with this assessment will either need to demonstrate that the Indian army has substantially improved its mobilization timelines (and that the Pakistan army has not), or argue that Indian equipment and troops are qualitatively superior to such an extent they can gain ground while Pakistani troops are deployed along the Afghan border.

Implications for Deterrence Stability

This essay has sought to demonstrate that India's near-term military options against Pakistan are risky and uncertain. They are risky because India's ability to keep a conflict limited is in doubt and because nuclear risk is present throughout the escalation process. They are uncertain because, while India enjoys conventional military advantages across all three services, these advantages are not as decisive as sometimes assumed.

These conclusions leave no room for complacency. The military expenditure asymmetry is simply too large and growing too rapidly for even a determined Pakistani effort to keep up with growing Indian military strength. India has gone from spending nearly four to five times as much as Pakistan in 1988 to nearly seven to eight times as much in 2012.⁸⁶ Neither Pakistan's geographic advantages nor India's procurement lethargy can prevent a growing conventional

mismatch from occurring. Nor can India's lethargy in military procurement be assumed indefinitely into the future.

India's economy is simply too large for Pakistan to compete. Even if India maintains defense spending at around or under two per cent of Gross Domestic Product (GDP), over time it will outstrip Pakistan's ability to maintain a credible conventional defense, even though Pakistan spends many times more on defense as a percentage of GDP. As the Indian military expands its qualitative superiority, particularly in the air domain, it will become increasingly difficult for the Pakistani military to deny India victory in limited fights in the medium- to long-term.

Growing conventional asymmetries are likely to decrease the ability of outsiders, most notably the United States, to manage the risk of conflict on the subcontinent. Deterrence stability on the subcontinent depends in large measure on Pakistan's military leadership. In the 1990s, Rawalpindi responded to unfavorable strategic shifts by relying to a greater extent on violent non-state actors. This strategy forced New Delhi to "pay attention" to Pakistan, while tying down significant numbers of Indian security forces in counterinsurgency operations, most notably in Kashmir. Put another way, support for militancy was considered to be a force multiplier for Pakistan and a force divider for India.

This strategy may have paid short-term dividends in the 1990s, but it now punishing Pakistan at least as much, if not more, than India. Pakistan pays reputational costs for increases in cross-LoC violence without improving its leverage to generate a favorable political settlement. Nor has this strategy steered militancy away from Pakistan—indeed, the reverse is true. Continued violence-by-proxy directed against India would not substantially reduce Indian conventional military capabilities arrayed against Pakistan, even if acts of terror are directed at Indian cities away from Jammu and Kashmir—a trend that has been evident since 2002. India's

response to mass casualty acts of terror has been to strengthen law enforcement and paramilitary forces, drawing from abundant manpower, without reducing conventional military capabilities.

If non-state actors are not the solution to the growing conventional force mismatch, Rawalpindi can either rely increasingly on its nuclear arsenal for deterrence or can seek to normalize its relations with India. These paths are not necessarily incompatible. If there were a diminution of terrorist attacks on India, or demonstrably greater distance between non-state actors and Pakistan's military and intelligence establishment, Pakistan's conventional capabilities and growing nuclear arsenal could serve as an adequate deterrent.

This analysis suggests that Washington would have limited ability to fundamentally change defense trends that are tilting hard in India's direction. As such, providing weapons systems to Pakistan that are most suitable to a potential war with India would do little to alter basic trends, while postponing the choices facing Pakistan's military leadership. Historically, U.S. officials have supported arms sales in an effort to demonstrate an enduring U.S.-Pakistan partnership, to calm Rawalpindi's concerns about the Indian threat, and to reduce Pakistan's reliance on nuclear weapons. In retrospect, the latter two objectives appear highly dubious. While U.S. conventional arms sales might continue to have modest symbolic value, over the medium- to long-term Rawalpindi's concerns about the Indian threat are unlikely to be diminished through this mechanism. Even modest sales of high-end weapons systems to Pakistan could prompt blocking action in the U.S. Congress, unless Pakistan is viewed as an essential and more reliable partner in countering terrorism.

Continuing to subsidize Rawalpindi's anti-India policy is not a wise U.S. policy objective. Nor is it possible for the United States to undertake the task of minimizing a conventional arms imbalance in the subcontinent. Pakistan will turn increasingly to China for

this purpose. Neither is it wise for the United States to accentuate an arms imbalance in particularly sensitive areas. Restraints on U.S. arms sales to India might focus on military technologies that are most dangerous to deterrence stability, and over which U.S. suppliers presently exercise a monopoly.

The defense relationship between the United States and India will continue to grow, particularly with respect to concerns over Beijing's more assertive military posture around its periphery. But it would be unwise to include weapon systems in transactions to India that increase the likelihood that a crisis with Pakistan leads to war, especially weapon systems that make it more likely that a war leads to nuclear escalation.

Three types of weapon systems appear to meet the potentially destabilizing, potentially controllable, and Pakistan-centric standards. First, the JSOW, discussed above, could facilitate precision-strike without requiring manned platforms to cross into Pakistani airspace. This weapon system modestly lowers the risks that Indian political decision makers might perceive from carrying out cross-border strikes. The fact that this weapon's range exposes many Pakistani cities and military installations to potential strikes, but can reach very few targets in China, further suggests the sale of this weapon system to India merits closer study.

Second, the United States has sold India over 500 CBU-105 Sensor Fuzed Weapons.⁸⁷ This weapon system is essentially an advanced cluster munition, which releases ten submunitions, each of which carries four projectiles (for forty projectiles total per weapon). It is designed as an area weapon capable of defeating combat vehicles, including main battle tanks. During operational testing, four weapons were released over a column of 24 vehicles, resulting in seventeen hits against eleven separate vehicles.⁸⁸ The CBU-105 has the potential to dramatically improve the efficacy of a single sortie against ground targets, with the potential to quickly

disrupt the balance in ground forces. Given the nature of the Himalayan border with China, this weapon would appear to be Pakistan-specific, and of limited utility in an India-China contingency.

Third, there are dubious strategic rationales for the U.S. release of missile defense technology to India. Any prospective Indian missile defense will have little utility against Chinese missiles, will incentivize the production of even greater fissile material by Pakistan, will incentivize greater production and use of cruise missiles, and could incentivize Pakistan to use nuclear weapons earlier and in greater numbers in a crisis. None of these developments appear to be salutary to regional stability, crisis and arms race stability, deterrence stability, or U.S. national interests.

Today, these weapon systems are primarily or entirely available from the United States. In other words, U.S. restrictions might delay Indian acquisition of the capability rather than merely divert the sale to the benefit of a third party. If this were no longer the case, arms transfer restraints could be reconsidered. Absent a U.S. near-monopoly on a specific type of weapon, attempts to restrain transfers would result in friction between New Delhi and Washington and Indian arms purchases from other defense suppliers. For instance, India's possession of the Kh-59M may reduce the practical effect of restricting JSOW transfers. but U.S. government experts should actively make such calculations and comparisons rather than ignore potentially destabilizing sales.

For its part, New Delhi has self-interested reasons to be cautious about pursuing unconstrained weapon development or procurement in two areas. The first regards missile defenses. Indian civilian and military officials have yet to articulate a strategic vision or the requirements driving Indian missile defense research and development. Certain limited missile

defense deployments might be beneficial to regional stability. A “thin” shield designed to absorb a small number of nuclear missiles that were launched inadvertently or accidentally might be modestly stabilizing—so long as it does not fuel additional fissile material and nuclear force requirements by its neighbors. Similarly, a missile defense configured primarily to deal with Chinese conventionally-armed ballistic missiles might have military benefits.

At present, Indian missile defense developments are open ended and likely to encourage Pakistan to undertake a variety of countervailing actions that negate the potential benefits of missile defenses while generating other nuclear risks to India. If Indian political leaders are serious about missile defense and have a clear strategic vision about how defenses factor into a broader strategic equation, then articulating the rationale and requirements for the envisioned ballistic missile defense (BMD) program might dampen negative consequences somewhat. Even so, Rawalpindi is likely to over-react to India’s pursuit of BMD. At a minimum, Indian missile defense research and testing give Pakistan’s strategic organizations a potent argument for more funding for delivery vehicle and warhead production.

Similarly, Indian political leaders have reason to oversee the development by the Defence Research and Development Organisation (DRDO) of increasingly precise ballistic missiles. While the very small Circular Error Probable figures provided by DRDO scientists are probably exaggerations, they likely prompt Pakistani military planners to wonder whether India is considering counterforce missions for its ballistic missile force.⁸⁹ Lt. Gen. (retd.) Khalid Kidwai, head of the Strategic Plans Division at Joint Staff Headquarters in Pakistan, has cited an “ability to deter a counterstrike against strategic assets” as an objective of Pakistan’s nuclear policy.⁹⁰ Probable Pakistani responses—more fissile material, more missiles, more warheads, and using nuclear weapons earlier in a crisis—are not prospective outcomes beneficial to Indian security.

Conclusion

This essay has questioned the conventional wisdom that the Indian military could prevail quickly or easily in armed conflict with Pakistan. In the near term, the limited military options available to Indian political and military leaders in a deep crisis carry with them significant risk of escalation or are so limited that they are unlikely to achieve the Indian objectives of altering Pakistani support to militants through the punitive use of force. To the extent this assessment is accurate, and perceived as such by decision makers in New Delhi, deterrence stability is likely to obtain in South Asia—for the near term.

While the conventional balance in South Asia is conducive to deterrence stability over the next few years, ongoing trends will produce Indian conventional military dominance. Over this longer timeframe, New Delhi will gain much greater latitude and have more options to employ conventional force. Pakistan's military establishment may increase the peacetime readiness and wartime role of nuclear weapons to compensate for the growing conventional imbalance, dramatically enhancing nuclear risks in peacetime, crisis, and war. The alternative to open ended competition is to normalize Pakistan's relations with India and to reorient military resources toward internal security threats. Unless and until national security managers actively seek more normal relations, this essay has suggested targeted areas of restraint that could minimize some foreseeable dangers.

For Washington, this essay suggests a substantial decrease in certain conventional military aid to Pakistan and a selective diminution of certain defense technology transfers to India. These measures constitute modest attempts to manage a very difficult transition in the South Asian security environment. Significant changes in the regional conventional balance will

occur whether or not decision makers in New Delhi, Islamabad, Rawalpindi, Washington and Beijing are prudent and thoughtful. The steps advocated here could help avert some of the risks inherent in the transformation of South Asia's military environment.

¹ A short summary of this research appeared in the spring 2012 edition of the MIT Center for International Studies newsletter *Précis*. I would like to thank Jack Gill, Phil Haun, Barry Posen, Michael Krepon, Vipin Narang, and David Smith for comments on earlier drafts, as well as working group participants at the Stimson Center in Washington, D.C., and members of the International Relations Work-in-Progress and Strategic Use of Force working groups at MIT.

² "Fernandes Does Not Rule Out Conventional War with Pak.," *The Hindu* (Chennai), January 6, 2000.

³ Riedel, "South Asia's Looming Arms Race," *Wall Street Journal*, April 7, 2011.

⁴ Walter Ladwig, "A Cold Start for Hot Wars? The Indian Army's New Limited War Doctrine," *International Security* vol. 32, no. 3 (Winter 2007/2008): 158-90.

⁵ Carl von Clausewitz, *On War*, eds. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1989): 86.

⁶ In 1965, Pakistani armor included 352 M47 and M48 Patton tanks, 308 M4 Shermans, and 96 M24 Chaffee light tanks. India by comparison had 186 British-designed Centurions, 332 Shermans, 90 French-built AMX-13 light tanks, and perhaps 50 combat-ready PT-76 light tanks. Harbakhsh Singh, *War Despatches: Indo-Pak Conflict, 1965* (New Delhi: Lancer, 1991): 7. Lachhman Singh Lehl also accounts for 150 light Soviet PT-76 tanks, but does not include PT-76 units in his list of armored regiments except for one regiment that he lists as "under conversion." Lehl, *Missed Opportunities, Indo-Pak War 1965* (Dehra Dun: Natraj Publishers, 1997): 67-8. The PT-76 does not appear until the 1966 issue of the International Institute for Strategic Studies' *Military Balance*, which states that it is part of mixed reconnaissance regiments along with the AMX-13. *Military Balance* (London: IISS, 1966), 36. John Gill explains that only one regiment of a planned three PT-76 units was ready for combat. Gill, "India-Pakistan: Order of Battle in the 1965 War," unpublished manuscript (Washington, D.C.: n.d.). Current figures will be discussed in greater detail below.

⁷ This account draws heavily from John H. Gill, *An Atlas of the 1971 India-Pakistan War: The Creation of Bangladesh*, Near East-South Asia Center Occasional Paper (Washington, D.C.: National Defense University, 2003).

⁸ See International Institute for Strategic Studies, *Military Balance* (London: IISS, 2011 ed.) for figures, along with Defense Security Cooperation Agency, "Pakistan – TOW-2A Anti-Armor Guided Missiles," News Release, December 7, 2006; see SIPRI Arms Transfers Database for different figures on the HJ-8 cruise missile than IISS, accessed May 3, 2011, available at http://www.sipri.org/contents/armstrad/at_data.html; and Vivek Raghuvanshi, "India's BDL to Build Milan 2T Missiles," *Defense News*, February 3, 2009.

⁹ For an early discussion, see John J. Mearsheimer, *Conventional Deterrence* (Ithaca, N.Y.: Cornell University Press, 1983): 189-198.

¹⁰ See Gulshan Luthra, "India Set to Acquire Precision Bomb Technology," *India Strategic* (Delhi), July 2007, available at <http://www.indiastrategic.in/topstories13.htm>.

¹¹ The Indian Air Force claims strikes aimed at operational interdiction of supplies and command and control targets of Pakistan's Northern Light Infantry (NLI) led to decisive battlefield effects, whereas the Indian Army focuses more on the role of ground-level fighting and close artillery and air support. While data on Pakistani thinking about the Kargil venture improved in the mid-2000s, there is not enough granular detail on the Pakistani side to adjudicate fully whether Indian air strikes did alter the course of the conflict.

¹² Robert Oakley, U.S. Ambassador to Pakistan during the 1990 crisis, assessed that post-crisis confidence-building measures implemented by India and Pakistan reduced the risks of crisis spirals in South Asia. See Michael Krepon and Mishi Faruquee, eds., "Conflict Prevention and Confidence-Building Measures in South Asia: the 1990 Crisis," *Occasional Paper*, no. 17 (Washington, D.C.: The Henry L. Stimson Center, April 1994): 9.

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- ¹³ Ashling O'Connor, "City that Never Stops Falls Silent to Tribute to Dead," *The Times* (London), June 19, 2006; and "India Police: Pakistan Spy Agency Behind Mumbai Bombings," *CNN World*, September 30, 2006.
- ¹⁴ Lt. Gen. (ret.) V. K. Sood and Pravin Sawhney, *Operation Parakram: The War Unfinished* (New Delhi: Sage, 2003): 61-2.
- ¹⁵ Steve Coll observed during a 2009 visit that the hospital operated by Jamaat-ud-Dawa had fewer patients than its capacity allowed "because people are afraid India may hit this Muridke complex." Steve Coll, "The Back Channel," *The New Yorker*, March 2, 2009.
- ¹⁶ See Polly Nayak and Michael Krepon, *U.S. Crisis Management in South Asia's Twin Peaks Crisis*, report no. 57 (Washington, D.C.: The Henry L. Stimson Center, September 2006) and Polly Nayak and Michael Krepon, *The Unfinished Crisis: U.S. Crisis Management after the 2008 Mumbai Attacks* (Washington, D.C.: The Henry L. Stimson Center, February 2012).
- ¹⁷ For this and other mistakes made by Kargil's planners, see Peter R. Lavoy, Feroz Hassan Khan, and Christopher Clary, "Pakistan's Motivations and Calculations for the Kargil Conflict," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter Lavoy (New York: Cambridge University Press, 2009): particularly 86-91.
- ¹⁸ Brig. (ret.) Arun Saghal has discussed similar tactics to neutralize forward deployed Chinese units along the Sino-Indian border. Saghal, "China's Military Modernization: Responses from India," in *Strategic Asia, 2012-2013*, eds. Ashley Tellis and Travis Tanner (Washington, D.C.: National Bureau of Asian Research, 2012): 295.
- ¹⁹ "Navy, Pakistan," in *Jane's Sentinel Security Assessment – South Asia*, updated September 20, 2010.
- ²⁰ IISS, *Military Balance* (2011 ed.), "RGM-84/UGM-84 Harpoon (GWS 60)," in *Jane's Naval Weapon Systems*, updated December 3, 2010, and "HQ-11 and HHQ-11 (LY-60/FY-60 and RF-11)," in *Jane's Strategic Weapon Systems*, updated December 3, 2010. Jane's suggests that three Tariq frigates have been fitted with the LY-60, while IISS lists only two frigates with the LY-60.
- ²¹ U.S. Defense Security Cooperation Agency, "Former U.S. Naval Ship Sails to its New Homeport in Pakistan," March 25, 2011; IISS, *Military Balance* (2012 ed.): 273, erroneously omits the Harpoon capacity, which is not standard for the U.S. frigates of this class.
- ²² IISS, *Military Balance* (2011 ed.); "CSS-N-4 'Sardine' (YJ-8/C-801); CSS-N-8 'Saccade' (YJ-2/YJ-82/YJ-12/C-802/Noor or Koor)," in *Jane's Underwater Weapon Systems*, updated March 16, 2011; and "HQ-7/HHQ-7 (RF-7, FM-80/-90 and CSA-4/-5)," in *Jane's Strategic Weapon Systems*, updated December 2, 2010.
- ²³ IISS, *Military Balance* (2011 ed.); and "CSS-N-4 'Sardine' (YJ-8/C-801); CSS-N-8 'Saccade' (YJ-2/YJ-82/YJ-12/C-802/Noor or Koor)," in *Jane's Underwater Weapon Systems*.
- ²⁴ "Pakistan's submariners are highly regarded by foreign experts." Brian Cloughley, "Pakistan's Small Navy Packs a Punch," *Jane's Navy International* 105, no. 2 (March 2000).
- ²⁵ "Hasmat (Agosta 70) class," *Jane's Fighting Ships*, updated February 2, 2011.
- ²⁶ "Khalid (Agosta 90B) class," *Jane's Fighting Ships*, updated March 10, 2011; Jon Rosamond, "Pakistan Commissions AIP-Equipped Agosta 90B," *Jane's Navy International*, September 26, 2008. All three submarines should be fitted with AIP and back in service no later than 2013.
- ²⁷ "Cosmos Class MG110," *GlobalSecurity.org* (accessed June 26, 2011), <http://www.globalsecurity.org/military/world/pakistan/mg110.htm>.
- ²⁸ Pakistan Navy, "Naval Air Arm," http://www.paknavy.gov.pk/air_arm.html (accessed June 26, 2011).
- ²⁹ Given ongoing upgrades of Pakistan's P-3s as well as new deliveries, the number of aircraft listed for Pakistan varies widely from source to source, so these numbers contain some degree of uncertainty. Muhammed Saleh Zaafir, "Pakistan to Ask U.S. for Two More Orion Planes," *The News International* [Pakistan], May 24, 2011; "Amphibious and Special Forces, Pakistan: Maritime Air Support," *Jane's Amphibious and Special Forces*, posted June 6, 2011; "Pakistan's P-3 Orion Maritime Aircraft – and Their Harpoons," *Defense Industry Daily*, <http://www.defenseindustrydaily.com/Pakistans-P-3-Orions-05972/> (updated June 20, 2011), also "U.S. to Replace Two P3C Orion Aircraft," *Dawn* [Pakistan], June 17, 2011; and IISS, *Military Balance* (2012 ed.): 273.
- ³⁰ The figure of 25 aircraft comes from the following deductive steps. *Jane's* says, "No. 8 (Mirage) Squadron at Masroor is dedicated to the maritime strike/fleet defence role and would only join the land/air battle in an extreme emergency." It then proceeds to list that No. 8 squadron has both Mirage-5PA2 and -PA3 variants, variants not operated elsewhere in the Pakistan Air Force. Later it lists Pakistan's active inventory as 15 Mirage-PA2s and 10 Mirage-PA3s. However, at one point it says the Mirage-PA2s are ground-attack, not sea-attack platforms. To further confuse the point, IISS's *Military Balance* says at one point that a squadron of Mirage-IIIs are dedicated to sea-

attack, but at a later point says that 10 Mirage-PA3s serve that role. “Pakistan – Air Force,” *Jane’s World Air Forces*, posted January 20, 2011; and IISS, *Military Balance* (2011 ed.), 265.

³¹ IISS, *Military Balance* (2011 ed.): 239; also “INS Chakra inducted into Navy,” *The Hindu*, April 4, 2012.

³² “Nuclear safety, nuclear stability and nuclear strategy in Pakistan” (Como, Italy: Landau Network, Centro Volta, January 2002), <http://www.pugwash.org/september11/pakistan-nuclear.htm>

³³ Corbett, *Some Principles of Maritime Strategy*, new ed. (New York: Longmans, Green, and Co., 1918): 11-12.

³⁴ On this general point, albeit focused more on great rather than middle powers, see John Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton, 2001): 87-96.

³⁵ Nadkarni, “Pakistan Navy Gets New Port,” *Rediff.com*, July 27, 2000, <http://www.rediff.com/news/2000/jul/27nad.htm> (accessed March 14, 2012).

³⁶ Frontier Works Organization, Government of Pakistan, “Makran Coastal Highway Project,” http://www.fwo.com.pk/index.php?option=com_k2&view=item&id=176:makran-coastal-highway-project-mchp (accessed March 14, 2012).

³⁷ All Pakistan Press, “Pre-feasibility for 411 mile rail link between Pakistan’s town of Havelian and Khunjerab completed,” *Pamir Times*, July 3, 2011, <http://pamirtimes.net/2011/07/03/feasibility-for-411-mile-rail-link-between-pakistan%E2%80%99s-town-of-havelian-and-khunjerab-completed/>.

³⁸ Office of Commander-in-Chief, Fleet, Royal Navy, *Loss of HMS Sheffield – Board of Inquiry* (Northwood, United Kingdom: Ministry of Defence, May 28, 1982), available at http://www.clashofarms.com/files/BOI_Rpt_HMS_Sheffield_May82.pdf

³⁹ Lawrence Freedman, *The Official History of the Falklands Campaign: The Origins of the Falklands War*, vol. II (New York: Routledge, 2005): 481-2.

⁴⁰ Comptroller and Auditor General, Government of India, “Union Audit Reports: Defence Services: Air Force and Navy, 2008-2009 Performance Audit,” report no. 7 of 2010-2011, chapter 2, available at http://www.cag.gov.in/html/reports/defence/2010-11_7AFN-PA/chap2.pdf.

⁴¹ Also see Richard Scott, “Indian Audit Report Slams LUSH Sea Harrier Update,” *Jane’s Missiles and Rockets* (August 27, 2010).

⁴² I thank Laurence Silberman of the RAND Corporation and formerly of the Royal Navy for helping me think through these technological trends.

⁴³ Freedman, *The Official History of the Falklands Campaign: The Origins of the Falklands War*, vol. II, 291-3. The *Conqueror* had advantages that a Pakistani diesel-electric submarine would not, most importantly faster submerged speed.

⁴⁴ See Ministry of Commerce, Government of Pakistan, “Trade Statistics,” http://www.commerce.gov.pk/?page_id=7 (accessed October 6, 2011) and U.S. Central Intelligence Agency, “Pakistan,” *World Factbook* (updated September 27, 2011).

⁴⁵ Khaleeq Kiani, “Plan for 20-day Oil Stocks to Avert Shortage,” *Dawn* [Pakistan], October 11, 2010.

⁴⁶ Air supremacy, air dominance, and air parity are all levels of air dominance. Air parity implies military forces from both sides encounter significant interference from the opposing air force. Air superiority implies that interference is not prohibitive, though it can still be extant. Air supremacy implies that interference is no longer effective. See United States Air Force, *Counterair Operations*, Air Force Doctrine Document 2-1.1 (October 1, 2008), 3, available at <http://www.fas.org/irp/doddir/usaf/afdd3-01.pdf>

⁴⁷ Emphasis added. Ladwig, “Cold Start for Hot Wars?” 160

⁴⁸ IISS, *Military Balance* (2002 ed.), 134.

⁴⁹ Air Cmde (retd.) Tariq Ashraf, “Air Power Imbalance and Strategic Instability in South Asia,” paper presented to conference on “Strategic Stability in South Asia,” the Naval Postgraduate School, Monterey, Calif., June 29-July 2, 2004.

⁵⁰ Defense Security Cooperation Agency, “Pakistan F-16A/B Mid-Life Update Modification Kits,” News Release, transmittal no. 06-10, June 28, 2006; “AN/APG-68(V),” *Jane’s Avionics* (updated April 4, 2011); and “AN/APG-66(V) Fire Control Radar (FCR),” *Jane’s Avionics* (updated October 1, 2010).

⁵¹ IISS, *Military Balance* (2012 ed.), 274. *Military Balance* lists 29+ with “150+” on order. *Jane’s* states that the expected JF-17 end strength for Pakistan is 240 total aircraft. Online entry for “CAC FC-1 Xiaolong,” *Jane’s All the World’s Aircraft* (updated January 19, 2011).

⁵² Online entries for “CAC FC-1 Xiaolong,” *Jane’s All the World’s Aircraft* and “SD-10, SD-10A (PL-12),” *Jane’s Air-Launched Weapons* (updated January 20, 2011).

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- ⁵³ IISS, *Military Balance* (2011 ed.).
- ⁵⁴ Greg Waldron, "Pakistan to Receive First ZDK-03 AEW&C Aircraft," *Flight International*, November 24, 2010, <http://www.flightglobal.com/news/articles/pakistan-to-receive-first-zdk-03-aewc-aircraft-350025/>. Also IISS, *Military Balance* (2012 ed.).
- ⁵⁵ Ashraf, "Air Power Imbalance and Strategic Instability in South Asia."
- ⁵⁶ See, e.g., Scott Baldauf, "Indian Air Force, in War Games, Gives US a Run," *Christian Science Monitor*, November 28, 2005.
- ⁵⁷ IISS, *Military Balance* (2011 ed.) and various entries, *Jane's Land-Based Air Defense* and *Jane's Electro-Optic Systems*.
- ⁵⁸ See Gulshan Luthra, "India Set to Acquire Precision Bomb Technology," *India Strategic* (Delhi), July 2007, available at <http://www.indiastrategic.in/topstories13.htm>.
- ⁵⁹ Maj. Randy Kaufman, *Precision Guided Munitions: History and Lessons for the Future*, master's thesis (Maxwell Air Force Base, AL: School of Advanced Air and Space Studies, Air University, June 2004): 70.
- ⁶⁰ Two Pakistani infantry brigades, reinforced by two armored regiments, made a push toward the Indian town of Longewala. There they surprised an Indian division that was nevertheless able to stop the Pakistani advance long enough for the Indian Air Force to launch attacks against the tanks operating in the open desert terrain. Between ground and air operations, the Pakistani brigades retreated with over 20 tanks and 100 other vehicles lost. Gill, *An Atlas of the 1971 India-Pakistan War*, 56-7.
- ⁶¹ Ladwig, "Cold Start to Hot Wars?" 182-3.
- ⁶² Daryl G. Press, "The Myth of Air Power in the Persian Gulf War," *International Security* vol. 26, no. 2 (2001): 5-44.
- ⁶³ Pinaki Bhattacharya, "Army and IAF Face Off Over New War Plan," *India Today* [Delhi], December 14, 2009.
- ⁶⁴ Sujan Dutta, "Army by Board, Navy by Sea," *The Telegraph* [Calcutta], April 5, 2009, http://www.telegraphindia.com/1090405/jsp/frontpage/story_10776641.jsp; "India Unveils Ambitious BrahMos Missile Expansion Plan," *Aviation Week and Space Technology*,
- ⁶⁵ Gareth Jennings, "Aero India: Raytheon Reveals JSOW Drops," *Jane's Missile and Rockets* (posted February 24, 2011); Raytheon, "Raytheon Conducts Free-Flight Demonstration of JSOW-C from F-16IN," News Release, February 10, 2011, <http://raytheon.mediaroom.com/index.php?s=43&item=1756&pagetemplate=release>.
- ⁶⁶ See, e.g., Omar Waraichi, "An Inside Look at the U.S.-Pakistan Feud over Drones," *Time*, April 23, 2011.
- ⁶⁷ The most cited piece on Cold Start is Ladwig, "A Cold Start for Hot Wars?" 158-90.
- ⁶⁸ See, e.g., Pravin Sawhney, "Punching Hard: Learning from Operation Parakram, the Army Sharpens Its Pro-Active Strategy," *Force* (Delhi), January 2008.
- ⁶⁹ See comments by current Indian Army chief in Manu Pubby, "No 'Cold Start' Doctrine, India Tells U.S.," *Indian Express*, September 9, 2010.
- ⁷⁰ Also see Shashank Joshi, "India's Military Instrument: A Doctrine Stillborn," *Journal of Strategic Studies* vol. 36, no. 4 (2013), 512-540.
- ⁷¹ See discussion in Sood and Sawhney, *The War Unfinished*, 73.
- ⁷² See discussion in Christopher Clary and Vipin Narang, "Doctrine, Capabilities, and (In)stability in South Asia," also in this volume.
- ⁷³ Brig. (retd.) Shaukat Qadir, "View: A Cold Start," *Daily Times* [Pakistan], September 3, 2005, http://www.dailytimes.com.pk/default.asp?page=story_3-9-2005_pg3_6.
- ⁷⁴ Ibid.
- ⁷⁵ The White House, "Report on Afghanistan and Pakistan, March 2011," available at <http://abcnews.go.com/images/Politics/UNCLASS%20Report%20on%20Afghanistan%20and%20Pakistan.pdf>; 70,000 number consistent with "'The Big Interview' – Wall Street Journal," comments by Admiral Mike Mullen, chairman of the Joint Chiefs of Staff, Washington, D.C. Wednesday, October 13, 2010, available at <http://www.jcs.mil/speech.aspx?ID=1475> (accessed June 29, 2011).
- ⁷⁶ "In Quotes: Indian Parliament Attack," *BBC News*, December 13, 2001, http://news.bbc.co.uk/2/hi/south_asia/1708654.stm.
- ⁷⁷ Lt. Gen. (retd.) V. K. Sood and Pravin Sawhney, *Operation Parakram: The War Unfinished* (New Delhi: Sage, 2003), 61-2.

⁷⁸ Colonel (retd.) David O. Smith, "The 2001-2002 Standoff: A Real-Time View from Islamabad," in *The India-Pakistan Military Standoff: Crisis and Escalation in South Asia*, ed. Zachary Davis (New York: Palgrave MacMillan, 2011), 193-6.

⁷⁹ Sood and Sawhney, *The War Unfinished*, 59.

⁸⁰ Mehta, "India Was on the Brink Twice," *Rediff.com*, January 2, 2003; and Sawhney, "Punching Hard: Learning from Operation Parakram, the Army Sharpens Its Pro-Active Strategy," *Force* (Delhi), January 2008.

⁸¹ See "Senators Joe Lieberman and John McCain Discuss Their Tour of Afghanistan, India and Pakistan with Seven Other Senators," *The Early Show*, CBS News Transcripts, January 8, 2002 and George Jahn, "U.S. Senators Say Pakistan Ready for Major Gesture to Defuse Crisis with Pakistan," *Associated Press*, January 8, 2002.

⁸² "Musharraf Speech Highlights," *BBC News*, January 12, 2002,

http://news.bbc.co.uk/2/hi/south_asia/1757251.stm.

⁸³ Smith, "The 2001-2002 Standoff," 198.

⁸⁴ Joshi, "Was the Indian Army Ready for War?" *Mail Today* [Delhi], January 17, 2009.

⁸⁵ I assume there are important advantages for defense. If India had 2:1 ratio of combat power at the theater level, it would be able to prevail quite easily, because in many local areas it would be able to generate 3:1 or greater offense-defense ratios. If India has a 1:1 ratio of combat power, I assume it would have considerable difficulties even though it might be able to generate some local encounters with more favorable ratios. Based on very preliminary quantitative analysis not presented here, but available upon request, I believe the number may be closer to 1:1 at the theater level on day 1 of a conflict than it is to 2:1. For a discussion when 3:1 ratios may still not be sufficient for offensive success, see Joshua M. Epstein, *Conventional Force Reductions: A Dynamic Assessment* (Washington, D.C.: Brookings Institution, 1990): 69-70.

⁸⁶ Stockholm International Peace Research Institute (SIPRI), "SIPRI Military Expenditure Database,"

http://www.sipri.org/research/armaments/milex/milex_database.

⁸⁷ Textron Systems Corporation, "Textron Defense Systems Receives \$257M Order to Supply Sensor Fuzed Weapons to Indian Air Force," News Release, February 9, 2011,

<http://investor.textron.com/phoenix.zhtml?c=110047&p=irol-newsArticle&ID=1526733>; also U.S. Defense Security Cooperation Agency, "India – CBU 105 Sensor Fuzed Weapons," transmittal no. 08-105 (Washington, D.C.: Defense Security Cooperation Agency, September 30, 2008).

⁸⁸ "CBU-97/B and CBU-105/B Sensor Fuzed Weapon (SFW), STS," *Jane's Air-Launched Weapons*, posted March 28, 2011.

⁸⁹ After a 2010 Prithvi II test, Indian officials claimed "the missile had achieved single digit accuracy reaching close to zero circular error probability." Press Trust of India, "Two Prithvi-II Missiles Test-Fired Successfully," *NDTV* (December 22, 2010), <http://www.ndtv.com/article/india/two-prithvi-ii-missiles-test-fired-successfully-74140>.

⁹⁰ Walker, summary of "Pakistan's Evolution as a Nuclear Weapons State: Lt. Gen. Khalid Kidwai's CCC Address."