

Realignment and Indian Airpower Doctrine Challenges in an Evolving Strategic Context

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With a shift in the balance of power in the Far East, as well as multiple challenges in the wider international security environment, several nations in the Indo-Pacific region have undergone significant changes in their defense postures. This is particularly the case with India, which has gone from a regional, largely Pakistan-focused, perspective to one involving global influence and power projection. This has presented ramifications for all the Indian armed services, but especially the Indian Air Force (IAF). Over the last decade, the IAF has been transforming itself from a principally army-support instrument to a broad spectrum air force, and this prompted a radical revision of Indian airpower doctrine in 2012. It is akin to Western airpower thought, but much of the latest doctrine is indigenous and demonstrates some unique conceptual work, not least in the way maritime airpower is used to protect Indian territories in the Indian Ocean and safeguard sea lines of communication. Because of this, it is starting to have traction in Anglo-American defense circles.¹ The current Indian emphases on strategic reach and conventional deterrence have been prompted by other events as well, not least the 1999 Kargil conflict between India and Pakistan, which demonstrated that India lacked a balanced defense apparatus. This article examines the evolving doctrinal thinking of the IAF and argues that the service is transformational in the way it situates the use of airpower in addressing India's security environment.²

The IAF is currently the fourth-largest air service in the world, with nearly 1,500 aircraft, and, for this reason alone, it merits far greater attention than has been the case to date.³ But it is also one of the oldest independent air forces, having been established in 1932. Since that time, it has been involved in a variety of

conflicts, including high-end, regular conventional warfare during WWII through to what can be categorized as counterinsurgency (COIN) and counterterrorism operations, including action against tribal groups in Waziristan. However, in spite of this extensive experience, the IAF has lacked a comprehensive doctrine and balanced force structure and has primarily served two masters since its inception: the Indian Army and nuclear deterrence. This has had a variety of consequences, not least a defensive and reactive posture. Since independence, India has done its utmost to prevent escalation of conflict with Pakistan and, in spite of numerous incursions into its territory, has managed to contain the violence.⁴ These engagements between India and Pakistan, and, in one case, with China, should not be seen merely as border skirmishes; China and Pakistan have compelled India to fight five separate high-intensity conflicts, in addition to numerous low-intensity clashes.⁵ What is particularly significant about all the major conflicts waged by India is that the 1962 war with China was the only one they lost, and it is the only conflict during which Indian airpower was not employed. In all other instances, the Indian forces managed to turn the tide with the assistance of airpower. But what is also notable about all the conflicts up to the end of the 1990s is that lessons over and above the tactical level were not taken on board, and a myopic focus on Pakistan as a threat reinforced this tactical focus. As a result, most bases and air assets were positioned close to the Pakistani border.⁶

In other words, until the last decade, India has lacked a conventional deterrent capability and the type of reach that would allow New Delhi to engage in power projection, should the need arise. In view of the observation that half a century's worth of experience seemed not to influence Indian airpower thinking much beyond tactical effect, it is interesting to note that the last serious exchange between India and Pakistan during the Kargil War in 1999 appears to have galvanized Indian thinking about the role of airpower. Events since 9/11 and the rise of China have also compelled India to rethink conventional deterrence and redefine security well beyond India's borders and territorial waters. This can be seen as a response to Chinese behaviors, in particular. For the last decade, China's air strategy defines strategic frontiers well beyond its own borders.⁷ However, the major step change in India's defense posture occurred most markedly after the Kargil War, and one of the most striking features of this change is the way in which airpower is viewed—both as a strategic instrument and as a decisive instrument in its own right. It is, therefore, worth examining the Kargil conflict briefly in order to understand why it exercised such influence over Indian thinking.

For more than two months during 1999, Indian and Pakistani forces waged an intense conflict on the Indian side of the Line of Control (LOC) separating the two nations in Kashmir.⁸ Outside of the Indian subcontinent, it was a little known war, mainly because the West's attention was focused on the Kosovo conflict, which occurred at the same time. During March and April 1999, units of the Pakistani Army infiltrated the Indian region of Kashmir by stealth. Almost all of the lead elements comprised Pakistan's Special Services Group and the locally-recruited Northern Light Infantry, disguised in tribal clothing.⁹ Because of harsh winter conditions during the preceding months, many of the Indian Army's outposts and observation points at altitudes of 16,000-18,000 feet had been abandoned, and reconnaissance of the region was reduced in scale. The withdrawal of Indian troops seemed to the Pakistanis too good an opportunity to miss, and although never officially stated at the time, the Pakistani aim was to seize control of India's only land line of communication to the Siachen Glacier, at the top end of the LOC, adjacent to the Chinese border.¹⁰ By the beginning of May, Pakistani forces occupied some 130 outposts, along a front of 112 miles, to a depth of 5–6 miles on the Indian side of the LOC. Conservative estimates at the time suggested that this involved an occupation force of between 1,500–2,000 Pakistani troops.¹¹

The Pakistani invasion became apparent only during the first week of May, when the Indian Army units that had withdrawn from their outposts and observation points a few months earlier started to return. At first, the initial assessment was that Pakistani troops had occupied only a handful of posts and that the incursions could be dealt with by a local unit response within a few days.¹² However, following artillery and small arms exchanges with Pakistani units, it became apparent that repelling the invaders would require a coherent response, and the IAF was called upon to support Indian Army battalions in the Kargil zone. As attack helicopters were unable to operate at the high altitudes involved, the IAF had to employ jet aircraft for reconnaissance and attack. During the third week of May, five infantry divisions, five brigades, and 44 battalions were dispatched to the Kargil sector, totaling more than 200,000 troops, and an Indian counteroffensive was planned for 26 May.¹³

The time elapsed between the first official acknowledgment of the Pakistani incursion and the counteroffensive was characterized by vacillation by senior Indian military leadership as to the nature of the threat posed, dogmatism on the part of Army commanders as to how they were going to meet the challenge (specifically, the type of air support they wanted), and fears over escalation of the conflict.¹⁴

There can be little doubt that the scale of the Pakistani incursion caused a strategic shock. Although artillery exchanges in the Kargil sector had increased in frequency over the preceding two years, the region was considered a quiet zone in comparison with others along the LOC. For the first two weeks of May, many senior commanders refused to believe that the incursion was performed by anyone other than militant insurgents, and briefings continued to refer to mujahedeen. The Indian Army persisted in its belief that it was markedly stronger and more capable than the Pakistanis, so the realization, when it finally came, that India had suffered a major incursion caused considerable psychological dislocation—not just at local unit level but, most significantly, among the senior military leadership.¹⁵ This dislocation manifested itself in a number of ways, not least in a lack of a joint response from the Indian armed forces. The initial reports were kept within Army circles, and as late as the morning of 10 May, the IAF's Western Air Command still knew nothing about the incursion. The only air support that was requested in the early stages was at a local level, when calls were made for helicopter gunships. When it was pointed out by the local air commander that attack helicopters would be extremely vulnerable to ground fire, especially Pakistani surface-to-air missiles (SAM), the Army vice-chief insisted that fast jet aviation would be inappropriate and potentially escalatory. At this point, the chief of the IAF, Air Chief Marshal Anil Tipnis, sought political approval for the use of fixed-wing offensive airpower.¹⁶ Permission was granted, as long as strikes were made inside Indian territory, and not across the LOC.

Offensive air operations began at first light on 26 May, two weeks after the first indications of a Pakistani incursion.¹⁷ The initial missions proved to be unusually taxing for the IAF; most of the targets were located on or near mountain ridgelines at altitudes between 16,000 and 18,000 feet.¹⁸ The rock-and-snow terrain made visual target identification very problematic, and the fast jet pilots found it very difficult to aim their weapons within the confines of narrow valleys.¹⁹ The threat of Pakistani anti-aircraft artillery and SAMs was always present, and three IAF aircraft were lost within the first three days of the campaign. Although no Indian aircraft were lost to enemy fire after this point, the SAM threat remained high, and the Pakistanis fired more than 100 SAMs in the course of the conflict. Exacerbating the problems facing the aircrews was the paucity of intelligence. Not only had there been a lack of joint air-land planning but the Army had also failed to pass on the latest intelligence assessments of Pakistani strengths and dispositions. Much of the intelligence being used by the IAF during the first weeks of the campaign was

derived from its own aerial reconnaissance. In contrast to the Army's own organic aviation reconnaissance, which failed to detect any Pakistani activity in the previous months, the IAF's imagery analysis had at least shown where most of the Pakistani dispositions were, and electronic surveillance of the area provided useful signals intelligence (SIGINT), in spite of the Pakistani's increased signals security.²⁰

The most significant aerial action in support of the Indian 3rd and 8th Mountain Divisions occurred during the first two weeks of June. In order to prevent the Pakistan Air Force (PAF) from interfering with the fighting on the ground and Indian air support, the IAF maintained combat air patrols along the full length of the LOC and the Indo-Pakistani border, more widely.²¹ This was done as a precaution in case of a rapid escalation of the conflict. By this point, there was close coordination between the IAF and the Indian Army, and almost all the actions on the ground were preceded by air strikes. To begin with, the IAF was employing unguided weapons, but because of the problems with targeting in the mountainous terrain, the IAF quickly employed Mirage 2000H aircraft, which were capable of delivering laser-guided weapons. The change to precision weapons played a significant role in swinging the campaign in India's favor, and by mid-June, the Indian mountain divisions had recaptured the high ground that gave direct line of sight onto the national highway to the north. Another significant aerial action occurred on 17 June, when IAF Mirages hit the Pakistanis' main administrative and logistics hub at Muntho Dhalo, causing not just physical destruction but also dealing a major blow to Pakistani morale. Pakistani reports show that this attack marked the turning point in their campaign, as they were unable to sustain their operations after this point. As the weeks passed, the Indian mountain divisions recaptured one post after another, and the only occasions on which air support was not provided was when the weather precluded flying operations. Some strike operations were done at night, which also added to the psychological pressure being applied to the Pakistanis, who had not anticipated round-the-clock air attacks. Air strikes ended in mid-July, but other air support continued. This included several thousand helicopter sorties engaged in troop movement, air resupply, casualty evacuation, and heavy lift provided by Antinov-32 transport aircraft, which brought 6,650 tons of materiel and 27,000 troops into the Kargil sector. The Pakistanis were unable to match this level of sustainment and reinforcement, and, by 26 July, Indian forces had recaptured most of the posts, and almost all Pakistani units had withdrawn to their side of the LOC. The Indian counteroffensive had cost the Army 471 killed and a further 1,060 wounded.²² The Pakistani casualties were

substantially more: over 700 killed and an estimated 1,000 wounded. Some sources suggest that these official Pakistani figures underplay the total losses by several hundred.²³ It is worth noting that, in spite of the difficulties the IAF experienced in targeting, there were no “blue-on-blue” incidents during the campaign, and the application of airpower had been both precise and proportionate.

In the decade that followed the Kargil War, the conflict became the subject for extensive study in both India and Pakistan and was seen as a watershed.²⁴ It was recognized as a unique conflict, not least because the two antagonists were nuclear-armed nations. Pakistan’s acquisition of nuclear weapons in 1998 had made the country bolder in its dealings with India, but both nations came away from the conflict impressed (and relieved) that they had succeeded in preventing a nuclear escalation. Up to that point, the accepted orthodoxy within Western political and military circles was that nuclear-armed adversaries would avoid conflict at all costs for fear of escalation to a nuclear level.²⁵ The Kargil War defied that orthodoxy. The failure of the nuclear deterrent in this case prompted a rethinking of nuclear doctrine, but the conflict also spawned a new limited war concept, especially as far as India was concerned.²⁶ For India, Kargil demonstrated that it was possible to engage in a limited conventional conflict without escalation to the nuclear level, and this hurriedly prompted India to pursue the build-up of conventional forces in order to maintain its military-strategic advantage over Pakistan. As part of that desire to dominate escalation in a conflict, India looked to airpower to provide the principal strategic advantage, and this posture was very clear from a number of actions and pronouncements made by IAF seniors.²⁷ Interestingly, the Pakistani analysis of the consequences of Kargil also drew a clear connection between the conflict and the IAF’s modernization program. One PAF senior officer asserted that the Kargil review report provided the basis for the IAF receiving the preponderance of the 15-year defense spending plan (i.e. about \$30 billion) for new multi-role aircraft, including the Sukhoi Su-30MKI and French Rafale, as well as new transport aircraft and an enhanced airborne early warning capability.²⁸

Doctrinal Evolution

India’s intent to dominate conflict escalation is also reflected in its 2012 airpower doctrine. What differentiates this doctrine from its predecessor (published in 1995) is that it goes beyond outlining merely what airpower is, in terms of its roles, and explains to a far greater extent what airpower is for.²⁹ In contrast to the previous IAF doctrine, and, indeed, most Western airpower doctrine, the 2012 version

makes a much clearer connection between airpower and national security. Airpower is viewed as an indicator of national power and is defined as comprising the “sum total of a nation’s aviation and related capabilities,” including civilian assets.³⁰ The inclusion of civilian assets is unusual in doctrinal terms, but it demonstrates that the IAF is now thinking in a holistic way about national capability. Airpower is seen as serving Indian national interests across the full spectrum of conflict as well as taking a leading role in nation building and military diplomacy.

However, perhaps the most unique conceptual work is displayed in the areas of control of the air and strategic effect.³¹ Control of the air is seen not merely as the most fundamental role of airpower (to protect the nation-state from attack) and a vital prerequisite for all other operations but also as the capability to defend a nation and provide freedom of maneuver as a deterrent in itself. This is a very important point overlooked in most other airpower doctrine. The IAF doctrine does not go as far as some previous British airpower doctrine, which suggests that control of the air is “an end in itself”; the argument the IAF puts forward is far more nuanced.³² It sees deterrence and control of the air as inextricably intertwined; the credibility of the air force is dependent upon the ability of that air force to maintain control of the air, but the ability to control the airspace means little if the deterrent value of the air force is limited. The phrase deterrent air defense encapsulates what is intended.

It is also interesting to note that the IAF has retained the old doctrinal nomenclature of degrees of control of the air.³³ This has been dispensed with in most Western air doctrine over the last decade and a half, coinciding with COIN campaigning, during which time there has been little threat from the air. However, it is under consideration again now that state threats have come back into focus and the West is having to operate in parts of the world where air defense is well developed and de-confliction among various national air contingents may not be thoroughly worked out. The 2011 air campaign over Libya and recent operations against the Islamic State in Syria are good examples of this.³⁴ During the Kargil operation, the IAF maintained air superiority adjacent to most of the LOC, but a persistent threat posed by SAMs meant that the IAF did not have air supremacy. The IAF’s control of the air was not absolute, but it possessed sufficient control in order to prosecute the campaign it wished in order to dislodge the invaders.

There are several other aspects of control of the air that have been downplayed or omitted in Western doctrine since the end of the Cold War but feature in the latest IAF doctrine. One of these is protection of airfields. The IAF doctrine notes that

airfields are “densely packed, high-value targets. Aircraft on the ground at airfields are more concentrated and vulnerable than they are in flight.”³⁵ With considerable prescience, these lines were written just prior to the major Taliban attack on Camp Bastion, Afghanistan, in September 2012, which resulted in the loss of two US servicemen and several aircraft, prompting the US and Britain to re-examine existing tactics and resuscitate old Cold War survival-to-operate procedures.³⁶ However, the point is that it should not have taken the attack on Camp Bastion to draw attention to force protection issues. Since the end of the Cold War, several NATO nations have had experiences of bases being attacked. During the closing stages of the conflict in Iraq, for example, British Royal Air Force (RAF) aircraft came increasingly under attack in Basra, causing the larger assets (such as the Nimrod maritime patrol aircraft) to be withdrawn further back in theatre, and during 2007, the RAF lost a C-130 Hercules after an improvised explosive device detonated on the airfield at Al-Amarah. In both of these cases, the lesson supposedly learned was that no freedom of maneuver meant no airpower effect, or, at least, delayed airpower effect. One of the reasons why such incidents seem not to have had much impact in the United Kingdom may be because force protection is not addressed directly in the latest British airpower doctrine but is dealt with in subordinate operations manuals written by the RAF Regiment. These manuals convey the importance of force protection in a manner that should appear, at least briefly, in the main airpower doctrine. For instance, the RAF Force Protection for Air Operations manual refers to the way in which force protection “is recognized, along with Air Logistics, as a key enabler for Air and Space Power’s four fundamental roles.”³⁷ This is one of several areas where the IAF airpower doctrine is superior because it acknowledges that control of the air includes protection of aircraft on the ground in the face of surface-to-surface threats.

However, the main reason the IAF doctrine has attracted attention in the West, particularly in the United States, is its treatment of strategic effect and conventional deterrence. The US interest stems from the fact that it is seeking to partner with nations that it regards as counterbalances to China, but it is also related to a new US focus on tailored deterrence using nuclear and conventional means.³⁸ In India, discussions of strategic effect preceded the Kargil conflict, and, indeed, the subject appeared briefly in the previous IAF doctrine, but the conflict in 1999 prompted far greater consideration of airpower’s strategic role, not the least because it helped to defuse a potential nuclear escalation. During the early to mid-2000s, many writers, several of whom were recently retired senior officers, underscored the importance of

airpower in turning the tide during the Kargil conflict and how airpower provided the best means of ensuring that India attains its place as a global player economically.³⁹ As far as India is concerned, the principal threat to this aspiration comes from China. Although Indo-Chinese relations improved for a time during the late 1990s, military competition and distrust remain. China engaged in what were considered to be several provocative actions during the following decade, including the building of SIGINT installations in the southern portion of the Tibetan plateau and in Aksai Chin, a disputed border area between the two countries. Chinese rapid reaction forces were also deployed close to the border. As a result, the IAF strengthened its Eastern Air Command, deploying Su30 Flankers there from 2008 onward. The commander of the Eastern Air Force at the time, Air Marshal Pranab Kumar Barbora, made the point that this reinforcement was designed to thwart any “misadventure” by the Chinese and a repeat of the 1962 conflict. While it was admitted that India could not match China’s numerical strength, it was felt that the IAF would provide a sufficiently strong “deterrent force” because of its force multiplying potential.⁴⁰

So, while India sees Pakistan as a constant drain on its defense resources because of the ongoing territorial claims, the rise of China has eclipsed most other security concerns. Whereas India’s concept of defense used to focus purely on its borders, it now envisages “strategic reach” to protect national interests, particularly economic, trade, and energy security.⁴¹ Implicit in this strategic reach is deterrence; India is no longer content to fight purely within its own borders when threatened and now talks in terms of protecting its security interests at a continental level and extending its range also in the maritime sphere from the Persian Gulf to the Straits of Malacca.⁴²

This emphasis on strategic reach and strategic effect, more broadly, is a fundamental revolution in how India views airpower and is reflected in both the 2012 IAF doctrine and procurement. After half a century of viewing the IAF as a tactical support instrument, the 2012 doctrine seems to go almost to the opposite extreme. It states “air power is inherently strategic in nature and its tactical application would only fritter away its prime advantage of creating strategic effects.”⁴³ Interestingly, the doctrine makes a point of quoting some of Marshal of the RAF Lord Hugh Trenchard’s pronouncements from the 1920s, “It is not necessary for an air force, in order to defeat an enemy nation, to defeat its armed forces first. Air power can dispense with that intermediate step, can pass over the enemy navies and armies, pen-

erate the air defences and attack direct the centres of production, transportation and communication from which the enemy war effort is maintained.”⁴⁴

But just when the new doctrine could appear to be a throwback to the extreme positions of the interwar theorists, it then offers some unique insights about the nature of strategic effect and serves to demonstrate where Western airpower doctrine is conceptually weak. One of these areas is the definition of strategic air effect. The IAF document makes the point that “the classification of an offensive air operation as ‘strategic’ is not determined by range, platform type or the weaponry used, but is determined by the objective or the purpose served.”⁴⁵ Much of Western airpower doctrine continues to conflate range or depth of penetration with “strategic.” For example, the latest British airpower doctrine talks about strategic being the effect sought, yet it also refers to operations against targets in the “heart of enemy territory.”⁴⁶

However, one of the most important observations made by the IAF doctrine about the nature of strategic effect can be found in a section on sub-conventional operations. One of the fallacies in Western discourse, especially since 2001, is that airpower is a purely supporting instrument in irregular warfare, and that airpower cannot have strategic effect in this setting.⁴⁷ Although the 2012 IAF doctrine could have expanded on this area a little more, it makes the point that key leadership targeting has a strategic effect.⁴⁸ It uses the US operation to kill Osama bin Laden in May 2011 to illustrate airpower’s role in sub-conventional warfare, but a better example might have been the targeting of the Al-Qaeda in Iraq (AQI) leader Abu Musab al-Zarqawi in 2006, which included airborne tracking of al-Zarqawi and the final act performed by F-16s.

Reflecting India’s new interest in protecting its global interests and defending forward, the 2012 doctrine also devotes space to strategic lift. The doctrine and senior IAF commentators make the point that a strategic strike capability without strategic airlift risks a gap in India’s ability to project power.⁴⁹ Doubtless, the Kargil experience was informative here, as airlift was used to bring several divisions into the zone prior to the Indian counteroffensive, but airlift has been viewed as a lifeline to Indian forces in the border zones for over 50 years.⁵⁰ However, it is also apparent that the IAF sees strategic airlift as important for soft power, including humanitarian aid and disaster relief in the region. Reference is made in several places throughout the doctrine to airpower’s role in non-kinetic activity, and a whole chapter is devoted to “Nation Building, Aerial Diplomacy and Perception Management.”⁵¹ Western air-

power doctrine, in contrast, has tended to emphasize kinetic effect when addressing strategic airpower. This is particularly the case with US doctrine.⁵²

India's aspiration to achieve power projection and an expeditionary capability is not yet a reality, and some writers cast doubt on the idea that India can achieve a true expeditionary footing, even in the midterm.⁵³ The IAF has many legacy assets, with a preponderance of short-range interceptor aircraft, such as the MiG-21, which were given multirole functions during the 1980s and 1990s. The short range of the aircraft concerned meant that the IAF could only perform air defense and Army-support functions.⁵⁴ However, the IAF's modernization program is making steady progress toward a strength of 42 squadrons by 2022, and the types of aircraft being procured indicate a serious intent to develop a balanced air force and a true strategic capability.⁵⁵ Three combat aircraft acquisition programs aim to provide a new light combat aircraft (an indigenous design, the Tejas) to replace the aging MiG-21s, a multirole combat fighter (the French Rafale), and a fifth-generation fighter (the Su-T50 being developed in collaboration with the Russians). Although the introduction of the Tejas has been slower than desired, the IAF expressed satisfaction with its performance as a light multirole strike aircraft during recent exercises.⁵⁶ In addition, the IAF is acquiring a fleet of 272 Su-30 fighter-bombers, Israeli airborne early warning aircraft, and air transport aircraft from the United States (including six C-130J Hercules, air-to-air refueling aircraft, and an unspecified number of C-17 Globemasters).⁵⁷ These acquisitions will have not just force multiplier effects but synergies that will add to the deterrent value of the IAF. Early warning aircraft will not only enhance India's air defense radius but will also play a key role in any expeditionary context. Similarly, refueling tanker aircraft will increase the range and weapon loads of strike aircraft, thereby adding to India's air deterrent.

Challenges Facing Indian Airpower

While greater thought is being applied as to how these aircraft are being acquired, one of the key weaknesses of the IAF has been the multiplicity of aircraft types in service. During the 1980s, for example, the IAF had no fewer than 11 different fighter aircraft, and this placed an unnecessary training and maintenance burden on the service.⁵⁸ There may still be problems if the current modernization program persists with multinational procurement, not the least because the United States' increasingly strained relations with Russia may affect India's relationship with those two countries. After decades of deliberately pursuing a non-aligned posture, India has cultivated much closer ties with the United States, including



Lt Col Casey Eaton, USAF, explains the capabilities of the C-17 Globemaster III to Indian air force wing commanders Anup Kumar Dutta, K.V. Surendran Nair, and S.K. Vidhate during their visit to Hickam Air Force Base, Hawaii. As part of their visit, Indian air force officers learned how the United States commands and controls airpower in the Pacific through the 613th Air and Space Operations Center (AOC). Five 613th AOC members later visited India for a similar orientation, as part of a subject-matter expert exchange with the Indian air force. US Air Force photo by Oscar Hernandez.

several high-profile joint exercises since 2004.⁵⁹ But closer interaction with the United States may imperil India's collaborative fifth-generation fighter aircraft project with Russia.

In spite of the hurdles inherent in the IAF's modernization program, the service has at least received international recognition as a balanced, full-spectrum air force. However, there remains one serious impediment to India's desire for global reach and power projection—a flawed intelligence apparatus. Sharing of intelligence between the military and intelligence agencies remains suboptimal, and India currently lacks a command, control, communications, computers, intelligence, information, surveillance, and reconnaissance (C4I2SR) system suitable for network-centric warfare.⁶⁰ While India made a variety of important observations about the Kargil conflict, chief of which was the deficiencies in the Indian intelligence apparatus, not all the lessons identified were acted upon or received further attention.⁶¹ This is evident in several places, not the least the 2012 IAF doctrine,

which pays scant attention to the subject of intelligence, either in terms of intelligence supporting operations or airpower as a source of intelligence. Although a doctrinal precepts section talks about how targets need to be “carefully chosen” and “must have a direct link with the enemy’s strategy or his decision-making process,” intelligence is not considered one of the main precepts and is accorded fewer than a dozen lines in the doctrine.⁶² There is no real discussion about the role of intelligence in target selection, target prioritization, the importance of timely and precise intelligence, and so forth. This is in contrast to most Western airpower doctrine, which treats intelligence acquisition as one of the four main roles of airpower and how strategic effect, in particular, is dependent upon all-source analysis.⁶³ Even allowing for Indian sensitivities over releasing too much information about their intelligence machinery, to accord the subject just a few lines is a serious weakness in the doctrine. Other nations’ airpower doctrine manages to address intelligence in generic terms, without compromising national security, and the IAF should be able to do the same.

In the past, when countries have suffered strategic shock as a result of perceived or actual intelligence failure, not only is the intelligence apparatus overhauled but also the significance of accurate and timely intelligence is usually impressed upon all organs of state, especially the military.⁶⁴ For the IAF doctrine to downplay the role of intelligence is not just dangerous, it is an oddity, because one of the conclusions drawn in the Kargil report was that India’s national surveillance capability was “grossly inadequate,” particularly satellite and other imagery acquisition.⁶⁵ The report states that had India possessed high-definition satellite imagery capability, unmanned aerial vehicles, and better human intelligence, the Pakistani incursion would have been spotted at a much earlier point. The report recommended that every effort be made and adequate funds provided to ensure that a capability of world standards was developed “indigenously and put in place in the shortest possible time.”⁶⁶ Therefore, it would be reasonable to expect the 2012 doctrine to, at least, treat intelligence acquisition as a core role for airpower in a similar way to Western airpower doctrine. One of the possible reasons why the doctrine devotes so little attention to the subject is that airpower, itself, is accorded surprisingly little attention in the Kargil report. The report tends to focus on the failures by the Indian defense-and-security apparatus, rather than addressing any success stories. As airpower was considered the principal factor explaining Indian success, it may have been sidelined as a topic not demanding further investigation.⁶⁷ If airpower

had been found wanting, then it and air-derived intelligence may have been addressed in more detail.

Nevertheless, the Kargil report does point to failings in service intelligence and sharing of intelligence among the services and intelligence agencies. Among the observations made is that Indian air intelligence was lulled into a false sense of security. When Pakistani aircraft were located near the border just prior to the incursion, both army and air force intelligence assessed this activity as “normal.”⁶⁸ Equally, reports of construction of helicopter bases were dismissed, as it was reasoned that the bases were required to support Pakistani positions near the LOC. However, both the air force and the army were criticized for shortcomings in order-of-battle analysis, especially their failure to keep track of five Pakistani light infantry battalions as they crossed the LOC.⁶⁹ In several cases, tactical intelligence was not shared beyond one-star headquarters, either within the same service or with other services so that a holistic view of Pakistani activity impossible.⁷⁰ However, the failings did not just exist at unit level. The operational level intelligence apparatus also came in for criticism when it became apparent that there was some tactical intelligence suggesting that an invasion was imminent, but that the analytical staffs compiling an overall assessment for the Director General of Military Intelligence overlooked this intelligence.⁷¹ Part of the problem seems to have stemmed from a classic intelligence pitfall: mirror imaging. Because the Indian Army lacked the means to sustain operations in winter weather at altitude, the assumption was made that the Pakistanis would not attempt major military operations in that type of environment.⁷²

Many writers consider Kargil to have been a systemic intelligence failure,⁷³ but this may be doing a disservice to parts of the intelligence machinery that functioned reasonably well. It is worth noting on which occasions and at what levels the intelligence apparatus made the correct assessments. There is a suggestion in the Kargil report that the Indian Joint Intelligence Committee (JIC), which is responsible for pan-government strategic assessments, did raise the possibility of a Pakistani campaign in the Kargil zone in November 1998, some five months before the incursion.⁷⁴ The JIC also repeatedly pointed to an emboldened Pakistani government that was likely to initiate a move in the Jammu and Kashmir region. The Kargil report made the point that JIC assessments did not receive the attention “they deserved at the political and higher bureaucratic levels. . . . The JIC was not accorded the importance it deserved either by the intelligence agencies or the Government.”⁷⁵ The question can be raised as to why the JIC’s assessments did not

gain traction especially within the Indian government. The problem may have been the type of language used; assessments done by committee tend to reflect the lowest-common-denominator positions within the committee, leading to anodyne language. It is, therefore, possible that the strategic indicators of an incursion by Pakistan were not conveyed robustly enough. But writers who suggest that no strategic assessments had been made are wrong.⁷⁶ Equally, after the incursion became apparent, the IAF did perform well in reconnaissance and imagery analysis. One of the IAF's strengths is its adaptability, and as early as 10 May, the IAF's reconnaissance-and-surveillance assets were swung into action, including Jaguar fighters employed in a reconnaissance role.⁷⁷ Air-derived intelligence helped to bring clarity to the situation during the critical days after the incursion was first reported, and on 14 May, the Air HQ established an air operations center for the Jammu–Kashmir region in anticipation of a counteroffensive.

The responsiveness that the IAF demonstrated was in spite of a lack of effective joint machinery. There was surprisingly little communication between the Land and Air HQs, and during the first week after the incursion was detected, the Indian Army attempted to respond alone. The Air Chief Marshal Tipnis recalled how the Army's Northern Command was reluctant to share reports on its initial artillery and small arms exchanges with the Pakistani forces. When the Army did engage with the local air officer commanding, the request was for helicopter gunships to assist with the "eviction" of the "intruders."⁷⁸ It was pointed out that the altitudes at which air support would have to operate precluded the use of helicopters, and fast jet aviation was suggested as the only option, not least because if the situation escalated, airpower was going to provide the best means of dealing with the situation quickly. This was eventually agreed upon, after discussions between the service chiefs, but valuable time was lost due to there being no formal process for air-land integration. Air Chief Marshal Tipnis commented that there was a total lack of Army-IAF joint staff work and no joint planning, not even joint deliberations at any command level, and this persisted for several weeks.⁷⁹ However, once the gravity of the Pakistani incursion became known at the governmental level and approval for the use of fast jet aviation was received, with the caveat that the IAF operated on the Indian side of the LOC, jointery characterized India's conduct of the conflict.⁸⁰

The IAF's senior leadership was clearly scarred by the initial lack of service integration during the Kargil conflict, and jointery is one of the areas that does receive close attention in the 2012 doctrine (in contrast to intelligence). A whole chapter

is devoted to “Joint Operations,” and it provides almost unique clarity on the subject.⁸¹ Western airpower doctrine would do well to emulate it. One of the particular strengths of the chapter is the way in which ideas are articulated; the language used is direct and very clear. The doctrine uses the word “jointmanship,” making it a function of leadership. This is a vitally important point and a considerable advance on most other doctrine. Second, it emphasizes that jointery is about true partnership and genuine respect for each service’s capabilities. The issue of respect is so often omitted in Western doctrine. It underscores mutual trust and confidence, as well as each service taking the time to learn and understand the strengths and weaknesses of other partners. The doctrine also emphasizes the importance of using the appropriate tools at the right time. The issue of appropriateness is rarely discussed in Western doctrine. It is suggested that if all these factors are taken account of, then joint action will have synergistic and force multiplying effects, but the point is also made that jointmanship needs to be exercised regularly, because this is the only way to refine operating concepts. In short, this chapter articulates the essential tenets of jointery in a way that is yet to be done properly in the West.

Although some of the most unique conceptual work found in the IAF doctrine relates to control of the air and strategic effect, the way in which air-surface integration is treated is also noteworthy.⁸² A number of important observations are made, including the psychological effect of air attacks on enemy troops and the fact that air interdiction of enemy supply lines can create strategic effect (the example cited in the latter case is Wehrmacht General Erwin Rommel’s Afrika Corps being unable to exercise any real impact on Mediterranean strategy after 1942 due to the aerial interdiction of his supply lines). During the Kargil conflict, the attack on the Pakistani logistics hub at Muntho Dhalo dealt a fatal blow to both Pakistani morale and their ability to sustain their campaign, and these effects were highlighted in the Kargil report.⁸³ Clearly, this experience had a major impact on IAF thinking about the psychological effect of airpower and the significance of aerial interdiction.

However, perhaps most interesting is the IAF doctrine’s treatment of air-maritime operations. Unusually, India employs its navy for maritime reconnaissance, but the strike function has been given to the air force. Of particular note is the way in which a distinction is drawn between anti-shipping strike and maritime strike.⁸⁴ The former is aimed at the enemy’s naval assets in proximity to Indian forces, while the latter is aimed at enemy targets that are not in contact with friendly forces, and included in this category are enemy naval facilities in harbor

and maritime patrol aircraft on the ground. This distinction between anti-shiping strike and maritime strike is unique and is akin to the distinction made in Western airpower doctrine between close air support (the targeting of enemy troops in contact with friendly forces) and air interdiction (the targeting of enemy supply lines, reserves, and troops not in the immediate battlespace). The main point, however, is that the IAF doctrine dedicates far more space to this subject than most Western airpower doctrine, certainly the British equivalents since the 1990s, which have steadily decreased the attention given to anti-shiping (or maritime strike) roles.⁸⁵

What the authors of the Indian airpower doctrine appreciate, while their counterparts in the West seem not to, is that one of the roles of air doctrine is to highlight how airpower should be used or could be used, if the nation possesses all the resources it requires. One of the traps into which British doctrine, in particular, has fallen is to downplay or disregard certain functions of airpower when the country has lacked particular assets. This is certainly the case with maritime aviation. In the late 1990s, after the RAF dispensed with its two Tornado squadrons devoted to an anti-shiping role, no mention was made of a maritime-strike function in RAF doctrine.⁸⁶ Similarly, the axing of the Nimrod maritime patrol aircraft after the Strategic Defence Review of 2010 led to the maritime reconnaissance-and-surveillance function being dropped from the 2013 doctrine, just as strategic effect disappeared from British air doctrine in the fourth edition simply because the operational context was, apparently, all about COIN warfare at the time. In other words, doctrine of any service type needs to deal in some universal constants and should not be overly swayed by either operational contexts or available capabilities. A certain proportion of any doctrine also has aspirational elements to it, and some of the IAF doctrine falls into this category. The IAF doctrine optimistically predicts that air force and carrier aviation will be able to meet both regional and out-of-area defense requirements, so long as operations are properly coordinated and planned.⁸⁷

Conclusion

It is clear from the 2012 doctrine that the IAF sees itself as an instrument of power projection and underpinning expeditionary capability, but it also recognizes that it is the principal tool in India's armory if deterrence fails.⁸⁸ It is also clear that the Kargil experience was extremely important in crystalizing Indian thinking about the utility of airpower. For India, the overriding lessons from 1999 were that the nation had paid a heavy price for its failure to invest properly in conventional

deterrence, a balanced force structure and intelligence, but that airpower had been the chief factor in turning the tide in its favor. Since then, Pakistan has been reluctant to engage in major adventurism (even if border skirmishes continue). Therefore, it is difficult to agree with some writers who suggest that the IAF's expanded capability is causing more, not less, instability in South Asia.⁸⁹ The IAF's modernization program has been transformative, not merely in material and training terms but also in the conceptual realm. While some flaws in the airpower doctrine remain, not least in how intelligence is treated, the 2012 doctrine is revolutionary on many levels. This transformation has ensured new, strong international partnerships that have, in turn, added to the deterrent value of the IAF. **JIPA**

Notes

1. See, for example, Adam B. Lowther and Rajeswari Pillai Rajagopalan, "Building a Partnership between the United States and India: Exploring Airpower's Potential," *Air & Space Power Journal* 29, no. 2 (March–April 2015): 21–35, http://www.airuniversity.af.mil/Portals/10/ASPJ/journals/Volume-29_Issue-2/F-Lowther_Rajagopalan.pdf.
2. For an overview of the changing priorities of Indian defence policy, see Harsh V. Pant, ed., *Handbook of Indian Defence Policy: Themes, Structures and Doctrines* (London: Routledge, 2015).
3. Arjun Subramaniam, "The Strategic Role of Airpower: An Indian Perspective on How We Need to Think, Train and Fight in the Coming Years," *Air & Space Power Journal* 22, no. 3 (Fall 2008): 56–66, http://www.airuniversity.af.mil/Portals/10/ASPJ/journals/Volume-22_Issue-1-4/2008_Vol22_No3.pdf; and George K. Tanham and Marcy Agmon, *The Indian Air Force: Trends and Prospects* (Santa Monica, CA: RAND, 1995), 91, https://www.rand.org/pubs/monograph_reports/MR424.html.
4. The only significant loss of territory (in the far north of India, in the Ladakh region) occurred during the 1962 conflict with China. See J. A. Khan, *Air Power Challenges to IAF* (New Delhi: APH Publishing, 2004), 180–81.
5. *Ibid.*, 265.
6. Subramaniam, "The Strategic Role of Airpower," 56–62.
7. A. K. Sachdev, "Chinese Missiles: Winning the Limited War," *Strategic Analysis* 24, no. 3 (2000): 525–38.
8. The best general analysis of the Kargil War can be found in Peter R. Lavoy, ed., *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict* (Cambridge, UK: Cambridge University Press, 2009). The best analysis from an airpower perspective can be found in Benjamin S. Lambeth, *Airpower at 18,000': The Indian Air Force in the Kargil War* (Washington, DC: Carnegie Endowment for International Peace, 2012).
9. Kargil Review Committee, Indian Government, *From Surprise to Reckoning: The Kargil Review Committee Report* (New Delhi: Sage Publications, 1999), 230.
10. The "Kargil Plan" was discussed among the senior political leadership in Pakistan as early as November 1998. See *Kargil Review Committee, From Surprise to Reckoning*, 226.
11. Benjamin S. Lambeth, "Air Power in India's 1999 Kargil War," *Journal of Strategic Studies* 35, no. 3 (2012), 292.

12. Lambeth, *Airpower at 18,000'*, 8.
13. Lambeth, "Air Power in India's 1999 Kargil War," 293.
14. *Ibid.*, 298.
15. John H. Gill, "Military Operations in the Kargil Conflict," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, edited by Peter R. Lavoy (Cambridge, UK: Cambridge University Press, 2009), 104.
16. Lambeth, "Air Power in India's 1999 Kargil War," 296.
17. The counteroffensive was called Operation Vijay, and the air element Operation Safed Sagar.
18. Lambeth, "Air Power in India's 1999 Kargil War," 299.
19. This was particularly so when aircraft had to make perpendicular approaches to targets, crossing several ridgelines in quick succession, rather than flying up valleys.
20. James J. Wirtz and Surinder Rana, "Surprise at the Top of the World: India's Systemic and Intelligence Failure," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, edited by Peter R. Lavoy (Cambridge, UK: Cambridge University Press, 2009), 222–24; and Lambeth, *Airpower at 18,000'*, 10, 20.
21. Lambeth, "Air Power in India's 1999 Kargil War," 300.
22. *Ibid.*, 303. The official Indian report, *From Surprise to Reckoning: The Kargil Review Committee Report*, has different figures for Indian wounded (1,109) and a total figure of 474 killed (which takes account of the three IAF aircraft lost to SAMs).
23. See, for example, Gill, "Military Operations in the Kargil Conflict," 120–22.
24. In India, the unclassified official report appeared as *From Surprise to Reckoning: The Kargil Review Committee Report*. In Pakistan, although most military analyses of the Kargil conflict remain classified, a semi-official account was published in 2003 by Shireen M. Mazari, *The Kargil Conflict 1999: Separating Fact from Fiction* (Islamabad: Institute of Strategic Studies, 2003). Since that time, several Indian and Pakistani senior officers have published their own accounts and analyses, including V. P. Malik, *Kargil: From Surprise to Victory* (New Delhi: Harper-Collins, 2006); Jasjit Singh, "Kashmir, Covert Wars, and Air Power," *Air Power Journal* (Summer 2005); and A. Y. Tipnis, "My Story: The Chief of Air Staff on Operation Safed Sagar," *Force* (October 2006). See also: Hasan-Askari Rizvi, "The Lessons of Kargil as Learned by Pakistan," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, edited by Peter R. Lavoy (Cambridge, UK: Cambridge University Press, 2009), 333–52; and Timothy D. Hoyt, "Kargil: The Nuclear Dimension," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, edited by Peter R. Lavoy (Cambridge, UK: Cambridge University Press, 2009), 144–70.
25. Peter R. Lavoy, "Introduction: The Importance of the Kargil Conflict," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, edited by Peter R. Lavoy (Cambridge, UK: Cambridge University Press, 2009), 30–31.
26. Hoyt, "Kargil: The Nuclear Dimension," 163.
27. Fali H. Major, "Indian Air Force in the 21st Century: Challenges and Opportunities," *Journal of Defence Studies* 2, no. 1 (Summer 2008): 17–30, https://idsa.in/jds/2_1_2008_IndianAirForceinthe21st-Century_FHMajor+&cd=1&hl=en&ct=clnk&gl=us. See also S. P. Tyagi, "Strengthen India's Aerospace Power," *Indian Defence Review* 22, no. 1 (January–March 2007), <http://www.indiandefencereview.com/news/strengthen-indias-aerospace-power/2/>; and Zia ul Huque Shamsi, "Indian Air Force Modernisation Plan of 2020: Challenges for Regional Air Forces," Australian Defence College, October 2012, http://www.defence.gov.au/ADC/Publications/Commanders/2012/04_IAF%202020%20AWC.pdf.
28. Shamsi, "Indian Air Force Modernisation Plan of 2020," 8–10.
29. Norman Anil Kumar Browne, "Foreword," in *Basic Doctrine of the Indian Air Force* (Delhi: Indian Air Force HQ, 2012), v–vi.

30. *Ibid.*, 22, and see also 1, 6–8, 36–56; and Tyagi, “Strengthen India’s Aerospace Power.”

31. *Basic Doctrine of the Indian Air Force*, 36–56 and 69–74. Virtually a whole chapter is devoted to the subject of control of the air, in all its facets, and strategic air is accorded the same level of attention throughout the 2012 doctrine.

32. Air Staff, Ministry of Defence, *Royal Air Force: Air Power Doctrine AP3000*, 2nd ed. (London: Ministry of Defence, 1993), 39. See also Shamsi, “Indian Air Force Modernisation Plan of 2020,” 13; and R. V. Phadke, “Response Options: Future of Indian Air Power Vision 2020,” *Strategic Analysis* 24, no. 10 (January 2001): 1795–812.

33. The three main categories outlined in the IAF doctrine are *air supremacy, air superiority, and favourable air situation*. *Basic Doctrine of the Indian Air Force*, 40–41.

34. Especially in the latter case, NATO partners have had difficulty deconflicting their operations against the Islamic State with activity by the Syrian regime and Russian aircraft, which have been pursuing their own agendas. See Christina Goulter, “The British Experience: Operation Ellamy,” in *Precision and Purpose: Airpower in the Libyan Civil War*, ed. Karl P. Mueller (Santa Monica, CA: RAND, 2015), 153–82, https://www.rand.org/content/dam/rand/pubs/research_reports/RR600/RR676/RAND_RR676.pdf.

35. *Basic Doctrine of the Indian Air Force*, 45. The doctrine was signed off, officially, by the IAF Chief on 17 September 2012, three days after the Taliban attack on Camp Bastion in Afghanistan, but the main text was completed some months before.

36. For more information on the Camp Bastion attack and American perspectives on air base defense, see Erik K. Rundquist, “A Short History of Air Base Defense: From World War I to Iraq,” in *Defending Air Bases in an Age of Insurgency*, edited by Shannon W. Caudill (Maxwell AFB, AL: Air University Press, 2014), 3–42.

37. RAF Air Publication 3241B *RAF Force Protection for Air Operations: Operations Manual* (March 2011), 1.2.

38. Lowther and Rajagopalan, “Building a Partnership between the United States and India”; Craig H. Neuman II, “Forging an Indian Partnership,” *Strategic Studies Quarterly* 6, no. 2 (Summer 2012): 112–44, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-06_Issue-2/07-Neuman.pdf; Robert Blake, “Looking East, Looking West: U.S. Support for India’s Regional Leadership” (speech, Harvard University, Cambridge, MA, 12 April 2013), <https://2009-2017.state.gov/p/sca/rls/rmks/2013/207497.htm>; C. Raja Mohan, “Rising India: Partner in Shaping the Global Commons?,” *Washington Quarterly* 33, no. 3 (July 2010): 133–48, http://www.act.nato.int/images/stories/events/2010/gc/ws_mar_risingindia.pdf; Keir A. Lieber and Daryl G. Press, “The New Era of Nuclear Weapons, Deterrence, and Conflict,” *Strategic Studies Quarterly* 7, no. 1 (Spring 2013): 3–14, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-10_Issue-5/Lieber.pdf; Robert S. Ross, “US Grand Strategy, the Rise of China, and US National Security Strategy for East Asia,” *Strategic Studies Quarterly* 7, no. 2 (Summer 2013): 20–40, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-07_Issue-2/Ross.pdf; David J. Trachtenberg, “US Extended Deterrence: How Much Strategic Force Is too Little?,” *Strategic Studies Quarterly* 6, no. 2 (Summer 2012): 62–92, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-06_Issue-2/05-Trachtenberg.pdf; and David W. Kearn Jr., “The Future of US Deterrence in East Asia: Are Conventional Land-Based IRBMs a Silver Bullet?,” *Strategic Studies Quarterly* 7, no. 4 (Winter 2013): 93–116, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-07_Issue-4/2013winter-Kearn.pdf.

39. See, for example, Tyagi, “Strengthen India’s Aerospace Power”; K. B. Menon, “Modernisation of India’s Military Aviation,” *Indian Defence Review* 26, no. 1 (January–March 2011), <http://www.indiandefencereview.com/news/modernisation-of-indias-military-aviation/2/>; and Subramaniam, “The Strategic

Role of Airpower,” 56–66. Air Commodore Subramaniam’s article was originally published by the Indian Centre for Air Power Studies in 2006. See also Kargil Review Committee, Indian Government, *From Surprise to Reckoning*, 105.

40. Quoted in Jonathan Holslag, “The Persistent Military Security Dilemma between China and India,” *Journal of Strategic Studies* 32, no.6 (2009), 823, <https://www.tandfonline.com/doi/pdf/10.1080/01402390903189592?needAccess=true>.

41. S. P. Tyagi, “India to Protect Interests Beyond Border,” *Dawn*, 24 August 2006. See also Tyagi, “Strengthen India’s Aerospace Power.”

42. Subramaniam, “The Strategic Role of Airpower,” 61; and Phadke, “Response Options,” 1795–812.

43. *Basic Doctrine*, 70.

44. The National Archives, AIR 9/8. CAS Sir Hugh Trenchard, “The War Object of an Air Force,” 2 May 1928.

45. *Basic Doctrine*, 69.

46. See, for example, British Air Power doctrine since the 1990s. While the 1993 edition of *Air Power Doctrine*, AP3000, 2nd ed., made the same point about *strategic* not being defined by range, platform, or weaponry, on page 72, the latest British air doctrine, JDP 0-30, published in 2013, is confusing on the issue (paragraph 319, Chapter 3-13).

47. *British Air Power Doctrine*, AP3000, 4th ed., omitted reference to strategic effect altogether, and the focus was on support aviation in a joint context. See also Christina Goulter, “Irregular Warfare: The Regular in the Irregular,” in *A Century of Military Aviation, 1914–2014: Proceedings of the 2014 RAAF Air Power Conference*, ed. Keith Brent (Canberra, Australia: Air Power Development Centre, 2014), 129–53.

48. *Basic Doctrine*, 73.

49. *Ibid.*, 72, 78, and Chapter 7. See also Subramaniam, “The Strategic Role of Airpower,” 61–62.

50. Phadke, “Response Options.”

51. *Basic Doctrine*, Chapter 10, 117–23.

52. See, for example, USAF, Air Force Doctrine Document 1, *Air Force Basic Doctrine*, 17 Nov 2003, 40–41. See also Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961–1984* (Maxwell AFB, AL: Air University Press, 1989); and Curtis E. LeMay, Richard H. Kohn, and Joseph P. Harahan, *Strategic Air Warfare: An Interview with Generals Curtis E. LeMay, Leon W. Johnson, David A. Burchinal, and Jack J. Catton* (Washington, DC: Office of Air Force History, 1988).

53. P. I. Muralidharan, “Indian Air Force: Is It an Expeditionary Force?” special commentary, *Institute of Peace and Conflict Studies*, 2 January 2014, http://www.ipcs.org/comm_select.php?articleNo=4232.

54. For example, the MiG-21 has an effective range of only about 750 miles. With a full weapons load this is reduced significantly.

55. Gurmeet Kanwal, “India’s Military Modernisation: Plans and Strategic Underpinnings,” *National Bureau of Asian Research* (website), 24 September 2012, <http://www.nbr.org/research/activity.aspx?id=275>.

56. Shaurya Gurung, “IAF Pushes for Faster Production of Tejas after Gagan Shakti- 2018,” *Economic Times*, 25 April 2018, <https://economictimes.indiatimes.com/news/defence/iaf-pushes-for-faster-production-of-tejas-after-gagan-shakti-2018/articleshow/63905916.cms?&cd=1&hl=en&ct=clnk&gl=us>.

57. *Ibid.* See also Lambeth, B. ‘India’s Air Force Evolves,’ *Air Force Magazine*, March 2015, pp.62-66.

58. Tanham, G. and Agmon, M. *The Indian Air Force: Trends and Prospects* (RAND, 1995), p. xiv. See also: Tyagi, ‘An IAF for the Future: Some Considerations – Part II,’ n.d, idsa-india.org.

59. Benjamin S. Lambeth, “India’s Air Force Evolves,” *Air Force Magazine*, March 2015, 64, <http://www.irforcemag.com/MagazineArchive/Magazine%20Documents/2015/March%202015/0315india.pdf>; Lowther and Rajagopalan, “Building a Partnership between the United States and India,” 21–35.

60. Subramaniam, “The Strategic Role of Airpower,” 62; and Kanwal, “India’s Military Modernisation,” 7.

61. Kargil Review Committee, Indian Government, *From Surprise to Reckoning*, chapters 6 – 8 and 14.

62. *Basic Doctrine*, 74, and 14, 71. Under *combat enabling air campaigns* on pages 87–94, space is devoted to surveillance and reconnaissance, but the preponderance of the discussion focuses on the distinction between surveillance and reconnaissance.

63. See, for example, UK Air Power doctrine, JDP 0-30 (2013), which devotes five pages to how airpower contributes to the intelligence picture and how airpower effect rests on an all-source derived intelligence product, 3.6–3.10.

64. For some of the best analyses of real or perceived intelligence failure, see Ronnie E. Ford, *Tet 1968: Understanding the Surprise* (London: Frank Cass, 1995); U^{ri} Bar-Yo^{se} f, *The Watchman Fell Asleep: The Surprise of Yom Kippur and its Sources* (Albany: State University of New York Press, 2005); and George Tenet and Bill Harlow, *At the Center of the Storm: My Years at the CIA* (New York: Harper Collins, 2007).

65. Kargil Review Committee, Indian Government, *From Surprise to Reckoning*, 158–59, 253.

66. *Ibid.*, 253.

67. *Ibid.*, 105.

68. *Ibid.*, 149.

69. *Ibid.*, 153.

70. *Ibid.*, 134 and chapter 8. See also Lambeth, “Airpower in India’s 1999 Kargil War,” 297.

71. Kargil Review Committee, Indian Government, *From Surprise to Reckoning*, 134.

72. *Ibid.*, 223–24.

73. See, for example, Wirtz and Rana, “Surprise at the Top of the World,” 209–30; Praveen Swami, “The Kargil War: Preliminary Explorations,” in *Faultlines: Writings on Conflict and Resolution*, ed. Kanwar Pal Singh Gill and Ajai Sahni (New Delhi: Bulwark, 1999), 39; and Ashley J. Tellis, C. Christine Fair, Jamison Jo Medby, *Limited Conflicts Under the Nuclear Umbrella: Indian and Pakistani Lessons from the Kargil Crisis* (Santa Monica, CA: RAND, 2002), Summary, x.

74. *Ibid.*, 138–41.

75. *Ibid.*, 238.

76. Swami, “The Kargil War,” 39.

77. *Jane’s Sentinel Security Assessment, South Asia* (accessed 28 July 2015); and Lambeth, “Airpower in India’s 1999 Kargil War,” 294.

78. Lambeth, “Airpower in India’s 1999 Kargil War,” 295–97.

79. *Ibid.*, 297.

80. *Ibid.*, 298.

81. *Basic Doctrine*, chapter 9, 113–16.

82. *Ibid.*, 57–68.

83. Kargil Review Committee, Indian Government, *From Surprise to Reckoning*, 105.

84. *Ibid.*, 66–67.

85. See, for example, *Air Power Doctrine*, AP3000, 2nd ed. (1993), which devotes less than a short paragraph to the subject, and the latest version, JDP 0-30, *UK Air and Space Doctrine* (2013), 4.6–4.8, which mentions a carrier-enabled strike function as part of power projection, but there is no mention of maritime strike as a subset of counter-force operations. Nor is there discussion of maritime-air reconnaissance and surveillance.

86. *United Kingdom National Intelligence Services Handbook* (Washington, DC: International Business Publications, 2013), 75.

87. *Basic Doctrine*, 68.

88. *Ibid.*, 37.

89. Walter C. Ladwig III, “Indian Military Modernization and Conventional Deterrence in South Asia,” *Journal of Strategic Studies* 38, no. 5 (2015): 729–72.



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