
India and its Air Power: Transformational Challenges

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Introduction

The Balakot air strikes and the air combat thereafter in which a MiG-21 Bison of the Indian Air Force (IAF) had to engage a much more modern F-16 of the Pakistan Air Force (PAF) has once again brought IAF modernisation back into focus. IAF Chief, Air Chief Marshal BS Dhanoa, has said that the IAF has hit an all-time low of 31 fighter squadrons vis-à-vis the government authorised 42.¹ He highlighted the convergence of strategic interests between China and Pakistan and their rapidly modernising Air Forces. The IAF, on the other hand has been slowly losing the combat edge that it had enjoyed over Pakistan in 1971 in terms of both quality and numbers. Technology intensive air power requires faster replacement of assets due to quicker obsolescence.

Geo-politically, India is the most threatened and war risk-prone region of the world. India has serious boundary disputes with its two militarily powerful nuclear armed neighbours. China's desire to dominate Asia and, in turn, the world has implications for India. Pakistan continues to be the epicentre of world terror. Pakistan has a clearly enunciated a 'first-use' nuclear policy against India. China has also helped Pakistan build up military strength to be able to counter India,

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including acquiring technologies for its nuclear weapons and missile programme. China has strategic interests in using Pakistani territory to reach West Asia and Africa for trade and geo-strategic positioning. It has invested in the China-Pakistan Economic Corridor (CPEC) that connects the Xinjiang region in west China to the China-built-and-operated Gwadar port near the Gulf of Hormuz. Simultaneously, China is investing in the Indian Ocean littoral countries to gain a foothold and extend its influence. Pakistan has not only stepped up the insurgency in Jammu and Kashmir (J&K), it openly boasts of collusive support from China in case of a war with India. India has to, thus, prepare for a possible two-front war.²

Too often, the region has been going through trigger incidents which could lead to a war, whether it was Doklam with China in 2017 or the more recent Pulwama terror attack by terrorist groups based in Pakistan, and to avenge which, India launched punitive air strikes. It is clear that the IAF must win the air war for the Army and Navy to win the surface war. Aerospace is, thus, the domain of the future and the one who controls it, will control the planet. Air power today is the dominant means of prosecuting war. It offers prompt multiple response options to the political leadership in times of national security crises. Rapidly evolving technologies are bringing transformational changes that are multiplying speed, range, accuracy, and lethality for achieving military effects. India has to ride this bandwagon to find a place for itself on the high table of the world order. The IAF had recently tested its operational plans in a two-front scenario, in the mother-of-all-exercises, 'Gagan Shakti'.³ While the IAF has a plan 'B' to fight with what it has, if forced into conflict, the numbers are clearly not adequate to fully execute an air campaign in a two-front scenario. It is incumbent upon the nation to provide the IAF assets for the task it has been entrusted. It is imperative that the IAF quickly rebuilds its squadron strength.

Military Capability

The military power of a nation is an important constituent of its national power. Great powers need to achieve the ability to create, deploy and physically use military force.⁴ India was once a Pakistan-centric regional power and now aspires for global influence and status. There is a need to constantly examine the type of war-fighting capabilities for employment of military force against the adversary to overwhelm his ability. The Indian armed forces are an important element of national power. In consonance with our national aspirations they need to transform through transactional means and prepare for future challenges.

Transformation includes a review of doctrines, strategy and tactics, organisational structures, human resource adaption and training, and maintenance and logistics concepts to meet the operational requirements. The resounding success of air power in many campaigns, from the Falklands to the Gulf War, showcased its ability to simultaneously interfere in, as well as influence, land/sea operations. This has presented ramifications for all the Indian armed Services, and, more so, the main repository of air power, the IAF.

Air Power Attributes

Air power, offers strategic flexibility in terms of ability to quickly reconfigure for different kinds of missions.⁵ The overarching air operations give capability to project power at far distances without risking own motherland. Air power offers the political leadership strategic choices and alternatives for sustainable and easily scalable levels. Air campaigns can be executed against different target systems simultaneously. Air power has the inherent capability to provide both kinetic and non-kinetic options with pin-point accuracy. Air power can directly influence the outcomes and actions of the surface forces. It has the ability to simultaneously produce physical as well as psychological shock.

IAF's Doctrinal Shift

The IAF evolved initially primarily to support the surface and maritime wars, but post 1965, the IAF had clear stand-alone roles covering the entire spectrum of air operations, beyond just protecting Indian territories and safeguarding sea lines of communication. Its doctrine and acquisitions indicate strategic reach and conventional deterrence as major goals.⁶ The IAF is still the world's fourth-largest air branch, albeit it has a depleting fighter squadron strength which stands at an all-time low of 30 vis-à-vis the authorised 42 squadrons. Despite reasonable war experience, since the Burma campaign and in the more recent 1965 and 1971 Indo-Pak Wars, the IAF initially did not have a well enunciated doctrine and only recently put in place a balanced force structure. The political masters have often shown reluctance to use air power due to the perceived fear of escalation of the conflict. The 1962 Indo-China War and 1999 Kargil conflict with Pakistan were cases in point. The ground reality in 1962 was that the IAF had relatively potent air power, with Western aircraft, vis-à-vis the old Russian aircraft with China. Air power actually helped turn the tide in the wars of 1965, 1971 and even Kargil.

The doctrine has now changed to take on a more offensive role against both adversaries. Introduction of combat enablers like the Airborne Warning and Control System (AWACS), flight refuellers, strategic transport aircraft has made a difference. In the recent so-called mother-of-all-exercises 'Gagan Shakti', the IAF tested out a possible two-front war and included inter-theatre movements of assets among practically all other domains of modern air power. Regional power projection and ability to take on China comprise the clear new doctrinal focus areas. The IAF's 2012 doctrine clearly brings out the intent to dominate the conflict and a greater role of air power in the full spectrum of national security and diplomacy. The IAF sees deterrence and control of the air as linked. Its control of the air may not be absolute, but it hopes to possess sufficient control in order to prosecute the campaign. A game-changer shift took place on February

26, 2019, when India decided to use offensive air power by carrying out deep strikes against targets in Pakistan, even beyond Pakistan occupied Kashmir (PoK). The Pakistani bogie of nuclear retaliation and over-hang even against a conventional strike was demolished.

Pakistan-Centric to China-Focussed Infrastructure

Till very recently, all major air bases and radars were positioned on the Pakistan border. The bulk of the IAF assets were looking west. The same was the case with the Indian Army and Navy. Airfields are high-value targets. Aircraft on the ground are highly vulnerable and require ballast protection. Most eastern air bases were bare runways, with no ballast protection shelters, and, at best, a few Operational Readiness Platforms (ORPs). They were mostly used for fighter training and air maintenance operations. Emerging economic strength, self-confidence and doctrinal maturity allowed the IAF to look beyond the borders and reach out into the seas beyond the Indian island territories.

China's focussed concentration on building air power also made India have a rethink on its air strategy. Even the political class and strategic think-tank circles realised the importance of the air as a decisive instrument of power projection. The lessons from Kargil also helped the IAF understand the real dimensions of fighting an air war at the Himalayan heights. The IAF's aerial reconnaissance assets helped it pin-point targets which the Army could not have detected. Despite the localised conflict, the IAF maintained combat air patrols across the entire border. Air operations were round the clock. Laser weapons employed by the IAF could take out small bunkers, and successful strikes on the Pakistani main administrative and logistics hub at Muntho Dhalo dealt a major blow, and changed the way the IAF will fight a possible war across the Himalayas. It was clear that the application of air power has to be precise and proportionate.

It was the first conventional conflict anywhere in the world between two nuclear powers, yet they prevented a nuclear escalation. It also gives

a reason for India to call the Pakistani nuclear bluff in the case of a limited conflict. The IAF's all new platform and weapon acquisitions require operating clearance of 6 km and higher. Successful employment of air power, clearly spelt out in the Kargil Review report, also helped, the IAF get a larger proportion of the capital acquisitions budget. The IAF has now deployed the frontline fighter aircraft, SU-30 MKI and the C-130 special operations aircraft, in the eastern sector while one Rafale squadron is also slated to be deployed in the east.

Strategic Effect and Conventional Deterrence

Air power is inherently strategic in nature. Paucity of defence funding has forced India to evolve the doctrine that air power must deliver strategic effects through basic conventional means. Only air power can achieve this. While control of the air remains a desirable state, the IAF has limits to which it can achieve against both the PAF and People's Liberation Army Air Force (PLAAF). India has also to defend itself against a possible sizeable Chinese Surface-to-Surface Missile (SSM) attack. U.S. think-tanks are closely evaluating the IAF doctrine because India is seen as a possible counter-balance against China. Sino-Indian military competition and distrust remain. China continues to create military posts around India. Chinese rapid reaction forces are also deployed close to the border. India cannot match China's numerical strength, but the IAF would provide a sufficiently strong "deterrent force".

The IAF now has credible "strategic reach", and, in turn, deterrence. The IAF is looking at reach from the Persian Gulf to the Strait of Malacca, using long range aircraft supported by the Flight Refuelling Aircraft (FRA) and AWACS. It is not only the range and weaponry, but the effect achieved that makes a mission strategic. Targeting of the leadership using air power, as was the case of the US' strike on Osama bin Laden, and later by the IAF during the Balakot strikes could actually deliver strategic effects. Strategic airlift is another

area of strategic reach and strategic effect. Inter-theatre movement of a large force to support a counter-offensive or reinforce defences can have strategic effect.

IAF: Struggling with Modernisation and Maintenance

The IAF has been struggling to phase-out many legacy platforms such as the MiG-21 and MiG-27. The IAF's modernisation programme to achieve 42 squadrons of modern 4th generation plus fighters continues to be elusive. At the current pace, that figure may not be achieved even in 2035. Critical to achieve the target are the acceleration of development and stepping up production of the indigenous Light Combat Aircraft (LCA) Tejas variants; the need to acquire critical technologies for the development of the indigenous 5th generation fighter, the Advanced Medium Combat Aircraft (AMCA); and hastening the process for acquiring 110 new fighters. In the case of expected delays in the AMCA, to choose between the SU-57 and the F-35 and acquire 3-4 squadrons as a stop-gap arrangement. In the meanwhile, procure the last remaining MiG-29s, Jaguars and Mirage-2000 to build up spares inventories through the reduce-to-build approach. The IAF cannot keep adding the SU-30 MKI beyond a point, lest it once again becomes fully dependent on the Russian basket. The IAF also needs to accelerate procurement of additional AWACS and FRA. AWACS and FRA will enhance the radius of action and weapon load carriage of air defence and offensive missions.

Like many other Air Forces, the IAF must try reduce the multiple source fleets. The Russian SU 30-MKI, MiG-21, MiG-27 and MiG-29; French Rafale and Mirage 2000; British Jaguar; and indigenous LCA make many sources for the fighters. The USA and Sweden are also in the new fighter aircraft race. So many types of fighters also cause a training, logistics and maintenance nightmare. Maintaining the varied inventories of aircraft and weapon systems is a challenge. The life-cycle cost, long-term agreements for spares, digital orders for provisioning planning with

the Original Equipment Manufacturer (OEM) database are important issues. The USA is also putting pressure on India over its procurements from Russia. Despite being a balanced force, IAF modernisation continues to dither due to long delayed acquisitions and also low capital budgets. After the Kargil War, one area that required attention was the Command, Control, Communications, Computers, Intelligence, Information, Surveillance, and Reconnaissance (C4I2SR) system. Air power is normally a great source of intelligence for target selection and target prioritisation. High-definition imagery from satellites and unmanned aerial vehicles is a must. Better human intelligence in respect of Pakistan is important.

Capability-Based IAF

IAF transformation is being driven from being platform-based to becoming capability-based. Effects-based, network-centric operations are the new normal. The advantage of air power is its ability to exploit swing-role capabilities. Modern platforms are critical. As Air Chief NAK Browne said, “Our aim is to preserve and maintain, upgrade and improve, and replace and acquire. At the end of this process, the IAF force structure will be modern and potent, with new and upgraded fleets only”.⁷ This action plan is underway, albeit a little slowly because of the fund crunch. Induction of high technology assets is on and existing fleets are going through mid-life upgrades. Any modern Air Force must have at least 40 per cent of the combat fleet comprising high-tech all-weather multi-role platforms and the remaining 20 per cent under changeover but still giving strength through numbers. The heavy lift capability for both transport and helicopter fleets is crucial for inter/intra-theatre movements in war and sustaining troops and relief operations during peace-time.

IAF—a Key Element: Need for Genuine Jointmanship

Due to the multi-dimensional nature of conflict, increasing the levels of synergy amongst the armed forces and civil agencies is operationally critical.⁸

The IAF is going to be a key element in support of the surface, maritime and sub-surface wars. It has air assets to support such efforts. Lessons from peace-time joint exercises and also from past wars reveal that much more needs to be done on the jointmanship front. The Services continue to train and fight in compartments. Some level of Service upmanship exists. Elements such as Tactical Air Centres (TAC) and Maritime Element of Air Force (MEAF) are in place, however, often the Air Force is brought into the discussions when all the planning is already over. There is a need for the Services to have genuine respect for each other's capability and use it to achieve national objectives. The three Services need to train for joint work more regularly. During the Kargil conflict, the attacks on the Pakistani air logistics hub at Muntho Dhalo finished the Pakistanis' ability to sustain their campaign. The IAF and Indian Navy need more coordination for maritime strikes in view of larger and more aircraft carriers. The three new Tri-Service Commands for Special Ops, Cyber and Space would increase coordination and operational capability.

India's Proactive Policy Shift

India has chosen the proactive approach towards national security. Its diplomatic engagement with the USA, the Arab world and East Asian nations is already paying dividends. India has been able to find a foothold in the Organisation of Islamic Countries (OIC) and was invited as a guest of honour. India has successfully exposed Pakistan as the fountainhead of terror. The Uri strike was the first of its kind punitive military action in response to a terror incident. The Balakot air strike, nearly 60 km deep and well beyond PoK was the next level of the proactive policy shift. This indicates the self-confidence of the nation. The IAF has to be ready for combat and support the entire gamut of operations, from sub-conventional, conventional to out of area to nuclear operations. For such a proactive stance to be maintained, the cutting edge of the Indian armed forces would have to be kept sharp, with modernisation keeping pace.

Hybrid Threats: Air Power as Guarantor

Hybrid threats⁹ take advantage of modern technologies for espionage, sabotage, data collection, attacks on people or infrastructure, or the achievement of media effects. Hybrid warfare exploits the vulnerabilities of the system. The air domain is being increasingly exploited to perpetrate illicit and terrorist attacks. Commercial-Off-The-Shelf (COTS) technologies have greatly improved the non-state actors' aerial warfare capabilities. For long, it was thought that air power could only support the land forces to counter hybrid threats. However, it is now clear that air power can act independently against hybrid threats. Air policing, air defence, and intervention against civilian aircraft or against a hybrid threat are evolving.

The Area Defence Commander is authorised to act against all terrorist, illegal, hazardous and dangerous acts in the air domain. National resilience and the nation's will to prevent and deny threats represent a strong deterrent in hybrid warfare. A new paradigm that transforms the traditional concept of Air Defence (AD) with the appropriate level of flexibility to manage the new aerial hybrid threats is required. Satellite and aerial surveillance, air traffic management, cyber space monitoring, low Radar Cross-Section (RCS) detection, multi-sensor fusion and tracking, and, finally, kinetic and less than kinetic engagement, using laser beams or directed energy weapons are some of the means.

IAF Backs Indigenisation

The IAF's transformation can never ignore the need to become independent from foreign defence supplies. For India to be a significant player, the local defence industry has to succeed. The vice-like hold of Defence Public Sector Undertakings (PSUs), especially Hindustan Aeronautics Ltd (HAL) has not helped indigenisation to succeed. Since 2001, India has been continuously refining its Defence Procurement Procedure (DPP) to support indigenisation and create a level playing

field for the private industry, but things have not changed much. The private industry still needs hand-holding. India continues to have the unfortunate distinction of being the world's biggest arms importer. India has not been able to leverage this, or its economic muscle, to get critical technologies transferred despite the offsets clauses in most contracts. The joint venture approach and public private partnerships have worked. The BrahMos is a good example. This needs to be explored further. India must take the leap beyond just licensed production. The IAF has been openly supporting all indigenous programmes by accommodating delays and allowing concessions. But India must remember that any fighting force requires equipment that should be as good as the adversary's or better.

Human Resource Development

The air action of February 27 in which Wing Commander Abhinandan Varthaman shot down a much superior F-16 indicates the level of operational flying training and aggressive intent required in an air warrior. Modern combat aircraft are at the front end of technology. Just mastering such technology is not sufficient, one should be able to use it optimally during split second combat conditions. The IAF crew must remain ahead of the technology employment curve. The IAF is already extensively using aircraft simulators. Joint training for integrated application in operations would also be a core area.

Transformational Leadership

A critical attribute for a force to succeed is the development and preparation of leaders at various levels. For military aviation, it could be at the section level, a combat formation leader, a Flight or Squadron Commander, an air base Commander or a Commander-in-Chief. A leader must have charisma, should be able to set an example and become a role model, and intellectually stimulate subordinates. He should project a sense of

urgency,¹⁰ formulate a strong coalition, create and communicate the vision, and yet invite and support others' ideas. In the air, each formation member has a complementary role, and depending on the air situation, the control could physically shift among members, even though the overall command remains with the leader. Leaders can win or lose wars. Leaders must move with the changing times and adapt to technological changes. The IAF needs to nurture young leaders.

Budgetary Inadequacy: Unfortunate Reality

The 2019-20 defence budget at Rs 3,01,866 crore (\$42.7 billion) is 1.44 per cent of the Gross Domestic Product (GDP). The capital budget for the entire Ministry of Defence (MoD) is Rs 1,03,380 crore. The budget for capital acquisition is Rs 81,422 crore. As per an Institute for Defence Studies and Analyses (IDSA) report by Laxman K Behera,¹¹ in 2018-19, as against Rs 1,10,044 crore required for committed liabilities, the total allocation for modernisation—which includes past liabilities—was Rs 74,116, leaving a gap of Rs 35,928 crore or 33 per cent. Against this shortage, the increase of a mere Rs 7,198 crore would only compound the problem for the MoD which would be in an extremely difficult situation to prioritise its payments for both the previously signed contracts and the contracts to be signed till the end of 2019-20.

The IAF's total budget share is Rs 68,949 crore—23 per cent of the total. The IAF's capital outlay is Rs 39,347 crore which is 57 per cent of its total allocation. In this count, the IAF has the highest percentage, more so when one compares with the manpower intensive Indian Army's 18 per cent. Unfortunately, the bulk of the IAF's capital allocation will be used for committed liabilities of earlier purchases such as the Apache and Chinook helicopters, Rafale, LCA and S-400. The IAF is a technology intensive Service. Airborne systems reach obsolescence earlier. Also airborne systems have flight safety issues and cannot be stretched beyond a point. The IAF will need out of budget funds for new acquisitions.

The Way Ahead

The uncertainties that will accompany the drawdown of US forces from Afghanistan and its influence on the regional security dynamics is likely to have a negative impact on the regional security environment. India has to prepare for the geo-political shift to the Indo-Pacific region and the rise of China as a significant aerospace power. Future conflicts will be short, swift and intense engagements against a nuclear backdrop which may be followed by long stabilisation periods. A quantum jump in precision and lethality of weapon systems may result in non-linearity and increased tempo of operations. Often, as in the case of the Balakot strikes, operations could be in the ambiguous zone of 'neither peace nor at war'. Wars will increasingly be multi-domain, varying from non-contact to contact warfare. The IAF will have to build deterrence and have the ability to dominate the air. It will have to induct modern systems for situational awareness, intelligence and precision strike ability. It will require fixed and rotary wing tactical and strategic air transport assets.

The transformation would be spread over a period of time. The IAF is looking at a horizon of 15 years. Technological advancements and evolving changes would have to be factored in. Artificial Intelligence (AI) has great applications for air power. India must take an early lead. Future security challenges will be more and more complex, multi-dimensional and non-traditional in both kinetic and non-kinetic forms. The IAF would need to think differently to be able to tackle the various asymmetric and non-traditional security threats and would require more innovative, out-of-box solutions the which would leverage the prevalent technology. Seamless integration of the armed forces and the Ministry of Defence is critical for both capability building and focussed operations as, per the national political directives. It will help better visionary planning, and commitment of national resources. For India to be secure, the IAF must continue to touch the sky with glory.

Notes

1. “Such Emergency Buys Made in Past too’: IAF Chief Dhanoa Backs Rafale Deal”, *Business Standard*, September 12, 2018, https://www.business-standard.com/article/current-affairs/such-emergency-buys-made-in-past-too-iaf-chief-dhanoa-backs-rafale-dea-118091200578_1.html. Accessed on March 15, 2019.
2. Air Marshal Anil Chopra, “The Challenges of a Two Front War,” *The Citizen*, October 18, 2016, <https://www.thecitizen.in/index.php/en/NewsDetail/index/4/8989/The-Challenges-Of-A-Two-Front-War>. Accessed on March 20, 2019.
3. “Indian Air Force Shows its Might at War Exercise ‘Gagan Shakti’,” *The Economic Times*, April 15, 2018, <https://economictimes.indiatimes.com/news/defence/indian-air-force-shows-its-might-at-gagan-shakti/show-of-strength/slideshow/63770967.cms>. Accessed on March 20, 2019.
4. See “National Power: Meaning, Nature, Dimensions and Methods,” <http://www.yourarticlelibrary.com/india-2/national-power-meaning-nature-dimensions-and-methods/48477>. Accessed on March 22, 2019.
5. Glenn A. Kent and David Ochmanek, *Defining the Role of Airpower in Joint Missions*, (Santa Monica, CA: RAND Corporation, 1998), ch. II.
6. Dr. Christina Goulter and Prof. Harsh Pant, “Realignment and Indian Airpower Doctrine Challenges in an Evolving Strategic Context,” *Journal of Indo-Pacific Affairs*, Vol. 1, No. 1, Fall 2018, pp. 21-44.
7. Air Chief Marshal NAK Browne, “Air Power and the IAF’s Strategic Transformation,” Institute of Defence Studies and Analyses, September 23, 2013, <https://idsa.in/keyspeeches/AirPowerandtheIndianAirForce>. Accessed on March 25, 2019.
8. Mrinal Suman, “Jointmanship and Attitudinal Issues,” *Journal of Defence Studies*, Vol. 1, Issue 1, August 2007, pp. 71-85.
9. Brig Gen Luigi Del Bene, “Joint Air & Space Power Conference 2017,” Joint Air Power Competence Centre, <https://www.japcc.org/hybrid-impact-on-the-air-domain/>. Accessed on March 25, 2019.
10. Srdjan Nikezic, et al., “Transactional and Transformational Leadership: Development Through Changes,” *International Journal for Quality Research*, Vol. 6, No. 3, 2012, pp. 285-296.
11. Laxman K. Behera, “Interim Defence Budget 2019-20,” Institute for Defence Studies and Analyses, February 4, 2019, <https://idsa.in/issuebrief/interim-defence-budget-2019-20-lkbehera-040219>. Accessed on March 25, 2019.