

A Pathway toward Enhancing the US Air Force–Indian Air Force Partnership and Deterrence in the Indo-Pacific Region

Stephen F. Burgess

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The article proposes a path toward increased partnership between the US Air Force (USAF) and Indian Air Force (IAF), given China's increasing challenge to Indian and US interests and the two countries' formal commitment to global order, democracy, and technological innovation. Since 2002, the US–India strategic partnership has included a focus on cooperation in nuclear energy, space, high technology, and missile defense.¹ For more than a decade, India's military has held more joint exercises with the US armed forces than with any other country, including those involving the IAF and USAF with combat and transport aircraft and other platforms.²

In 2014, Indian prime minister Narendra Modi's nationalist Bharatiya Janata Party (BJP) government came to power, and the US–India partnership is now experiencing a growth spurt. Currently India is striving to develop its armed forces, including its air force, and the capabilities to resist Pakistan's asymmetric aggression and deter China's expansionist tendencies. The People's Liberation Army (PLA) continues to encroach on India's territory in the Himalayan mountain region, and China is implementing its Belt and Road Initiative, with infrastructure projects and other forms of assistance to win over regimes in the Indo-Pacific and, according to some experts, encircle India. Thus, the stage is set for the United States to try creative approaches to strengthen its relations with India and the IAF. Building stronger relations can enhance deterrence and help meet increasing challenges in the Indo-Pacific region.

The article begins by assessing what the United States and USAF and India and the IAF would like each other to accomplish, based on a range of Indian and US sources and dozens of interviews. It proceeds to analyze the barriers to progress on both sides. It assesses how the United States and USAF might overcome those barriers and advance both countries' interests and provides recommendations for how

the USAF might be creative in working with the IAF. The article weighs different scenarios regarding how US engagement with India may change and evolve to meet future security goals, including the provision of deterrence, and how the USAF and IAF might be involved.

The article's two main recommendations are that the United States should emphasize building partnership first, while remaining judicious about the transfer of technology, and promoting the acquisition of US aircraft second. The USAF should follow the model of the 26-year US Navy (USN)–Indian Navy (IN) partnership—featuring multipronged strategic/operational-level dialogue, extensive war gaming, linking technology development to service requirements, and increasingly complex exercises.³

What Would the United States Like India and the IAF to Do?

According to the 2017 US *National Security Strategy* and other sources,⁴ the United States would like India to develop forces that can help provide dominance and deterrence in South Asia and the surrounding waters of the Indian Ocean, especially as PLA forces gain increasing access to the region. Ideally, the IAF would develop equivalent forces to those of the PLA Air Force (PLAAF) units based in Tibet and be capable of deterring them from conflict escalation in the Himalayas and South Asia. The air force would also further develop its capabilities to transport Indian Army forces to the frontier with China in case of conflict escalation. In helping to eventually provide dominance, India would develop the forces, including space and cyber capabilities, to fight a possible two-front war against China and Pakistan. US expectations are that India would continue to develop self-sufficiency in the Himalayas and the IAF would eventually achieve interoperability with the USAF and USN over the Indian Ocean and, in the end, Southeast Asia, the South China Sea, and the Persian Gulf. The IAF would become increasingly expeditionary and work with the IN and US forces in the Indian Ocean and Southeast Asia in maintaining sea lines of communication (SLOC). This would require the IAF building up its aerial refueling and logistics capabilities.⁵ While India and the IAF would take the lead in the Himalayas, the United States would continue to lead in the Persian Gulf, Strait of Hormuz, South China Sea, and Strait of Malacca. Eventually, the growing USAF–IAF partnership would create a force multiplier that would deter China from taking offensive action in the Indian Ocean and the Himalayas.

The United States and USAF would like India and the IAF to develop a greater shared strategic outlook with the United States and USAF and for India to continue to move away from its traditional nonaligned status and focus on Pakistan. Such a change of perspective would also entail the IAF shifting from concentrating on the Pakistan Air Force (PAF) and toward developing a common position with the USAF regarding how to counter China's assertiveness and creating ways to deter Beijing's forces from offensive actions.⁶ The IAF would transition to become as focused on countering the PLA and PLAAF as it has been on preparing to fight the Pakistan Army and PAF. The IAF would follow the two navies' partnership model and develop a strategic relationship with the USAF through sustained, multilevel interactions, strategic dialogue, war gaming, and a variety of joint exercises, such as Exercise Malabar,⁷ to develop a shared strategic outlook, a high level of trust, and a degree of interoperability in communications and data link/exchanges.⁸ In addition, the IAF would engage with the USAF to identify technologies that the US Air Force Research Laboratories (AFRL) and Indian Defence Research and Development Organisation (DRDO) could develop together and have clear operational benefits in the air domain—just as the two navies do.⁹ In following the two navies' path to an expanded strategic partnership, the USAF has the experience and capabilities working with other air forces that make it possible for it to work more closely with the IAF.¹⁰ In line with this recommendation, the USAF's involvement in the Joint Technical Group forum has led to the AFRL having five cooperative projects in applied science with DRDO valued at \$22 million, with the costs split equally.¹¹

In 2018, the Trump administration announced a “Free and Open Indo-Pacific Strategy,” replacing the Obama administration's “Rebalance to Asia” and calling for a strong coalition of democracies committed to uphold the existing order.¹² As part of the vision of this strategy, India and the IAF would increase participation in ensuring a “rules-based order” in the Indo-Pacific, which includes respect for territorial integrity, freedom of navigation, and overflight.¹³ To defend that order, the United States has been working with India and other allies and partners to strengthen deterrence and dissuade China from engaging in aggressive expansion. India and the IAF is envisioned as increasingly engaging with the United States and USAF as part of an emerging multilateral defense partnership (also involving the air forces, navies, and land forces of Japan and Australia). The signs of emerging multilateral cooperation include regular meetings of defense ministers and multilateral joint exercises, including those involving air forces.¹⁴ In September

2018, Secretary of State Mike Pompeo and Secretary of Defense James Mattis met with Minister of External Affairs Sushma Swaraj and Minister of Defence Nirmala Sitharaman in the inaugural 2+2 Strategic Dialogue. The United States would like India to continue to engage in and organize multilateral exercises in the Indian Ocean and South China Sea, with the IAF becoming more involved and increasingly expeditionary. At the 2+2 Dialogue, the two countries agreed to engage in tri-service exercises, with the IAF and USAF mastering the complexities of multi-domain threats. India and the IAF would have to overcome constraints, including the country's traditional posture of strategic autonomy, the slow-paced increase of India's defense budget, and the IAF's traditional preoccupation with Pakistan and the PAF. A developing USAF–IAF partnership could be an important component of maintaining the status quo in Asia and the Indian Ocean.

US Indo-Pacific Command (USINDOPACOM) and its air component, Pacific Air Forces (PACAF), would like a stronger partnership with India and the IAF. Its commander from 2015 to 2018, Adm Harry Harris, was a force behind what was hoped to be an emerging quadrilateral defense cooperation—the “Quad”—and a closer partnership with India.¹⁵ In 2016, he envisaged broad and deep cooperation: “USPACOM [US Pacific Command] aims to build a powerful quadrilateral partnership framework of the most powerful democracies in the Indo-Asia-Pacific. India, Japan, Australia and the US working together will be a force for the maintenance of the regional rules-based order, counterbalancing and deterring coercion or unrestrained national ambitions.”¹⁶

Harris' successor, Adm Phillip Davidson, has reiterated support for the Quad and called for the United States to work with India to reduce its advanced weapons dependence on Russia. The United States would like India to exercise air dominance in the Indian Ocean and South Asia by the 2020s. This would allow the United States to focus on the PLA in the East and South China Seas and on North Korea. PACAF has engaged in joint exercises with the IAF, mostly centered on humanitarian assistance and disaster response (HA/DR). The United States would like the IAF to lead in HA/DR and stabilization (including Afghanistan) in its region and assist the IN in ensuring freedom of navigation in the Indian Ocean and in enforcing the Proliferation Security Initiative, which aims at halting trafficking of weapons of mass destruction, their delivery systems, and related materials to and from states and nonstate actors.¹⁷



Figure 1. PACAF–IAF cooperation. US Air Force Gen CQ Brown, Jr., Pacific Air Forces commander, prepares for an orientation flight in an IAF Mirage 2000 at Cope India 19 at Kalaikunda Air Force Station, India, 14 December 2018. Brown attended the closing ceremony of Cope India 19, a field training exercise focused on enhancing mutual cooperation and building on existing capabilities, aircrew tactics, and force employment. (USAF photo by SSgt Hailey Haux)

The United States and US Central Command (USCENTCOM) and its air component, US Air Forces Central Command (AFCENT), with their forward base in the Persian Gulf at Al Udeid Air Base, Qatar, would like India and the IAF to assist more in Afghanistan. The commander of US Forces Afghanistan has visited New Delhi on a number of occasions for consultations with Indian officials concerning how India can further assist in the stabilization effort. In the last few years, the US–India Military Cooperation Group has included USCENTCOM representation along with India’s Chief of Defence Staff, the IAF Air Chief, and a USINDOPACOM three-star general officer.¹⁸ The United States and India have recently decided to start exchanges between the US Naval Forces Central Command and the IN, which will be another avenue for deepening maritime cooperation and possibly establishing USAF–IAF links in the western Indian Ocean and Persian Gulf.¹⁹ India has vital interests in the Gulf, including oil and gas ship-

ments and the safety of seven million Indian nationals who live and work there. While India does not see a strategic threat from Iran that would spur deterrence cooperation with the United States in the Gulf, there has already been cooperation in Yemen with the IAF's use of C-130Js to evacuate Indian and US citizens. The IAF and USAF could mount joint exercises in the Gulf and elsewhere, preparing for possible noncombatant extraction operations of Indian nationals and others and HA/DR.



Figure 2. Operation Raahat. During the 2015 onset of the Saudi intervention in the Yemeni Civil War, the Indian Armed Forces evacuated Indian citizens and foreign nationals from Yemen. The IN began seaborne evacuations on 1 April 2015 from Aden port. The IAF started air evacuations utilizing military and Air India planes on 3 April 2015 from Sana'a. More than 4,640 Indian citizens in Yemen were evacuated along with 960 foreign nationals of 41 countries. (IAF photo)

In the technological and defense procurement realm, the United States would like to continue helping India as the latter upgrades its military forces and capabilities and develops a range of technologies in the air domain.²⁰ Under such cooperative efforts, India would develop advanced fourth-generation, airspace awareness and other capabilities that can match those of the PLAAF and PAF and eventually refine its aircraft engine technology. The United States would like to see

the development of a more capable and technologically advanced IAF, creation of more advanced joint exercises, and progress toward interoperability. However, the United States will never provide India with the same level of technological capability as that possessed by the USAF and the USN.

India continues to collaborate with Russia in defense technology development, making cooperation in some areas with the United States difficult if not impossible. Nevertheless, the United States would like to expand cooperation in developing defense technologies in other areas that would benefit India's powerful but ponderous DRDO and the country's indigenous defense industry.²¹ Under the US Defense Technology and Trade Initiative (DTTI) and its air systems Joint Working Group (JWG), the USAF and IAF have worked to resolve process issues impeding cooperation and alignment of systems, increase the flow of technology and investment, develop capabilities and partnership in codevelopment and coproduction, and intensify cooperation in research and development.²² An intelligence, surveillance, and reconnaissance (ISR) JWG is helping to advance IAF capabilities in that area and in developing distributed common ground control systems for intelligence processing, exploitation, and dissemination (PED). A major benefit of DTTI is that it brings the IAF, DRDO, and the Ministry of Defence (MoD) together to develop capabilities with the US services. However, the United States does not support using DTTI as a way to codevelop a fourth- or fifth-generation combat aircraft. Instead, the United States would like India to acquire the F-16 Block 70 and/or F/A-18-E/F for greater IAF performance and USAF–IAF interoperability.²³

In the future, the United States and USAF would like to expand ties with India and the IAF to assist in missile defense, deterrence in space, and cyberspace. Although missile defense cooperation is still a far way off, India would eventually develop a shared strategic vision and interoperability with the United States and Japan.²⁴ In the space realm, India would continue with its dynamic space program and make progress in preparations against antisatellite (ASAT) warfare.²⁵ In the cyber realm, India would be better prepared to deter China from waging cyber war and prevail if deterrence fails.²⁶ The United States and India would build trust and common standards for cyber defense.²⁷

India and the IAF would increasingly engage in logistics and information sharing with the United States and USAF.²⁸ The 2016 Indo–US Logistics Exchange Memorandum of Agreement (LEMOA) has opened the door for USAF and IAF access to logistics at each other's bases and will enhance HA/DR exercises and op-

erations in the Indian Ocean region and beyond.²⁹ Eventually, the LEMOA could provide a logistics hub and forward operating location (FOL) on the Andaman and Nicobar Islands in the eastern Indian Ocean where the IAF and USAF could work together to demonstrate resolve toward China and deter PLA efforts to dominate the South China Sea and Strait of Malacca.³⁰

Concerning information sharing, India signed the General Security of Military Information Agreement in 2002 and the Communication and Information Security Memorandum of Agreement (COMCASA) in September 2018.³¹ These agreements allow the United States to supply India with US proprietary encrypted communications equipment and systems, enabling secure peacetime and wartime communication between high-level military leaders on both sides. In addition, the COMCASA could establish this capability between Indian and US military assets, including aircraft and ships and advancing USAF–IAF interoperability.

The Basic Exchange and Cooperation Agreement (BECA) has been pending for more than a decade. The BECA would set a framework through which the United States could share sensitive data to aid targeting and navigation with India and further advance interoperability.³² COMCASA and BECA combined with PLA expansionism could eventually lead to India becoming a more capable member of the “Pacific Seniors” division of the “five eyes” signals intelligence arrangement. However, there is no indication that India will become a US ally and “sixth eye.”³³

What Would India Like the United States and the USAF to Do?

India would like the United States to develop a partnership of equals, respecting India’s strategic autonomy and substantial economic relations with China, which calls for a diplomatic approach toward Beijing rather than a military one.³⁴ Indian leaders and officials want to develop the country’s economic power first, with an increasing role in regional and global leadership. India is pleased with the recent US designation of Pakistani militants as terrorists and the withholding of counterterrorism funding from the Pakistani government. India’s preference would be for the US would continue to lead in building a multinational defense framework that would provide more security in the Indo-Pacific and counter the potential for PLA encirclement. The United States in cooperation with Japan and Australia would draw China’s attention toward East Asia and away from encroaching on Indian territory in the Himalayas and encirclement in the Indian Ocean; would work to

* This analysis of what India and the IAF would like the United States and USAF to do is derived from Indian government pronouncements and documents as well as interviews of Indian think-tank experts and IAF officials in New Delhi, November–December 2017.

maintain the rules-based order in the Indo-Pacific; and would take the lead in Southeast Asia and the South China Sea, benefiting India’s “Act East” policy. In working with India to counter China’s encirclement strategy, the United States and India would ensure sustained oil and gas shipments from the Persian Gulf and protection of Indian nationals,³⁵ as well as develop defense and technological relations with Israel.³⁶ The United States would continue to lead in aiding Afghanistan and its military with substantial but low-key Indian assistance and hold open the door for India and its navy and eventually the IAF to cooperate in helping to provide security in the USCENTCOM area of responsibility in the western Indian Ocean and Persian Gulf.³⁷ India is developing the port of Chabahar in Iran as a means of improving access to Afghanistan and Central Asia, which will enable it to provide more assistance to the regime in Kabul.³⁸

India’s interests in the Persian Gulf and Southeast Asia mean that its ambitions would gradually expand beyond South Asia and the Chinese frontier and that the IAF would eventually become more expeditionary with US and USAF assistance. The United States and USAF would continue to draw away from Pakistan and the PAF, so that India and the IAF would continue to maintain military and air superiority. The United States would partner with India in preparing for a possible two-front war against China and Pakistan, which would involve strategic dialogue, joint exercises, and upgraded and expanded forces.³⁹ The United States would continue to engage India in strategic-level discussions regarding the strengthening of theater missile defense against Pakistan and developing ballistic missile defense against China.⁴⁰ However, before the United States can transfer missile defense technology to India, Washington would need to change export control restrictions. The United States would start to partner with India in developing space defense, as well as cyber defense.⁴¹

New Delhi wants the United States to transfer as much technology as possible to enable the development of its aerospace industry and other high-end industries as part of India becoming a major strategic and economic power and to enable the IAF to eventually build a world-class air force.⁴² India and the IAF would like the United States and USAF to assist in developing fourth- and fifth-generation combat aircraft and space and cyber capabilities, while benefiting Indian industries.⁴³ India would become increasingly competitive with China, which is developing fifth-generation fighters, ASAT weapons, and cyberwarfare capabilities. If New Delhi buys US fighter aircraft, the country would like to produce as much of the aircraft and their components at home, secure as much transfer of technology as

possible at a reasonable cost, and provide the basis for skilled job creation.⁴⁴ It is important to note here that US officials assess India's expectations in the aerospace sector as somewhat unrealistic.

Some Indian leaders would like the United States and USAF to assist in the development of the country's indigenous aerospace industry, which would propel the development of the strategic partnership.⁴⁵ There are those who would like the United States—which has an aerospace industry that remains head and shoulders above those of Russia, China, and others—to enable India to eventually produce world-class combat aircraft with state-of-the-art jet engines. They would like Washington and US defense industries to assist the state-owned Hindustan Aeronautics Limited (HAL),⁴⁶ which has been striving for decades to produce the Tejas light combat aircraft (LCA) and other fighter planes and working with DRDO for many years to develop jet engines for more advanced, capable aircraft.⁴⁷

In a shift in policy, the BJP government also would like Washington and US aerospace companies to engage with the private sector that is competing with HAL in the production of combat aircraft. For example, Tata Industries is teaming up with Lockheed Martin in a possible F-16 Block 70 deal that would provide the IAF with a “four-and-a-half generation multi-role combat aircraft (MRCA),”⁴⁸ and Mahindra Defence System (MDS) and HAL have linked up with Boeing for an F/A-18-E/F Super Hornet bid that would give both the IN and IAF an MRCA with greater than fourth-generation capabilities.⁴⁹ These companies are competing with the Ambani family's Reliance Group, which will be working with the French aircraft manufacturer Dassault Aviation to assemble in country the 36 Rafale multirole fighters that India recently purchased—with the prospect of more to come if the price could be lowered.⁵⁰ Additionally, MDS must compete with the Adani Group, which is working with Saab on a possible Gripen fighter deal in which the Swedish company would assist in developing the Tejas LCA and other HAL products. On a smaller scale, innovative start-up companies, especially in Bangalore, could open up opportunities to collaborate under the DTTI air systems JWG.

The IAF would like an equal partnership with the USAF with reciprocity, greater capabilities, and independence.⁵¹ With the signing of COMCASA, the IAF might eventually want to develop a degree of interoperability with the USAF. The IAF would like the USAF to assist in developing strategy, upgrading joint exercises, and training to build more fighter squadrons. The USAF would assist in further developing IAF capabilities to counter the PLA and PLAAF. The United States and USAF would work with India and the IAF to acquire US aircraft that

meet the latter's operational requirements, as well as space and cyber capabilities.⁵² Most of the IAF leadership is more concerned with capabilities and less so with the transfer of technology and development of indigenous industries. The IAF leadership has pushed for the emergency acquisition of 36 Rafale fighters due to a dire need for aircraft to maintain a bare minimum number of squadrons. The IAF would like more resources to increase the number of squadrons from approximately 32 to 42 and eventually move toward 60 squadrons.⁵³ The IAF is also interested in next-generation capabilities, including fifth-generation fighters with stealth and advanced munitions, radar, and e-warfare capabilities.⁵⁴ Finally, India and the IAF would like to acquire US armed unmanned aerial systems (UAS), particularly armed Predators or Sea Guardians.⁵⁵

Challenges Confronting the Partnership and the IAF

On the US side, the principal barriers to a stronger partnership are unrealistic expectations that India will become an ally, frustration over the lack of quick wins, and a complex Indian bureaucracy. In the past, some US officials have exhibited paternalism and impatience in their efforts to encourage India to become a dependent ally as some European countries are in NATO. In addition, while the US officials believe that India procuring the F-16 Block 70 is in the country's best interests, advocacy can create the impression that there is greater interest in arms sales than a partnership. India and the IAF want capable fighter aircraft, and there has been recent interest in eventually acquiring the F-35. However, Indian leaders remain cautious about making a major commitment to acquire US planes and being drawn into too close a relationship. On-again, off-again US relations with Pakistan has demonstrated inconsistency. In recent years, Washington has been moving away from Pakistan and taking a harder line toward China. However, the threat of US sanctions over New Delhi's purchase of the Russian S-400 air defense system, which reportedly is capable of shooting down an F-35, has puzzled Indian officials.⁵⁶ With the finalization of the purchase in October 2018, the United States must decide if it should impose sanctions or grant a waiver (as expected).⁵⁷ In addition, US–Indian relations may worsen because of the threat of sanctions for the importation of Iranian oil and gas.⁵⁸

The United States and USAF remains uncertain as to how they should engage in South Asia—and with India. Since 2001, Washington's focus in South Asia has been on Afghanistan. The problem that US policy makers have not historically seen South Asia as strategically important as East Asia, the Persian Gulf, or choke-

points such as the Strait of Malacca, Strait of Hormuz, and Bab al-Mandab Strait. The lack of vital national interests is one of the reasons that the US Department of Defense has placed India in USINDOPACOM (which focuses on East Asia) and Pakistan in USCENTCOM (which is concerned with Afghanistan and the Persian Gulf), creating a strategic seam that runs through South Asia. Thus, the United States has problems demonstrating consistent commitment in working with India and the IAF. Washington has been moving away from its “major non-NATO alliance” with Pakistan but needs to maintain a residual relationship to continue to operate in Afghanistan with the major lines of communication running from Karachi into Afghanistan.⁵⁹

Indian officials and security experts increasingly view China as the greatest strategic challenge, while they see Pakistan as the most intense threat.⁶⁰ Washington wants India to engage to the east in the South China Sea and to the northwest in Afghanistan to help fight violent extremist organizations, both of which are in India’s vital interests. The United States has courted India as a potential partner in Afghanistan, but New Delhi has demurred, in part due to lack of financial resources and in part out of concern that Pakistan would escalate support for the Taliban and anti-Indian jihadists.

India’s commitment to strategic autonomy, electoral politics, and a bureaucratic culture remain the principal obstacles to the development of the IAF and relations with the United States and USAF. While Prime Minister Modi has cultivated the US partnership at the expense of his country’s commitment to nonalignment because of the challenge from China, some officials in the foreign policy and military establishments remain suspicious of Washington and its relations with Pakistan and China. While New Delhi is concerned about China’s strategic behavior, many in government and the business community do not want a confrontation between the two powers to escalate and harm the economy.⁶¹

India’s five-year election cycles mean that successive governments and parliament (the Lok Sabha) give intermittent attention to defense spending and IAF requirements and requests.⁶² The political imperative is reflected in India’s purchase of multiple aircraft brands due to shifting criteria, difficulty articulating military requirements, and influence by foreign aerospace firms and governments.⁶³ Political factors also explain delays in acquiring sufficient aircraft to enable the IAF to maintain the 32 squadrons that it currently has, as well as preventing it from losing squadrons. The slowly expanding budget and shifting government priorities constrain the Indian Armed Forces, especially the IAF, regarding the size, scale,

and frequency of joint exercises.⁶⁴ In contrast, China’s defense budget has increased by an average of 10 percent annually for the past two decades, propelling the PLA and PLAAF well ahead of the Indian Armed Forces and IAF.

The structure of India’s government remains an obstacle to the development of the IAF and partnership with the USAF. India’s relatively small, conservative bureaucracy possesses comparatively little capacity to plan and monitor the development of the IAF and its relations with other air forces. In addition, the prime minister’s office, where most political power is concentrated, controls force-development deliberations and decisions and has been found to pay insufficient attention to strategic planning and force requirements.⁶⁵ US officials are concerned with India’s lack of a rigorous requirements definition process; they assess that New Delhi’s “requirements” are more specifications or lists, which means that Indian officials have not always thought out why they need a particular item or how they plan to use it. This makes it difficult for US officials to respond when there is a lack of clarity regarding what is desired.⁶⁶ The result of an underdeveloped requirements process has often been inappropriate choices of aircraft and other weapons systems. In addition, there are weak links between the country’s strategic planning and requirement generation and actual force development. Force development could be more effective if the government moved greater responsibility to India’s MoD through the still-to-be developed “Defence Staff,” which would work with the services to develop strategic planning and requirement generation.⁶⁷ A related problem is that the MoD has no real equivalent to the US Joint Chiefs of Staff to enhance political-military communication and coordination among the Indian Army, IAF, and IN in developing strategy and planning, requirement generation, acquisition, and budgeting.⁶⁸ The result is friction among the MoD and the services.⁶⁹

Until these challenges are surmounted, India and the IAF will remain burdened by inconsistent, ad hoc force-development decisions that do not always lead to the most effective force and hinder the development of an equal partnership with the USAF.⁷⁰ The most glaring examples have been the process of acquiring 126 medium MRCA since 2004, the controversial 2011 United Progressive Alliance (UPA) government’s decision to buy French Dassault Rafale planes, and the Modi government’s controversial emergency purchase of 36 Rafale MRCA in 2015 after the original Dassault decision stalled. The MRCA procurement process was criticized on a number of grounds, especially that it violated defense procurement pol-

icy and specifically the government's "Make in India" and transfer of technology commitments.⁷¹

The Indian Army remains the dominant service, and there is weak "jointness" among the three services, leaving the IAF in a secondary position in operational planning and decision-making processes as well as resources and capabilities. It will take years of Indian government and IAF efforts to help the air force become a roughly co-equal service. The IN also is secondary to the Army in priority and resources, but it operates autonomously and has had the advantage of working with the USN for more than two decades in the Indian Ocean, which has led to the development of a shared strategic vision and steps toward interoperability. If the Indian government enables the IAF to become more autonomous and expeditionary and emulate the IN model, this would benefit engagement with the USAF.

The IAF leadership has a conservative organizational culture and vision that presents a challenge, which the USAF and IAF must overcome. This culture has hindered dynamic O-5s (wing commanders) and O-6s (group captains) who are striving to bring about change; also, when one-star general officers (air commodores) become two-star generals (air vice marshals), they tend to stop pushing for change and instead conform to the prevailing culture.⁷² The result is that the IAF leadership has tended to persist in its traditional role of supporting the army in defense of the country against Pakistan with mostly aging Russian fighter aircraft.⁷³ The IAF leadership has tended to question the need for a wider regional vision and mission, which has resulted in slow movement toward organizational change and partnership with the USAF. It has also been slow in developing an expeditionary air force, even though the IAF has been developing ideas about an expeditionary capability since the Kargil War of 1999 and articulated the intention to do so in doctrine and policy statements in recent years. Also, the IAF has resisted developing long-range strategic bombing capability, even though the PLAAF could strike India with similar aircraft. Some in the IAF leadership question the growing threat from PLAAF and PAF capability advances, and the possibility of a two-front war, believing that only skirmishes will occur for the foreseeable future. While the IAF leadership has welcomed a deepening partnership with the United States and USAF, it questions the purpose of the US relationship with Pakistan.⁷⁴ A problem related to organizational culture is a lack of continuity and planning in the IAF, which is partly attributable to the generally uneven transition from one air chief marshal to another, weakness of the IAF staff, and lack of an IAF Secretariat. The weakness of planning is evidenced in the 15- and 5-year IAF plans, which the

MoD and the Prime Minister’s Office do not integrate into decision-making processes.⁷⁵ The disjointed planning, requirements, and force-development process contribute to why the IAF has been slow to modernize. However, with a concerted approach proposed herein, these challenges can be overcome.

Shortfalls in IAF capabilities are another obstacle to greater cooperation.⁷⁶ They include communications, air-space-cyber linkages, aerial refueling, and ISR, which limits the amount and sophistication of joint exercises and the development of interoperability.⁷⁷ The IAF has only recently been developing its Airborne Early Warning and Control System (AEWCS),⁷⁸ which cannot match the long-standing and well-developed USAF Airborne Warning and Control System (AWACS).⁷⁹ Most significantly, the IAF suffers from a shortage of squadrons and sophisticated combat aircraft that are needed to compete with the PLAAF and PAF and build cooperation with the USAF.⁸⁰ The IAF is currently at an estimated 32 squadrons, and the retirement of MiG-21 and MiG-27 aircraft by 2025 means that the IAF could have 28 or fewer squadrons.⁸¹ Given the rising challenge from the PLAAF and PAF, Indian military planners estimate that the IAF will need 42 squadrons by 2027.⁸² Given the PLAAF buildup in Tibet and superior combat aircraft, Ashley Tellis estimates that the IAF needs to double the number of squadrons to 60 by 2027.⁸³ In contrast, Laxman Behera observes that instead of building fighter squadrons, India could rely on missiles for defense and deterrence.⁸⁴ Even the goal of 42 squadrons will be difficult to achieve, given the Indian government’s defense budget shortfalls, slow procurement of combat aircraft, and questionable acquisition decisions that have resulted in multiple platforms that are difficult to maintain and operate. For example, the Modi government’s emergency purchase of 36 Rafale MRCA in 2015 to plug a gap in IAF capabilities cost an estimated \$200 million per plane, which will be virtually impossible to expand to fulfill the requirement of 126 planes and will add another aircraft type to the several that the IAF already has to maintain and operate.⁸⁵ Security experts have pointed out that India must use all means necessary to acquire more combat aircraft, and one has even suggested that the IAF should give up its attack helicopters to the army to have the resources to buy aircraft and build squadrons.⁸⁶

A related obstacle for the IAF developing dominance and deterrence in South Asia and the Indian Ocean, in partnership with the USAF, is pressure from those in politics, government, and the think-tank world to develop India’s aerospace industry, especially HAL. To achieve this goal, these policy makers are willing to sacrifice significant short- to medium-term capability and future interoperability with

the USAF. These advocates assert that the HAL Tejas LCA is good enough to serve as the LCA in the immediate future and that it can be upgraded in the long run; the same applies to the HAL Sukhoi 30MKI heavy fighter and even the advanced medium combat aircraft that is still under development. Also, advocates for HAL argue that low-cost platforms such as the Tejas and Sukhoi MKI will enable the IAF to expeditiously develop more squadrons.⁸⁷ If India follows such a path, the IAF will struggle to generate enough highly capable combat aircraft to deter and possibly fight Pakistan and China. The proponents of indigenization over capability argue that the risk of war is low in the short term and that it is essential for India to develop jobs through a world-class combat aircraft industry over the long run. However, the intensity of the threat from Pakistan remains at an elevated level, and the challenge from China is growing. Thus, IAF leaders want quality over quantity—highly capable fighter aircraft rather than mediocre planes.

Some Indian and IAF leaders want more capability in the LCA and other combat aircraft and agree with aircraft experts who think that HAL will take too long to develop world-class jet engines and planes.⁸⁸ Many US officials and experts agree with IAF leaders that India needs capable fighter aircraft as soon as possible, given the growth of the PLAAF.⁸⁹ US officials have been hesitant about encouraging their Indian counterparts in regard to the Tejas, while remaining aware that HAL officials and some defense experts are proud of it. US officials think that the Tejas and indigenous jet engines are not as far along as HAL officials and others think they are and that their pride makes it difficult to cooperate when the US side has to be critical.⁹⁰ Furthermore, US companies are limited in how they can support these indigenous programs.

The BJP government has opened the door to private companies to compete with HAL in the manufacture of fourth-generation combat aircraft. These companies include the Reliance Group, which is working with Dassault Aviation to assemble the Rafale MRCA in India; the Tata Group, which is working with Lockheed Martin to possibly manufacture F-16 Block 70 MRCA in India; and the Adani Group, which is working with Saab to manufacture the Gripen Block 50 MRCA in India.⁹¹ While the insertion of private-sector competition has positive aspects, it also adds to political pressures on government decisions about combat aircraft and could slow down the acquisition process. Any MRCA acquisition must wait until after the 2019 election, and it could be 2022 before a contract can be signed—if there is not an economic downturn. It could be 2026 before aircraft are delivered to the IAF given new acquisition procedures. Lockheed Martin wants the produc-

tion line up and running in 2028 at the latest and wants Indian assurance that at least 100 F-16s will be produced.⁹²

In contrast to the IAF, the PLAAF is moving ahead with the development of fifth-generation fighter aircraft and advanced sensors, weapons systems, and cyber capabilities. However, like India, China is encountering difficulties in manufacturing jet engines, trying to develop a fifth-generation stealth fighter by reverse engineering the Russian Sukhoi 35 (a four-and-a-half-generation stealth fighter) to upgrade the locally produced J-20.⁹³ Beijing is also prepared to fight in multiple domains, with the PLA likely to launch cyber attacks and ASAT warfare well before initiating a large-scale conventional offensive.⁹⁴ In addition, the PLAAF is building bases in Tibet that will help it to gain an increasing advantage over the IAF in the Himalayas⁹⁵ and protect Chinese mining enterprises on the Indian border.⁹⁶ China is increasing its defense budget and developing the PLAAF at a much faster rate than India and the IAF. The PLAAF is helping the PAF to develop ever-more capable fighter aircraft. This means that deterrence will be increasingly difficult to maintain. In the 2017 PLA standoff with the Indian military over the Doklam Plateau in the Himalayas, the PLAAF demonstrated a degree of air and space superiority.⁹⁷ As part of a possible Indian conflict with China, the IAF currently is planning for 10–15 days of combat with the PLAAF, with the expectation that there will be third-party intervention to stop hostilities.⁹⁸

In conclusion, the challenges to a growing USAF–IAF partnership are considerable given the US and USAF’s focus on East Asia and the Persian Gulf and India and the IAF’s focus on Pakistan. India’s foreign policy uncertainty and bureaucratic deliberateness are a major impediment. The IAF’s focus on supporting the Indian Army make the partnership difficult to develop in a similar fashion as the USN and IN have in the Indian Ocean and adjacent waters. There are those who ask if the IAF’s baggage is too great as the first steps are taken to make it more strategic and expeditionary. However, the United States and India can use creative methods to surmount the challenges and build a stronger USAF–IAF partnership.

How Can the United States and India Be Creative in Strengthening the USAF–IAF Partnership?

If the United States and USAF approach India and the IAF with the concept of “partnership first and platforms second,” it would serve as the basis for creatively developing relations. Such an approach enabled IN–USN relations to progress for more than two decades.⁹⁹ In contrast, while India acquiring combat aircraft from

the United States would benefit interoperability, putting aircraft first creates a paternalistic and transactional impression. Partnership first requires intensified, sustained engagement by the USAF leadership on the basis of equality and a process of developing a shared strategic outlook about the Indo-Pacific region through multipronged dialogue and a range of simulations,¹⁰⁰ especially tabletop war gaming with the IAF.¹⁰¹ This would lead to larger and more complex joint exercises. While more, higher quality exercises are preferable, they should also be structured to demonstrate the value of interoperability and information sharing (command, control, communications, computers, intelligence, surveillance and reconnaissance, C4ISR)—both cross-service and IAF/USAF. Such structuring will highlight the need for greater information and logistics sharing.¹⁰²

If the United States and USAF were to implement a more concerted South Asia strategy and prioritize engagement with India and the IAF, this could eventually facilitate the development of aerospace dominance and deterrence by the IAF, USAF, and other allies and partners in the Indo-Pacific region. As China's assertive expansion continues, the USAF can use the US partnership with India, Japan, and Australia as a vehicle for developing a shared strategic vision with the IAF. Although India is reluctant to openly balance against China, multilateral defense cooperation provides a mechanism for sharing perspectives about how to deal with the rising power, its partners, and their air forces. The USAF and IAF can take part in multilateral defense meetings and use communiqués as the basis for developing a shared strategic outlook and multilateral exercises. The Quad's naval chiefs have met and deliberated together, which sets the stage for the four air force chiefs to follow suit.¹⁰³

In developing a partnership with the IAF, the USAF can follow the example of the IN–USN partnership that the two services have developed and sustained through various phases of the US–India relationship and in which the two navies have cultivated a shared strategic vision. The USN—as the most expeditionary American service in the Indo-Pacific and the source for most USINDOPACOM combatant commanders—reached out in the 1990s to the IN and worked to develop their relationship through a range of navy-related think tanks and conferences.¹⁰⁴ Also, the IN and USN have engaged in a wide range of frequent tabletop war games, including HA/DR scenarios, to better grasp each other's strategic thinking and standard operating procedures, thereby developing shared strategic and operational visions and mounting more realistic, complex joint exercises.¹⁰⁵ Following the IN–USN example, the USAF and IAF engaging in larger, more

complex joint exercises, including HA/DR, and based upon extensive simulations will help develop the partnership.¹⁰⁶ PACAF is making progress on this front, though it remains focused on the South China Sea. For example, the USAF could assist the IAF in developing contingency gaming models to figure out structures of cooperation and doctrine to prepare for the possibility of a two-front conventional conflict. There could be an exercise in northern India involving US AWACS and ISR assets.¹⁰⁷ India and the United States have committed the IAF and USAF to be integrated eventually into Exercise Malabar with the IN and USN. Washington could also elevate the Indian Armed Forces, including the IAF, to full-participant status in Exercise Cobra Gold in Thailand.¹⁰⁸ However, to make integration effective, the air forces would first have to deal with the cognitive level and extensive war gaming before engaging in such a complex exercise.¹⁰⁹ The IAF and USAF could eventually work out a mechanism to join with the IN and USN to use in countering aggressive moves by China. This could be a joint defense of the SLOCs or a distant blockade beyond PLAAF and People’s Liberation Army Navy (PLAN) air range, while seeking to avoid escalation in a complex and adaptive environment.¹¹⁰ Washington and New Delhi need to work out how much there should be a division-of-labor approach as against striving for interoperability. For example, the IN with IAF support could increasingly share the burden of patrolling the Gulf of Aden with the United States and its allies. The IAF’s primary focus should remain on deterring China from encroaching on its territory, with possible US support in a contingency. For instance, if the confrontation on Doklam Plateau spirals into a shooting war, the United States could provide logistical support.¹¹¹

The USN has demonstrated cooperation with the USAF in the development of strategy and joint operational concepts that can be useful in the development of an IAF-IN-USAF-USN relationship. For example, the USAF and USN have worked together in strategic planning and in developing the “Air Sea Battle” and Joint Access Measures-Global Commons (JAM-GC) operational concepts and building joint exercises around them, especially in the Indo-Pacific, to counter “Anti-Access and Area Denial” (A2/AD) strategies and operational concepts and capabilities. The USAF and the USN can work with the IAF and IN in developing India’s joint strategy and operational concepts, including anti-A2/AD.¹¹² Also, the USN has worked with the USAF to become more expeditionary in the Indo-Pacific, especially in Southeast Asia. The USAF and USN can work with the IAF and IN to develop joint expeditionary operations.¹¹³

If the USAF were to elevate the level of its relationship with the IAF to the Headquarters Air Force (HAF) level with more engagement by the USAF Chief of Staff (CSAF) and Secretary of the USAF (SECAF), it would lead to greater mutual respect and provide a boost of confidence as the IAF seeks to become regionally dominant. Already, CSAF Gen David L. Goldfein visited India in February 2018, but the relationship would advance further if it were institutionalized at a higher level through the SECAF and Under Secretary of the Air Force International Affairs (SAF/IA) and their Indian counterparts.¹¹⁴ Engaging with the IAF at all levels—top, mid, and bottom—would better enable the partnership to advance. In regard to bilateral ties, there are multiple points of contact that the USAF could pursue, including the IAF Air Warfare Strategy Cell, the Centre for Air Power Studies, and other think tanks.¹¹⁵ If the USAF leadership would promote the discussion of strategic perspectives in various fora and through multiple nodes, including think tanks and a Track II dialogue involving USAF and IAF civilians and retired senior officers, the two air forces could more easily come to agreement on mutual concerns in the region, including Pakistan, China, Afghanistan, and the Persian Gulf. Among topics for discussion could be how the IAF could cooperate with the USAF and USN in defense of the security of the Gulf, common concerns about multidomain warfare and A2/AD, and the development of strategic nuclear forces and deterrence.¹¹⁶

Offering more professional military education (PME) and exchanges to the IAF would help build capacity and advance the partnership. This includes working with the IAF to send more officers and noncommissioned officers (NCO) to USAF PME institutions, including the use of more International Military Education and Training (IMET) funds. Arranging to send a large number of IAF officers at the O-3 (captain) level to the USAF Squadron Officer School, as well as senior NCOs to the USAF Barnes Center, would increase much-needed critical thinking skills and familiarization with USAF tactics, techniques, and procedures (TTP).¹¹⁷ However, such an expansion should be made in concert with engagement with senior IAF leaders to help avoid confusion when junior officers return to India.

More USAF officers and NCOs attending IAF PME schools would familiarize them with IAF TTPs. Such exchanges would bring greater familiarity and development of a shared vision, especially as both air forces are building and revitalizing squadrons. Visa-free official travel for IAF and USAF personnel to each other's country would make exchanges easier and a goodwill gesture. Exchanges by senior USAF and IAF leaders will also build goodwill and trust in the development of the

partnership. For example, in February 2018, CSAF Goldfein responded positively to Indian overtures to either fly the HAL Tejas MK-1 LCA or the HAL Sukhoi MKI; ultimately, he flew the Tejas and was reportedly impressed.¹¹⁸ If USAF leaders continue such initiatives, they would foster stronger relations. Also, the USAF could reciprocate by having IAF leaders fly the F-35,¹¹⁹ especially as some Indian leaders have expressed interest in exploring the acquisition of the aircraft as a fifth-generation fighter in the next decade.¹²⁰

At the combatant command level, the renaming of USPACOM as USIN-DOPACOM places a greater emphasis on India and the Indian Ocean and signals the intention of the command and its air component to engage more with the Indian Armed Forces and the IAF. An invitation to the IAF to station liaison officers at USINDOPACOM would help to operationalize this opportunity. If the United States were to invite India to participate more in USCENTCOM and the IAF to develop relations with AFCENT, the US–India partnership would move forward in the Persian Gulf, where both countries have vital interests.¹²¹ If AFCENT was to advocate for the IAF to have a liaison officer at Al Udeid Air Base in Qatar, it could open the door to greater engagement by India, not only in the Gulf but also Afghanistan and elsewhere.

Working with India and the IAF to increase logistics and information sharing would advance the strategic and operational aspects of the partnership.¹²² The LEMOA will enhance joint exercises involving the IAF and USAF and focusing on HA/DR scenarios. Eventually, the LEMOA could provide access for the USAF and IAF to additional FOLs in the Indo-Pacific and the development of the quadrilateral partnership, building the potential to deter China. Working with India in operationalizing the COMCASA would enable the United States to supply India with proprietary encrypted communications equipment and systems. This would enable the USAF and IAF to secure peacetime and wartime communication between their leaders. COMCASA would extend this capability to Indian and US military assets, including IAF and USAF aircraft. The BECA would set a framework through which the United States could share sensitive data to aid in targeting by the IAF.¹²³ Greater information sharing could eventually lead to Indian entry into a deeper intelligence partnership with the United States, which would help the IAF.

The State Partnership Program (SPP) provides the USAF with another way of engaging with the IAF.¹²⁴ The SPP enables the Air National Guards (ANG) of US states to interact with other air forces, largely independently of the active duty

USAF. The SPP and the ANG's flexible, state-based funding stream has facilitated rapid engagement in many cases. Another advantage is that ANG personnel are relatively permanent and are able to engage with their partner countries for a sustained period, building relationships. ANGs also specialize in civil defense and HA/DR, which are also concerns for the IAF and would be the basis for joint exercises. With a large country like India and a large air force like the IAF, it would be preferable for a large ANG from a large US state to engage. The Texas ANG would be one possibility; with the 136th Airlift Wing and its eight C-130 H2s, it would be ideal to engage in HA/DR exercises with the IAF. In addition, the Texas ANG has F-16 Block 32s that it could use to familiarize the IAF with the aircraft. This arrangement could lead the IAF to lease 50 F-16 Block 32s for five years while waiting for the possible acquisition of the more advanced F-16 Block 70s in the next decade.



Figure 3. State Partnership Program. Czech Alcas and US F-16s sit side by side on the ramp at Caslav Air Base, Czech Republic. Members of the Texas Air National Guard's 149th Fighter Wing were in the Czech Republic conducting mutual training as part of the National Guard's State Partnership Program. Similar ventures with the IAF would foster a deeper USAF-IAF relationship. (US Air Force photo by SMSgt Miguel Arellano)

If the United States and USAF were to engage with India in multiple domains, such overtures could facilitate cooperation in space and cyber to meet various challenges from China and other strategic competitors. In space, the United States and USAF can work with the India's Integrated Space Cell, which includes the IAF, in developing countermeasures to deter China from launching ASAT attacks and other forms of space warfare.¹²⁵ US and Indian satellites could be used to track PLAN ballistic missile submarines in the Indian Ocean. The USAF can use its considerable experience to work with other US agencies in assisting DRDO to develop missile defense.¹²⁶ The USAF can work with other US agencies in assisting India's Cyber Command, which includes the IAF, to counter China's cyber attacks.

While emphasizing the development of an IAF–USAF strategic partnership above platforms and transfer of technology, the latter are also part of developing stronger relations. A relevant example is the development of the USN–IN partnership, during which India purchased naval hardware from the United States to enable the IN to become more capable and thereby achieved a modest degree of interoperability with the USN.¹²⁷ In regard to technology and arms sales, DTTI and JWG's will continue to familiarize the Indian bureaucracy with US policies and procedures and should smooth the way to greater transfer of technology, while the United States remains able to secure its vital secrets. If the DTTI and JWG's would enable their Indian counterparts' practices in the MoD and IAF to improve strategic planning, force development and acquisition, it would provide the basis for the timelier and logical procurement of aircraft and other items. In turn, this would lead to the long-term development of an IAF–USAF partnership. If as much transfer of technology as possible is made, it would advance the partnership and India's defense capacity. The United States and USAF continuing to develop multiple ways to assist the IAF in developing capabilities, such as AWACS and UAS, should eventually lead to the development of the IAF as a world-class air force. In regard to UAS, the United States currently is only willing to sell India an ISR-capable Predator B (Sea Guardian) and not an armed Predator. With the development of the IAF–USAF partnership, trust can be developed that could eventually allow the United States to sell armed Predators to India.¹²⁸

In regard to platforms, India agreeing to the purchase of US MRCA—either the F-16 Block 70 or F/A-18-E/F Super Hornet—would provide the IAF with a capability of “generation four plus” and transfer of US technology that India could use to eventually achieve interoperability with the USAF.¹²⁹ Boeing linking with MDS and HAL to coproduce Super Hornets holds out the prospect of IAF–IN–USN

interoperability and would open the door for Boeing to work with HAL in attempting to upgrade the Tejas as a LCA.¹³⁰ Lockheed Martin's 2016 agreement with Tata to coproduce F-16 Block 70 MRCA made the aircraft attractive to India, which could produce parts for F-16s worldwide,¹³¹ and would enhance prospects for interoperability with the USAF.¹³² Indian defense experts observe that the F-16 would fit well into expanded IAF squadrons. An F-16 Block 70 deal would increase the chances for India working with Lockheed Martin to acquire and coproduce the F-35, which the IAF is exploring as a possible MRCA of the 2030s. One consideration is that Lockheed Martin is shutting down F-16 production in the United States in less than five years; so, India needs to make a commitment after the 2019 elections.¹³³

In trying to sell MRCA to India, the United States and its companies are competing with Sweden and Saab, which are selling the Gripen and offering to help HAL develop the Tejas LCA into a more capable fighter and India acquire the Meteor air-to-air missile,¹³⁴ which is attractive to the IAF.¹³⁵ Given the competition, it would be wise for US agencies to judiciously increase the amount of technology that can be transferred to India, select companies, and devise an arrangement so Lockheed Martin and/or Boeing would assist those companies and DRDO in developing technology for Indian combat aircraft.¹³⁶

In conclusion, India deciding to acquire US MRCA would constitute an important step forward in the relationship. However, even if India moves in a different direction, the United States and USAF engaging with India and the IAF to build the strategic partnership would still pay dividends.

Conclusion: The Future of USAF–IAF Partnership and Deterrence in the Indo-Pacific

This article has provided analysis of what the two countries and air forces want from a partnership and the barriers to realizing stronger relations and a more capable IAF. Additionally, the article has put forward recommendations for how the United States and USAF can creatively engage with their Indian peers. It is evident that both sides want a stronger partnership but for somewhat different reasons and at different levels and rates of speed. The challenges are considerable, but with the right amount of will and creative effort, the United States and USAF are capable of working with India and the IAF to overcome those obstacles and move the relationship forward. Washington has signaled that it is prepared to exert greater will

through the renaming of USPACOM and efforts to try to make India part of a strong quadrilateral partnership.

Given the rising level of US interest and will, the prospects for the development of USAF–IAF cooperation are positive. Going forward, there are three likely scenarios: (1) incremental development in which both sides continue to build the USAF–IAF partnership, with occasional lulls; (2) aggression by China against India that moves New Delhi and Washington toward a stronger partnership or an alliance and USAF–IAF interoperability; and (3) aggression by China against India leading the United States to move slowly toward an alliance commitment and the USAF not becoming interoperable with the IAF. Based upon recent trends, there is a greater than 50-percent chance that “scenario one” will continue to prevail, despite US efforts to push toward a strong partnership and NATO-like interoperability between the IAF and USAF. Incremental development would continue as it has between 2002 and 2008 and 2014 to the present and occasionally plateau again as from 2008–2014, depending on the political situation. Although China continues to encroach in the Himalayas and build relationships in the Indian Ocean region and with Russia, there is little indication that such activities will escalate toward open conflict.¹³⁷ However, if conflict does ensue, Washington will have to choose either to move toward a stronger partnership or alliance commitments to India or refrain from them. While the United States and USINDOPACOM have indicated that they want a strong partnership and interoperability with the Indian Armed Forces, making commitments to India may be a bridge too far given existing US alliances.

US and USAF engagement with India and the IAF can eventually lead to greater burden sharing, deterrence, and regional dominance in the Indo-Pacific. Burden sharing is necessary for the United States, with greater security interests in East Asia and the Persian Gulf than in the Indian Ocean and South Asia. Countering the continued rise of China and Beijing’s incipient strategy of eventually dominating Eurasia, including the energy producing Gulf, and the Indo-Pacific will require burden sharing and stronger partnership, including the USAF and IAF. The development of deterrence of China in the region will require a quadrilateral partnership in which the four armed forces and air forces commit themselves to acting in concert in case the PLA and PLAAF acts aggressively in one area of the Indo-Pacific. Regional dominance will require a strong quadrilateral partnership, including the expeditious buildup of the IAF with US and USAF assistance. US and Indian leaders need to constantly stress that India is a lynchpin of the Quad.¹³⁸

The IAF and USAF can play a role in preventing China from achieving dominance by developing a shared strategy, interoperability, and the capability to deter China from further encroaching in the Himalayas and encircling India in the Indian Ocean. Multilateral defense cooperation is the optimal way in which the IAF can assist in fielding a regionally or globally dominant air force in a changing world with increased challenges and enhance deterrence in Indo-Pacific region. A USAF–IAF partnership could enhance deterrence prospects in South Asia and the Indian Ocean in relation to China. Ultimately, deterrence works better in the quadrilateral framework with Japan and Australia—and even better when Vietnam and Indonesia are added to the equation.

In overcoming obstacles, the United States and USAF can undertake initiatives to help arrest the decline of the IAF and help it to become a regionally dominant force. As the number of fighter squadrons is declining and remedial measures have proven insufficient to plug the gap, the United States and USAF can assist with training and equipment, including working toward selling US MRCA to India, which would enable training and squadron development to proceed faster. US engagement could also provide the IAF with a substantial capability boost, with DTTI and other bilateral mechanisms to develop ISR, PED, and AWACS. The role of Office of the Secretary of Defense and HAF in helping IAF and MoD to develop is worthwhile but will be a long and continuing process. The departments of State and Commerce and SAF/IA should work with Lockheed Martin and/or Boeing to facilitate greater transfer of technology, while safeguarding US national security.

In closing, the US should continue to build the partnership with India and the IAF primarily through various forms of dialogue, simulations, and exercises as well as security assistance and exchanges. The USAF and the air components in the Indo-Pacific and Persian Gulf can lead in partner development, while avoiding a paternalistic and transactional relationship. Secondly, Washington should promote US combat aircraft with the aim of the USAF developing interoperability with the IAF. The United States should work with India and the IAF to reverse the decline in the number of fighter squadrons and begin building the IAF into what eventually could be a regionally dominant force. **JIPA**

Notes

1. While US and Indian officials have discussed missile defense since 2002, thus far there has been no cooperation between the US Defense Security Cooperation Agency and its Indian counterpart. Additionally, while US–India space cooperation has developed since 2004, there is not yet cooperation on military space issues.

2. Dr. Abhijit Iyer-Mitra, Institute for Peace and Conflict Studies, and Angad Singh, Zone5Aviation, interview by the author, 28 November 2017. However, communications in most joint exercises remain underdeveloped—often conducted over mobile phone.

3. Ibid. The USN and IN have mutually acculturated, cross-pollinated ideas, and engaged in joint humanitarian assistance and disaster relief (HA/DR) operations. However, there is little interoperability, especially for joint freedom of navigation operations (FONOPS), and the prospect of joint antisubmarine warfare (ASW) operations is even further in the future.

4. Donald J. Trump, *National Security Strategy of the United States of America* (Washington, DC: The White House, December 2017), 45–47, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>. This analysis of what the United States wants India and the IAF to do is derived from the 2017 NSS, 2018 National Defense Strategy, posture statements of USINDOPACOM, news from the PACAF–IAF steering group meeting, and interviews with officials in the Office of the Secretary of Defense, Secretary of the Air Force International Affairs, and US Embassy, New Delhi.

5. Vice Admiral Pradeep Chauhan, director, National Maritime Foundation, interview by the author, 11 December 2017. The admiral noted that the IAF has the vision to become more strategic and expeditionary but that the logistic burden is great.

6. US officials, interviews by the author, New Delhi, 5 December 2017. Some observed that the PLA's offensive actions on the Doklam Plateau in Summer 2017 could be a “game-changer” in US–Indian relations had led Indian officials, including the IAF Chief, into a closer relationship with their US counterparts and to discussions about a future “alliance”.

7. Subimal Bhattecharjee, “2+2 Will Revitalize US–India Defence Ties,” *The Hindu*, 14 September 2018, <https://www.thehindubusinessline.com/opinion/columns/22-will-revitalise-indo-us-defence-ties/article24948626.ece>. “The announcement at the 2+2 dialogue of the creation of a new, tri-services exercise and to further increase personnel exchanges between the two militaries and defence organisations is a major development and is expected to happen next year. . . . Clearly these exercises will also have the benefit of COMCASA [the Communication and Information Security Memorandum of Agreement] in terms of enabling better interoperability.”

8. Ajai Shukla, journalist and a retired colonel of Indian Army, interview by the author, New Delhi, 12 December 2017.

9. US official, to the author, e-mail, 17 September 2018. Two more collaborative opportunities are in the field discussions stage: high-altitude human performance testing and psychological assessment and training.

10. Chauhan interview.

11. US official, to the author, e-mail, 17 September 2018.

12. Michael D. Swaine, “Creating an Unstable Asia: The U.S. ‘Free and Open Indo-Pacific’ Strategy,” Carnegie Endowment for International Peace and Security, 2 March 2018, <http://carnegieendowment.org/2018/03/02/creating-unstable-asia-u.s.-free-and-open-indo-pacific-strategy-pub-75720>.

13. Office of the Spokesperson, US Pacific Command, “Joint Statement from the US Department of State and the Ministry of Foreign Affairs of Sri Lanka on the Second US–Sri Lanka Partnership Dialogue” (joint statement, Washington, DC, 6 November 2017), <http://www.pacom.mil/Media/News/News-Article-View/Article/1364170/joint-statement-from-the-us-department-of-state-and-the-ministry-of-foreign-aff/>.

14. Stephen F. Burgess and Janet Beilstein, “Multilateral Defense Cooperation in the Indo-Asia-Pacific Region: Tentative Steps toward a Regional NATO?,” *Contemporary Security Policy* 39, no. 2 (2018), 258–79, <https://doi.org/10.1080/13523260.2017.1386953>.

15. Wyatt Olson, “US Fleet Forces Commander to Replace PACOM Head Harris,” *Stars and Stripes*, 10 April 2018, <https://www.stripes.com/news/pacific/us-fleet-forces-commander-tapped-to-replace-pacom-head-harris-1.521394>.

16. House, *Statement of Admiral Harry B. Harris Jr., U.S. Navy Commander, U.S. Pacific Command Before the House Armed Services Committee on U.S. Pacific Command Posture*, 114th Cong., 2nd sess., 24 February 2016, <https://docs.house.gov/meetings/AS/AS00/20160224/104587/HHRG-114-AS00-Wstate-HarrisH-20160224.pdf>.

17. MSgt George Maddon, “U.S., Indian Air Forces Solidify Cooperation through Steering Group,” *Pacific Air Forces*, 16 December 2016, <https://www.pacaf.af.mil/News/Article-Display/Article/1032996/US-Indian-air-forces-solidify-cooperation-through-steering-group/>.

18. US officials, interview by the author, New Delhi, 5 December 2017. USINDOPACOM is making efforts to raise the level of discussion from the tactical to strategic level.

19. Bhattharjee, “2+2 Will Revitalize US–India Defence Ties.”

20. According to US officials, the USAF has not yet developed space and cyberspace partnerships with the Indian military, but there are efforts under way to do so.

21. Rajat Pandit, “To Up Efficiency, Centre Gives DRDO More Financial Powers,” *Times of India*, 28 June 2018, <https://timesofindia.indiatimes.com/india/to-up-efficiency-centre-gives-drdo-more-financial-powers/articleshow/64770965.cms>. This was done to “enhance its efficiency and effectiveness’ but the body requires a drastic overhaul rather than just mere tinkering to ensure India develops a robust defence-industrial base in the years ahead.” Also, US officials interview, 5 December 2017, who—among others—commented that DRDO was being criticized for focusing more on emerging technologies and less on applied research for the services, including the IAF, which can only do basic maintenance on its C-130Js.

22. Richard Weitz, *Promoting U.S.-Indian Defense Cooperation: Opportunities and Obstacles* (Carlisle Barracks, PA: Strategic Studies Institute and US Army War College Press, 7 June 2017), 13–18, <https://ssi.armywarcollege.edu/pubs/display.cfm?pubID=1355>.

23. Ashley J. Tellis, *Troubles They Come in Battalions: The Manifold Travails of the Indian Air Force* (Washington, DC: Carnegie Endowment for International Peace, 2106), http://carnegieendowment.org/files/Tellis_IAF_final.pdf Ashley Tellis is a US strategist and architect of the US-India Strategic Partnership that developed under the administration of President George W. Bush.

24. Samir Nair and Guru Amrit Khalsa, “Toward U.S.–India Missile Defense Cooperation,” *cogitASIA* (blog), 6 June 2013, <https://www.cogitasia.com/toward-u-s-india-missile-defense-cooperation/>.

25. Vivek Raghuvanshi, “India Kick-Starts Military Satellite Programs,” *Defense News*, 19 June 2017, <https://www.defensenews.com/space/2017/06/19/india-kick-starts-military-satellite-programs/>.

26. Office of the Press Secretary, The White House, “FACT SHEET: Framework for the U.S.–India Cyber Relationship,” 7 June 2016, <https://obamawhitehouse.archives.gov/the-press-office/2016/06/07/fact-sheet-framework-us-india-cyber-relationship>.

27. James Carafano, Walter Lohman, David Inserra, Dean Cheng, Riley Walters, Paul Rosenzweig, and Steven Bucci, “Trump–Modi Agenda for Next Steps in U.S.–India Cybersecurity Cooperation,” *Heritage Foundation*, 1 May 2017, <https://www.heritage.org/defense/report/trump-modi-agenda-next-steps-us-india-cybersecurity-cooperation>.

28. Ashley J. Tellis, Alison Szalwinski, Michael Wills, and John H. Gill, *Power, Ideas, and Military Strategy in the Asia-Pacific* (Washington, DC: National Bureau of Asian Research, 2017). India needs to develop an automated logistics system.

29. “LEMOA Comes in Force, US Tanker Refuels Indian Navy Ship in the Sea of Japan; Know What the Memorandum Is All About,” *Financial Express*, 11 November 2017, <https://www.financialexpress>.

com/india-news/lemao-comes-in-force-us-tanker-refuels-indian-navy-ship-in-the-sea-of-japan-know-what-the-memorandum-is-all-about/928773/.

30. Darshana M. Baruah, “The Andaman and Nicobar Islands: India’s Eastern Anchor in a Changing Indo-Pacific,” *War on the Rocks*, 21 March 2018, <https://warontherocks.com/2018/03/the-andaman-and-nicobar-islands-indias-eastern-anchor-in-a-changing-indo-pacific/>. India’s Andaman and Nicobar Command is in the process of development and could host joint IN-IAF-Indian Army exercises, but the islands’ infrastructure needs to be upgraded.

31. According to US officials, the Indian media have been overly optimistic about what COMCASA will be able to achieve. *See for example*, “Seven Reasons Why COMCASA Is so Important for India,” *Economic Times*, 7 September 2018, <https://economictimes.indiatimes.com/news/defence/seven-reasons-why-comcasa-is-so-important-for-india/articleshow/65707682.cms>.

32. Ankit Panda, “LSA, CISMOA, BECA and the Future of the US–India Defense Partnership,” *The Diplomat*, 7 April 2016, <https://thediplomat.com/2016/04/lsa-cismoa-beca-and-the-future-of-the-us-india-defense-partnership/>.

33. Ryan Gallagher, “The Powerful Global Spy Alliance You Never Knew Existed,” *The Intercept*, 1 March 2018, <https://theintercept.com/2018/03/01/nsa-global-surveillance-sigint-seniors/>. India became a member of SIGINT Seniors Pacific Division when it was founded in 2005 to fight terrorism. However, Indian signals intelligence officers leaked intelligence in 2008, which caused problems for upgrading to a higher SIGINT status.

34. Raji Rajagopalan and Abhijnan Rej, roundtable, Observer Research Foundation, New Delhi, 6 December 2017. India must contend with evidence that China is winning the economic competition in Asia, with Beijing’s high volume of regional trade and investment and with the Asia Infrastructure Investment Bank (AIIB) and Belt and Road Initiative. Most Southeast and South Asian nations are finding it hard to resist China’s politico-economic influence.

35. Brigadier Arun Sahgal, Indian Army, retired, and Lt Gen Anil Ahuja, Indian Army, retired, interview by the author, Delhi Policy Group, New Delhi, 5 December 2017. Currently, India is concerned about the blockade of Qatar by Saudi Arabia and the United Arab Emirates.

36. Rupam Jain, “Israel’s Netanyahu Eyes Trade, Defense Ties on Trip to India,” Reuters, 12 January 2018, <https://www.reuters.com/article/us-india-israel/israels-netanyahu-eyes-trade-defense-ties-on-india-trip-idUSKBN1F11SD>. Indian interests in Southwest Asia also include its increasingly close defense ties with Israel.

37. Dhruva Jaishankar, Brookings India, interview by the author, 11 December 2017. In regard to India’s interests in its diaspora and energy and complex cooperation with Iran, Israel, Saudi Arabia, and Russia, the country has a clearer “look and act west” policy than its official “Act East” policy toward the “messy East” with the “Quad” and trying to counter China and the PLA. It is possible that the Indian Navy will be able to replenish from a base in Oman by 2022.

38. Catherine Putz, “Iran Scores a Chabahar Port Exemption in an India and Afghanistan-Inspired Sanctions Exemption,” *The Diplomat*, 8 November 2018, <https://thediplomat.com/2018/11/irans-chabahar-port-scores-an-india-and-afghanistan-inspired-sanctions-exemption/>; and “U.S. Exempts Iran’s Chabahar Port from Sanctions in Nod to Afghanistan,” *Radio Free Europe/Radio Liberty*, 7 November 2018, <https://www.rferl.org/a/us-exempts-iran-chabahar-port-project-from-sanction-in-nod-to-afghanistan-india/29586874.html>.

39. Ashley J. Tellis, Carnegie Endowment for International Peace and Security, telephone interview by the author, 15 November 2017.

40. Nair and Khalsa, “Toward U.S.–India Missile Defense Cooperation.”

41. Raghuvanshi, “India Kick-Starts Military Satellite Programs”; and ET Bureau, “India, US Renew Agreement for Cyber Security Coordination,” *Economic Times*, 11 January 2017, <https://economictimes.indiatimes.com/news/defence/india-us-renew-agreement-for-cyber-security-coordination/article-show/56484102.cms>.

42. Discussions at the Centre for Airpower Studies (CAPS) and Indian Air Force Headquarters, New Delhi, December 2017. There was interest in hypersonic and unmanned aerial system (UAS) technologies, among other technologies.

43. US officials, Washington, DC, to the author, e-mail, 26 September and 2 October 2018; and US officials, conversations with the author, US Embassy, New Delhi, December 2017. These officials voiced skepticism about India developing its own fourth and fifth-generation combat aircraft, given the under-performance of Hindustan Aeronautics Limited (HAL) and the Defence Research and Development Organisation (DRDO) in the sector. Instead, the view is that it is in India’s interest to purchase the F-16 Block 70 and/or F/A-18-E/F as the optimal way of enhancing India’s air combat capabilities in a timely manner.

44. US officials, conversations with the author, New Delhi, 5 December 2017. US officials commented that Indian government contracts often fall apart and that they are not willing to pay the price for new technology.

45. Air Marshal M. Matheswaran, IAF, retired, Matheswaran Strategic Consulting, interview by the author, New Delhi, 6 December 2017.

46. HAL is an Indian state-owned aerospace and defense company headquartered in Bangalore, India, and under the management of the MoD.

47. US officials, interview by the author, New Delhi, December 2017. The United States has no interest in transferring valuable jet engine technology to HAL and DRDO, which have struggled but failed for more than three decades to develop competitive jet engines.

48. US officials, interview by the author, New Delhi, India, December 2017; and Sahgal and Ahuja interview. There is prejudice against the F-16 Block 70. For example, one retired air vice marshal, who is now a defense consultant, pined that India would be acquiring “third-generation” combat aircraft, when it would actually be procuring four-and-a-half-generation ones. Others thought the Pakistan F-16 Block 30 (a third-generation aircraft) would be equivalent to the F-16 Block 70.

49. Sanjeev Miglani, Jamie Freed, “India Eying Boeing’s Super Hornet in Latest Twist to Air Force Procurement,” *Reuters*, 14 March 2018, <https://www.reuters.com/article/us-india-boeing-analysis/india-eying-boeings-super-hornet-in-latest-twist-to-air-force-procurement-idUSKCN1GR081>.

50. Rajat Pandit, “Government Says Rafale Cost Secret, but Had Disclosed It in 2016,” *Times of India*, 7 February 2018, <https://timesofindia.indiatimes.com/india/government-says-rafale-cost-secret-but-had-disclosed-it-in-2016/articleshow/62812165.cms>.

51. A common theme from interviews in India in November–December 2017 was that India and the IAF valued partnership with the USAF over interoperability.

52. Discussions at the Centre for Airpower Studies (CAPS) and Indian Air Force Headquarters, December 2017.

53. US official, to the author, e-mail, 28 September 2018. The USAF is in the process of building more squadrons and revitalizing others, which provides an area for partnership going forward.

54. Royal Australian Air Force, “Five Generations of Jet Fighter Aircraft,” *Pathfinder: Air Power Development Centre Bulletin* 170 (January 2012), <http://airpower.airforce.gov.au/APDC/media/PDF-Files/Pathfinder/PF170-Five-Generations-of-Jet-Fighter-Aircraft.pdf>. This article classifies aircraft as follows: **fourth-generation fighters**: developed from 1970 to the late 1980s, feature head-up displays, fly-by-wire, swing-role fighters and include the following aircraft: MiG-29, Su-27, F/A-18, F-15, F-16, and Mi-

rage 2000. **Four-and-a-half-generation fighters:** from the late 1980s into the 1990s (fell short of a fifth-generation fighter due to budget cutbacks), feature stealth technology, radar-absorbent materials, thrust vectoring, active electronically scanned array radar, network warfare, and capable of multirole missions and include the F/A-18-E/F, F-15SE, Eurofighter Typhoon, Saab Gripen, and Dassault Rafale. **Fifth-generation fighters:** from 2005, feature stealth technology, multispectral sensors, and networking and include the F-22, F-35, PAK FA (Su-57), and Chengdu J-20. See also, John A. Tirpak, “The Sixth Generation Fighter,” *Air Force Magazine*, October 2009, <http://www.airforcemag.com/MagazineArchive/Pages/2009/October%202009/1009fighter.aspx>. Tirpak classifies the fighters as follows:

- 4th—features pulse Doppler radar, high maneuverability, and look-down/shoot-down missiles and includes the F-15, F-16, Mirage 2000, MiG-29. 4th plus – features high agility, sensor fusion, and reduced radar signature and includes the Eurofighter Typhoon, Su-30, F/A-18-E/F, and Rafale.
- 4th plus—features active electronically scanned arrays; continued reduced signatures or “active” (waveform canceling) stealth technology, and super-cruise and includes the Su-35 and proposed F-15SE.
- 5th—features all-aspect stealth with internal weapons bays, extreme agility, full-sensor fusion, integrated avionics, and some or full super-cruise and includes the F-22 and F-35.

55. US official, to the author, e-mail, 5 December 2017; and Rajat Pandit, “Satellite Control Set to Give Armed Drones More Sting,” *Times of India*, 22 September 2018. The United States and India are in the advanced stages of purchasing the armed Predator-B or Sea Guardian UAS.

56. “With CAATSA, the U.S. Is Trying to Make Russia Hurt,” *Stratfor*, 28 May 2018. <https://worldview.stratfor.com/situation-report/china-russia-airborne-security-cooperation-continues>.

57. “India, Russia Formally Ink the \$5.2 Billion Deal for S-400 Air Defence System,” *Economic Times*, 5 October 2018, <https://economictimes.indiatimes.com/news/defence/india-russia-formally-ink-the-5-2-billion-deal-for-the-s-400/articleshow/66082930.cms>.

58. Press Trust of India, “India to Continue to Iranian Oil Imports Post-US Sanctions,” *Economic Times*, 5 October 2018, <https://economictimes.indiatimes.com/industry/energy/oil-gas/india-to-continue-iranian-oil-imports-post-us-sanctions/articleshow/66088584.cms>.

59. Lexington, “The President Was Never Going to Smile on Pakistan,” *The Economist*, 8 December 2018, <https://www.economist.com/united-states/2018/12/08/the-president-was-never-going-to-smile-on-pakistan>.

60. T. V. Paul, “Explaining Conflict and Cooperation in the China-India Rivalry,” in *The China-India Rivalry in the Globalization Era*, ed., T. V. Paul (Washington, DC: Georgetown University Press, 2018), 5.

61. Sahgal and Ahuja interview. They see the most likely scenario being China succeeding through Belt and Road in subordinating Asian states; the next most likely outcome being the Quad leading in balancing against China; and least likely, China hitting a growth wall.

62. Laxman Behera, Institute for Defence and Security Analyses, interview by the author, New Delhi, 26 November 2018.

63. Sahgal and Ahuja interview. India’s relatively weak industrial base explains the failure to develop combat aircraft and jet engines.

64. *Ibid.* IAF participation in the USAF Red Flag exercise cost 1 billion dollars.

65. Iyer-Mitra and Singh interview. Prime Minister Modi plays the dominant decision-making role in the prime minister's office and projects the government's position, with the national security advisor, Ajit Doval, subordinate to him.

66. US official, to the author, e-mail, 5 December 2017. This official provides the following examples: Indian officials have requested "roll-on/roll-off kits for C-130s but are not sure which ones they want; electro-magnetic launchers for aircraft carriers they but do not know what sortie rate they are trying to achieve; and sonobuoy dispensers on unmanned aerial systems but are not sure how they want to use them."

67. Bharat Karnad, Centre for Policy Research, interview by the author, 30 November 2017.

68. Shukla interview. The MoD has made no attempt to create a defense acquisition specialization as exists in the US Office of the Secretary of Defense (OSD). The lack of such a specialization will hamper the efforts of the DTTI JwGs to upgrade Indian acquisition procedures. The key official for DTTI in MoD is Shri Shambhu Kumaran, Joint Secretary for Planning and International Cooperation (JSPIC).

69. Dhruva Jaishankar, Brookings India, interview by the author, 11 December 2017. The Ministry of External Affairs (MEA) is better integrated with the military than the MoD. There are serving military officers in the MEA.

70. Behera interview.

71. Amit Cowshish, "Defence Acquisition: Procurement Procedure Separate from Procurement Policy," *Economic Times* (blog post), 24 November 2017, <https://economictimes.indiatimes.com/blogs/et-commentary/defence-acquisition-procurement-procedure-separate-from-procurement-policy/>.

The unseemly controversy surrounding the purchase of 36 Rafale fighter aircraft lays bare the drawback of mixing procurement policy with procurement procedure, and the absence of proactive disclosures regarding defence contracts. This leaves the field wide open to all kinds of inferences and accusations. Since 2002, the procurement of all major equipment, weapon systems and platforms has been governed by the Defence Procurement Procedure (DPP). The DPP has been tweaked several times since then. But it continues to be a queer mix of the policy on—and the procedure for—capital acquisitions for the armed forces. . . . Several components of what should ideally be a distinct overarching procurement policy (such as those related to defence offsets or the use of agents) are enmeshed with the procedure by way of guidelines, a part of some specific provision in the DPP, or as separate chapters. The problem arising from the policy-procedure mix is that any deviation from procedure tends to be viewed as a deviation from policy. Thus, even if such deviation is absolutely necessary to ensure that the procurement proposal does not get derailed, this fear prevents the procurement personnel from taking bold decisions to break the procedural logjams that crop up in practically every procurement programme. Nothing exemplifies this better than the view many hold that off-the-shelf purchase of defence equipment, without any transfer of technology (ToT), violates the putative 'Make in India' policy and impedes the stated objective of indigenisation of defence production. This view disregards the fact that it is not mandated by any policy or concomitant procedure to seek ToT in every case.

72. Iyer-Mitra and Singh interview; and Karnad interview.

73. Indian officials, interviews by the author, New Delhi, 11 December 2017. Indian officials recognize that Russian weapons, such as the Sukhoi MKI, are more expensive than American ones in the long run.

74. Centre for Airpower Studies, lecture and interaction, 6 December 2017. Some former IAF officers downplay the 1962 PLA victory over India as an anomaly because the IAF was not used, while extolling the IAF role in the 1999 Kargil War that helped to turn the tide, even though aircraft were not allowed to cross the Line of Control because of Pakistan's threats of nuclear retaliation. US officials, interview by the author, New Delhi, 5 December 2017. US officials commented that the IAF was not properly positioned to take out Pakistan forces during Kargil and the PLA during Doklam and had lessons to learn.

75. Iyer-Mitra and Singh interview; Behera interview; and Shukla interview. The Indian Navy has methodically planned and developed its fleet with 36 ships procured in the last two decades. In contrast, defense experts observe that the Indian Army has been the worst service in regard to planning, with the IAF second worst.

76. Behera interview. The IAF still has considerable amounts of 1970s technology, though it has advanced subsystems.

77. Tellis interview. Tellis observes that intellectually the IAF is “platform-obsessed” like the USAF was in the 1980s. IAF leadership is not focusing on the development of networks or complementary capabilities or precision munitions or secure data links. Also, IAF bases need modernization. These issues lead to doubts about the IAF’s ability to sustain an air campaign.

78. Rajat Pandit, “India to Launch AWACS Project to Counter China, Pak,” *Times of India*, 19 June 2012, <https://timesofindia.indiatimes.com/india/India-to-launch-AWACS-project-to-counter-China-Pak/articleshow/14253161.cms?referral=PM>.

79. India is also developing a system to match the Northrop Grumman E-8 Joint Surveillance Target Attack Radar System (Joint STARS), which the USAF is phasing out and folding into its AWACS program.

80. The PLAAF Western Theater Command that faces India and the IAF has four fighter divisions that amount to an estimated 36 fighter squadrons. The PAF has an estimated 21 fighter squadrons. This places India’s likely foes with a total of 57 squadrons at India’s front door.

81. Shukla interview.

82. Franz-Stefan Gady, “India’s Air Force Will Field 42 Combat Squadrons by 2027,” *The Diplomat*, 6 October 2015, <https://thediplomat.com/2015/10/indias-air-force-will-field-42-combat-squadrons-by-2027/>.

83. Tellis, “Troubles They Come in Battalions” 2016.

84. Behera interview.

85. Manu Pubby, “Rafale Deal: Pricing Issues, India’s Insistence on 50% Local Spending Lead to Missing of July Target,” *Economic Times*, 31 July 2015, <https://economictimes.indiatimes.com/news/defence/rafale-deal-pricing-issues-indias-insistence-on-50-local-spending-lead-to-missing-of-july-target/article-show/48288656.cms>.

86. Ajai Shukla, “Indian Air Force Initiates Rs 33,000 Crore Buy of 83 Tejas Fighters,” Broadsword (blog), 21 December 2017, <http://ajaiashukla.blogspot.com/2017/12/indian-air-force-initiates-rs-33000.html>.

87. Shukla interview; and Karnad interview.

88. Rajat Pandit, “Armed forces say no to advanced versions of indigenous ‘Tejas’, ‘Arjun,’” *Times of India*, 13 November 2017, <https://timesofindia.indiatimes.com/india/armed-forces-say-no-to-advanced-versions-of-tejas-arjun/articleshow/61620740.cms>.

IAF, for instance, says Tejas is yet to become combat-ready or achieve ‘final operational clearance’ after being in the making for over three decades. Moreover, with its limited range and weapon carrying capacity, the Tejas simply does not give IAF the punch and cost-effectiveness it needs. Tejas, which has just about 50% of the capabilities of an F-16 or Gripen in terms of endurance, payload etc., will have to fly under the protection of other fighters during conflicts,” said an officer. Grappling with just 33 fighter squadrons when 42 are need to take care of the “collusive threat” from China and Pakistan, the IAF feels the single-engine fighter project is necessary to maintain adequate force-levels till an entirely new Tejas Mark-2 becomes a reality.

89. Amit Gupta, “Global Arms Industry: From Hi-tech to Lo-tech,” *Geopolitics* 8, no. 11 (April 2018): 12–16, <https://www.scribd.com/document/392249685/Geopolitics-April2018>. India has long

lacked the technological and industrial base to develop a world-class aircraft industry, and there are few signs of improvement.

90. US official, to the author, e-mail, 5 December 2017.

91. Iyer-Mitra interview. The Adani Group specializes in resource trade and has limited experience in high-end manufacturing, but the company is politically well-connected to the BJP. Tata has disconnected manufacturing programs. Both would need to build the factory, train the team, and start manufacturing the aircraft. Shukla interview. The closeness of the Adani Group to the BJP could also draw increased opposition and slow down any deal.

92. Behera interview. The Indian government is handicapped by the lack of a centralized defense acquisition authority. Prime Minister Modi also campaigned on allowing 100 percent foreign direct investment to spur industrialization, but the government has not followed through.

93. David Majumdar, "If the J-20 Stealth Fighter Is So Amazing, Why Is China Buying Russia's SU-35?" *National Interest*, 2 November 2016, <http://nationalinterest.org/blog/the-buzz/if-the-j-20-stealth-fighter-so-amazing-why-china-buying-18273>.

94. Karnad interview.

95. Press Trust of India, "China's Airfields in Tibet Lack Military Infrastructure for Offensive Ops: Air Chief Marshal B S Dhanoa," *Indian Express*, 9 September 2017, <https://indianexpress.com/article/india/china-airfields-in-tibet-lack-military-infrastructure-for-offensive-ops-air-chief-b-s-dhanoa-4836195/>.

96. Stephen Chen, "How Chinese Mining in the Himalayas May Create a New Military Flashpoint with India," *South China Morning Post*, 20 May 2018, <https://www.scmp.com/news/china/society/article/2146296/how-chinese-mining-himalayas-may-create-new-military-flashpoint>.

97. Manoj Joshi, "After Doklam, Military Postures Continue to Escalate in India, China," *Asia Times*, 23 March 2018, <http://www.atimes.com/post-doklam-military-postures-continue-escalate-india-china/>; and Tellis interview. The IAF has problems with operations in mountainous regions.

98. Indian officials, interviews by the author, New Delhi, 11 December 2017. India, the United States, and Japan see China's actions in Doklam as part of its "salami-slicing" tactics that Beijing is also employing in the South China Sea and East China Sea.

99. Commodore C. Uday Bashkar (Indian Navy, retired), director, *South Asia Monitor*, interview by the author, New Delhi, 8 December 2018.

100. Sahgal and Ahuja interview. These two retired officers recommend strategic-level discussions and red-blue-green gaming first; technology transfer second; and the development of India's conventional deterrent third.

101. "Wargaming," RAND Corporation, accessed 14 June 2018, <https://www.rand.org/topics/wargaming.html>

102. US official, to the author, e-mail, 5 December 2017.

103. Indian officials, interviews by the author, New Delhi, 11 December 2011.

104. Chauhan interview.

105. Chauhan interview.

106. Iyer-Mitra and Singh interview.

107. Indian officials, interviews by the author, New Delhi, 11 December 2017.

108. US officials, interviews by the author, New Delhi, 5 December 2017.

109. Chauhan interview.

110. Stuti Banerjee, India World Affairs Council, interview by the author, New Delhi, 8 December 2017.

111. Matheswaran interview. In such a case, India needs to explicitly state that the United States and India are working together in a contingency and not as part of an alliance.

112. Tellis interview.

113. Iyer-Mitra and Singh interview. A number of hurdles need to be crossed before the IAF and IN can achieve interoperability.

114. Press Trust of India, “Indian, U.S. Air Forces to Deepen Cooperation in Indo-Pacific Region: U.S. Air Force Chief,” *The Hindu*, 4 February 2018, <https://www.thehindu.com/news/national/indian-us-air-forces-to-deepen-cooperation-in-indo-pacific-us-air-force-chief/article22650919.ece>.

115. Some think tanks that the USAF could interact with include the Centre for Peace and Conflict Studies; Institute for Defence and Security Analyses; Observer Research Foundation; and Brookings India.

116. Jaishankar interview.

117. Iyer-Mitra and Singh interview. If the US president were to impress upon the Indian prime minister the urgency of lowering bureaucratic barriers to International Military Education and Training (IMET), engagement, exchanges, and exercises, the USAF–IAF partnership would develop more rapidly.

118. Gen Goldfein was supposed to fly the HAL Sukhoi MKI but could not due to technical difficulties. Previously, there was concern that these aircraft needed to undergo air worthiness certification, the wait could be worth it, but this concern was overcome.

119. US official, to the author, e-mail, 5 December 2017. Lockheed Martin does not want to advocate for the F-35, which may distract India from the F-16 Block 70. Also, most Indian in leaders have not shown much enthusiasm for the idea of acquiring the F-35 given the expense.

120. Jaishankar interview. If Lockheed Martin could make the F-35 case privately to the Indian government, perhaps as a follow-on aircraft to the F-16 Block 70, the chances for a sale would increase.

121. *Ibid.* If USCENTCOM would give India special treatment, the IAF–USAF relationship would benefit.

122. Iyer-Mitra and Singh interview. If Prime Minister Modi would intervene, the process of signing the BECA would accelerate.

123. Panda, “LSA, CISMOA, BECA.”

124. Pushpinder Singh, Society for Aerospace Studies, interview by the author, New Delhi, December 2017.

125. Air Marshal Anil Chopra, IAF, retired, “India’s Military Space Program,” *South Asia Defence & Strategic Review* 11, no. 5, (November–December 2017). <http://www.defstrat.com/india%E2%80%99s-military-space-program>. The ISC is jointly operated by all the three services of the Indian Armed Forces, the civilian Department of Space, and the Indian Space Research Organisation (ISRO).

126. Nair and Khalsa, “Toward U.S.–India Missile Defense Cooperation.”

127. Iyer-Mitra and Singh interview. The IN purchased vessels from Russia in the past, and Russia does not want US equipment installed on its ships. Therefore, some IN ships have difficulty communicating with each other.

128. US official, to the author, e-mail, 5 December 2017.

129. Nayanima Basu, “Full Transfer of Tech in Defence Aviation is Non-negotiable,” *The Hindu*, 21 November 2017, <https://www.thehindubusinessline.com/news/world/full-transfer-of-tech-in-defence-aviation-is-nonnegotiable/article9968794.ece>. “Keith Webster, Senior Vice-President (Defence and Aerospace), US-India Strategic Partnership Forum (USISPF), said while the Trump administration is excited about the \$10-billion single-engine fighter jet deal, Lockheed Martin will not be going for full transfer of technology. In an interview with *BusinessLine*, he said if India decides to buy the F-16s, the first few planes will be bought off the shelf.”

130. Press Trust of India, “Boeing Says F/A-18 Super Hornet Fighter Jet Can Help India Grow Its Aerospace Ecosystem” *Economic Times*, 18 May 2018, <https://economictimes.indiatimes.com/news/defence/>

boeing-says-f/a-18-super-hornet-fighter-jet-can-help-india-grow-its-aerospace-ecosystem/article-show/64175203.cms.

131. Jaishankar interview. There are approximately 4,000 F-16s worldwide.

132. Mike Stone, "Lockheed Signs Pact with Tata to Make F-16 Planes in India," *Reuters*, 17 June 2017 <http://www.reuters.com/article/us-airshow-paris-india-idUSKBN19A1G0>.

133. Behera interview. The Ministry of External Affairs disqualified the F-16 and FA/18 during the last MRCA competition in 2014. There is still a question concerning whether Lockheed Martin and Boeing can rebid.

134. Ajit Kumar Dubey, "Setback for IAF's Plans to Arm Fighter Jets with Meteor Missiles," *India Today*, 4 June 2018, <https://www.indiatoday.in/mail-today/story/iaf-s-meteor-missile-plans-likely-to-take-a-hit-1249650-2018-06-04>.

135. Iyer-Mitra and Singh interview. There will be no money in the budget for a possible Gripen deal with Saab before the 2019 elections. Also, there needs to be a two-year lead time for the purchase, which means that 2024 is the earliest date that the Gripens could arrive.

136. US officials, interviews with the author, New Delhi, 5 December 2017. Evidently, IAF leaders preferred the Gripen and were giving lip service to the F-16.

137. US official, to the author, e-mail, 27 September 2018. China participated in Operation VOSTOK with Russia in September 2018. The United States and India could engage in similar large-scale exercises to bolster India as a strong partner.

138. Harinder Sekhon, Vivekenanda Institute, interview with the author, New Delhi, 29 November 2017.



Dr. Stephen F. Burgess, has been professor of international security studies, US Air War College since June 1999. He has published books and numerous articles, book chapters and monographs on Asian and African security issues, peace and stability operations, and weapons of mass destruction. His books include *The United Nations under Boutros Boutros-Ghali, 1992-97* and *South Africa's Weapons of Mass Destruction*. His recent journal articles include "Multilateral Defense Cooperation in the Indo-Asia-Pacific Region: Tentative Steps toward a Regional NATO?" *Contemporary Security Policy*, (December 2017): 1-22; and "Rising Bipolarity in the South China Sea: The Impact of the US Rebalance to Asia on China's Expansion," *Contemporary Security Policy* 37, no. 1 (April 2016); and "The US Pivot to Asia and Renewal of the US-India Strategic Partnership," *Comparative Strategy* 34, no. 44 (July 2015). He holds a doctorate from Michigan State University (1992) and has been on the faculty at the University of Zambia, University of Zimbabwe, Vanderbilt University, and Hofstra University.