

Medals and Ribbons

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A SALUTE TO OUR VALIANT WARRIORS

PEOPLE'S
LIBERATION ARMY

Strategy Shifts

Policy changes along the
LAC Post-Galwan 2020

Makkah
Joint Defence
Agreement

- An Islamic Triumvirate?

Weaponisation of
Frontiers

*- Asymmetric and
Demographic Grey Zone Warfare*

Changing Nature of
Military Preparedness

*- Technological Capability to
Industrial Readiness*

OPERATION URJA SURAKSHA



The Indian Navy has launched **Operation "Urja Suraksha,"** deploying seven frontline warships, including destroyers, across the Gulf of Oman and the Arabian Sea. Launched in late March 2026, Operation Urja Suraksha (Energy Security) is a high-stakes maritime mission by the Indian Navy to secure the country's energy supply lines.

OBJECTIVE

Energy Lifeline: To ensure the safe transit of Indian-flagged vessels carrying critical energy resources (Crude Oil, LNG, and LPG) from the Persian Gulf.

Risk Mitigation: Protecting merchant ships from escalating tensions in West Asia, specifically around the Strait of Hormuz, which has faced blockades and threats of underwater mines.

Strategic Significance

Economic Stability: Secures billions of dollars in trade; even a month's delay in imports could cost India upwards of \$10 billion.

Regional Role: Reinforces India's standing as a "net security provider" in the Indian Ocean Region.

OPERATION DETAILS

Deployment: More than five frontline warships, including destroyers and frigates, are stationed in the Gulf of Oman and the North Arabian Sea.

Layered Security: The Navy provides a "security umbrella" that includes physical escorts, real-time monitoring, and electronic warfare protection.

Beyond Escorting: Warships provide route-specific guidance and precise navigational support to help merchant crews avoid high-risk zones and potential minefields.

Discreet Execution: The operation is being conducted with "calibrated precision and minimal publicity" to maintain safety and diplomatic balance in the region.

KEY SUCCESSSES

Vessels Escorted: High-priority vessels like the LPG carriers Pine Gas and Jag Vasant (carrying ~92,000 tonnes of cooking gas) have already been safely guided to Indian ports.

Other Ships: The Navy has also successfully protected the Shivalik, Nanda Devi, and the crude tanker Jag Laadki.

Identification: Indian vessels have reportedly used specific identification signals (e.g., "PINE GAS INDIAN SHIP") to clearly distinguish themselves in the conflict zone.

Mission Details



Col David Devasahayam



After the rapid disruption and rout of Iraqi Occupation Forces in Kuwait in the First Gulf War in January-February 1991, USA cemented its position as the primary security provider in West Asia. Saudi Arabia and the Gulf countries relied on American security presence and architecture. In the last two decades after the removal of President Saddam Hussein from Iraq, US power and control faced resistance too. The American Forces engaged in a long asymmetric warfare campaign against non-state groups like the Islamic State of Iraq and Syria (ISIS), against pro-Iran militia in Iraq, and against President Bashar Assad's regime in Syria. Overall, the US security umbrella was reliable.

The US - Israel conflict with Iran in the last couple of years has raised questions about its credibility. The US - Israel alliance, despite their technological and airpower superiority, has not been able to defeat Iran conclusively. Negotiated ceasefires have not lasted, because of the irreconcilable positions of USA and Iran. Is the maxim "*victory is measured by foot*" still applicable? Are technological superiority, aerial bombardment, and long-range rockets and missiles unable to bring the enemy to his knees? Which leads me to the '**national resilience**' factor - Iran's national resilience was never in doubt as they had fought against Iraq for over eight

years in the 80s. This nationalist fervour leads the Americans to wisely avoid putting '*boots on the ground*'. So other means, primarily economic in nature, are being employed to make Iran acquiesce.

The American inability to protect the Gulf nations fully has been discerned. The Iranians are able to strike at infrastructure assets in the Gulf countries at will. Countries in the region are looking at alternative security arrangements, rather than depending entirely on an American security partnership. After discussions for more than a year, the Makkah Joint Defence Agreement was inked between Saudi Arabia, Türkiye and Pakistan - possibly the first steps in developing alternative regional security architecture. In the Reflections column, Dr Shashi Tharoor has analysed this development, its connotations and whether it can be called an Islamic NATO, as perceived by some commentators.

Another noteworthy development relates to Robotics. I was seeing some visuals from the second World Humanoid Robot Games, widely known as the Robot Olympics, which took place in Beijing, China, from August 22 to 26, 2026. Robots will undoubtedly be employed effectively in future wars, and many nations have started integrating manned and unmanned teams for operational tasks. In an insightful article, our Associate Editor, Major General Ravi Murugan has examined the integration of autonomous systems and robotics in the Indian Army. The lesson for us is that we have to move swiftly to develop our technological and industrial readiness for future war. We cannot afford to move at a snail's pace. We have included another excellent essay by Lieutenant General T K Chawla highlighting this imperative.

As readers will notice, we have stitched together a diverse mix of articles covering contemporary events, regional and defence developments, as also human interest narratives from the Armed Forces. **Medals and Ribbons** continues to garner greater viewership, with increased reach on social media too. We, the Editorial Team are grateful for your encouraging feedback and endorsement. ■ ■ ■



Humanoids defeating Usain Bolt's 100m record in the Robot Olympics at Beijing

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Medals and Ribbons

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Lt Gen J S Sandhu, (Retd)

In the Founder's Note on Page 1, Colonel David Devasahayam has flagged the inability of nations to conclusively achieve victory in contemporary conflicts. The impasse in the Russia - Ukraine conflict, the Israel - Hamas stalemate and the US-Israeli campaign against Iran are clear examples. Despite massive destruction, national will has not wilted amongst the Iranians, Ukrainians, Hezbollah, the Houthis or the Hamas.

Warfare is changing rapidly, and multiple domains are being employed to coerce the adversary. Trade warfare (tariffs), economic sanctions, technology and resources denial are being used by the USA not only against the belligerent but are being applied on neutral trade partners to isolate and economically weaken the enemy. The rules based international order is being given short shrift, international organisations like the United Nations, World Trade Organisation are standing silent. There is an apparent anarchy in the global order, as nations navigate to hold on to their national interests. Undoubtedly, the world is moving

from an era of relative peace to an era of unending conflicts, despite diplomacy, negotiations and multilateral consultations to bring about peace. India needs to be ready for future confrontations - and '*Atmanirbharta*' (self-reliance) is a necessary objective, with technological, industrial and resources being harnessed within the boundaries. Industrial readiness for future war has therefore drawn the attention of our policy makers and leadership, and has been amplified by Lieutenant General T K Chawla (Retd) in his article.

Narratives are created to justify such unilateral actions. Considering the national resilience factor, the cognitive warfare domain has gained importance to influence the people. The wide reach of social media has brought 'toolkits' into focus, with the algorithms designed suitably. Brigadier Preet Pal Singh (Retd) has delved into the cognitive domain in modern warfare in this issue. The notion of victory can be easily manipulated and perceptions altered using Artificial Intelligence through the electronic and social media.

National security is no longer defined merely by the border, but the frontier has expanded on both sides of a border. Shri Jaideep Saikia, a reputed security analyst has expounded on the grey zone activities in frontier zones, with narcotics, weapons smuggling and demographic subversion leading to volatile situations. We have an interesting civilian perspective on the expanding national security dimensions from Ms Shrawani Shagun, who attended a security strategy programme.

Notwithstanding the global pressures, India has to remain vigilant to security threats developing in our neighbourhood. We have hence focused on our Northern borders in our cover story. Lieutenant General A S Bedi (Retd) has discussed the

strategy shifts being adopted by the People's Liberation Army; likewise Lieutenant General Rajeev Chaudhry (Retd) has highlighted the necessity of border infrastructure for credible deterrence. Our Editor (Navy) has amplified the undersea modernisation being executed by the Pakistan Navy with the induction of the Hangor Class submarines, and the implications for our navy. I have portrayed a '*behind the scenes*' terrorist strike scenario emanating from our Western adversary in a fictional narrative on **Operation Paigham**.

Technology is a critical component for future war readiness. The threats posed by drones and unmanned craft to shipping has manifested in the Houthi attacks on ships in the Red Sea. Captain Abhishek Prasad from the Indian Navy has looked at combining manned and unmanned assets to chart a Composite Fleet, to counter emerging threats at sea. And Air Commodore Ashutosh Lal (Retd) has deliberated on the trajectory of India's military helicopters and the future readiness for our Aviation arms.

We have many other diverse articles of interest. Ex-Squadron Leader Vijay Arisetty, a Founder of the MyGate security app for gated communities, has seen phenomenal success in the Corporate World in his second innings. Our Editor (Air) interacted with him, and his story is extremely fascinating.

Lieutenant General Shokin Chauhan (Retd) narrates his visit to the mother of his soldier who died in action - an extremely poignant and vivid account, depicting a Commanding Officer's Covenant.

The Indian Armed Forces sportspersons performed commendably in the Commonwealth Games at Glasgow in July - August this year with 18 medal winners. Colonel Mohan Rao, the Commandant of Army Sports Institute, Pune describes the sporting ecosystem developed by the Indian Army in his report titled "**Glory at the Glasgow Games**".

Amongst other articles, Lieutenant General B S Raju (Retd) pays tribute to Colonel Jojan Thomas, AC (Posthumous) who was killed in action in August 2008 in Machhal Sector of Kashmir. We have also included a youngster's first person account of the Summer Silk Route Expedition in Ladakh from Nimu to Karakoram Pass. This adventure trek followed and retraced the ancient silk route between Ladakh and the Xinjiang region in China. In our regular Wellness column, Dr. Renuka David talks about the misinformation on health advice flooding social media and suggests checks and professional consultation before following such health tips. Our Money Matters Column elaborates on thematic and sectoral funds, and points out the differences between them.

We will continue to focus on contemporary issues and current events in our issues, while also including articles on adventure activities, valiant heroes, anecdotes and operational activities of the Armed Forces. Desirous authors may please send the articles to chiefeditor@medalsandribbons.com by 10 November 2026. We look forward to your earnest feedback. The Editorial Team thanks all the readers for your valuable support and your positive kudos to this publication.





President U Min Aung Hlaing of Myanmar with Prime Minister Narendra Modi at New Delhi on 02 June 2026 (Photo PIB India)

WEAPONISATION OF FRONTIERS

ASYMMETRIC AND DEMOGRAPHIC GREY-ZONE WARFARE

In contemporary strategic discourse, the frontier is traditionally conceptualised as a static demarcation of state sovereignty—a Westphalian line to be defended by conventional military posturing. This article challenges that orthodox paradigm, introducing the concept of Frontier Weaponisation. It argues that in an era of constrained kinetic symmetry, hostile state and non-state actors increasingly exploit the ecological, demographic, and historical fluidities of peripheral borderlands to wage non-linear, grey-zone warfare.

The volatile tri-junction of North East India, Myanmar, and Bangladesh demonstrates how porous borders, state-engineered human displacement, and the digital mutation of ungoverned spaces are transformed into strategic vectors designed to fracture an adversary's internal cohesion, drain its economic capital, and erode its sovereign legitimacy.

Such a weaponisation thrives on the inherent instability of fluid borders, where traditional territorial perimeters give way to porous zones of socio-political friction. In these peripheral landscapes, borders are not rigid walls but variable channels. Hostile actors exploit this elasticity, transforming historical migration corridors into tools of demographic subversion. By manipulating the flow of displaced populations across unregulated boundaries, rivals can engineer severe socio-economic crises within a target nation. This deliberate movement strains local resources, inflames indigenous ethnic anxieties, and sparks strong internal conflict without triggering a formal military response.

Furthermore, the physical fluidity of these borders mirrors the cardinal infrastructure of ungoverned spaces. Transnational criminal networks and insurgent groups operate seamlessly across dominions, utilising the lack of synchronised state control to establish shadow economies. They fund "irregular warfare" through illicit trade, smuggling, and cyber-enabled operations that exploit legal vacuums. The

frontier becomes an offensive platform where the distinction between internal security and external defence dissolves entirely. Consequently, the state is forced into a costly, reactive posture. It must continually divert vital economic capital and administrative focus to secure its boundaries. Through this continuous, low-intensity attrition, frontier weaponisation systematically degrades a nation's sovereign authority and fractures its domestic cohesion.

Redefining the Westphalian Peripheral

For centuries, strategic thought treated boundaries as rigid shields. However, the modern geopolitical landscape has inverted the frontier from a defensive barrier into an offensive vulnerability. Frontier weaponisation occurs when natural or socio-political fluidities such as porous terrain, ethnic contiguity across borders, and institutional deficits are deliberately leveraged as instruments of coercion.

Unlike conventional territorial revisionism, which seeks the physical annexation of land, frontier weaponisation aims at the psychological, demographic, and cognitive destabilisation of the target state. It represents the ultimate manifestation of grey-zone warfare: operating below the threshold of open military conflict, yet inflicting strategic costs that rival conventional campaigns.

To understand this phenomenon, one must look beyond



On 9 June 2015 India carried out a Surgical Strike in Myanmar against two camps belonging to North-East insurgent groups. Indian Para Commandos pictured after the operation

intensified drastically through transactional statecraft along the Indo-Myanmar frontier. Prior to the military takeover of 2021, bilateral security efforts were defined by Naypyidaw's reluctant acquiescence to Indian strategic requests. This fragile cooperation culminated in **Operation Sunrise I and II** in 2019, wherein the Myanmar Armed Forces (*Tatmadaw*) coordinated with India to dismantle insurgent infrastructure inside Myanmar. However, the post-coup environment shattered this cooperative security framework.

Facing existential domestic survival struggles against a widespread pro-democracy rebellion and civilian resistance

Eurocentric security models and examine the complex geopolitical laboratory of the Indo-Pacific's landward hinge: the contiguous borderlands of North East India, Myanmar, and Bangladesh. This frontier which stitches the three hinterlands together is historically artificial, topographically unforgiving, and ethnically overlapping. This makes it an ideal environment for asymmetric exploitation.

The Myanmar Crises and the Transnational Insurgent Ecosystem

The post-1 February 2021 collapse of state authority in Myanmar has fundamentally weaponised the Indo-Myanmar border. The *Tatmadaw* and various Ethnic Armed Organisations (EAOs) have inadvertently or calculatedly forced insurgent groups—including remnants of Indian Insurgent Groups (IIGs)—into tactical alliances.

This frontier is no longer just a physical hideout; it has been weaponised as an operational sanctuary. Cross-border ethnic kinships, such as those among the Chin, Kuki, and Mizo peoples, are manipulated to create logistical corridors. These corridors funnel illicit arms, narcotics, and insurgent personnel across sovereign lines, aggressively disrupting New Delhi's "Act East" infrastructure and forcing the Indian state to divert significant security resources to internal policing.

Furthermore, this geopolitical vulnerability has

forces, the **junta** in Naypyidaw quickly entered into an opportunistic "marriage of convenience" with several IIGs. Under this transactional entente, the *Tatmadaw* granted these IIGs safe haven and guaranteed their cross-border stations would remain untouched. In return, these rebel factions acted as proxy enforcers. They actively helped the military regime quell internal unrest by attacking anti-junta resistance groups and post-coup refugees including the People's Defence Force and sundry EAOs. By absorbing these hostile outfits into its counter-insurgency apparatus, the **junta** effectively externalised its security burden. This calculated manipulation directly subverted India's border security, explicitly demonstrating how fluid boundaries are utilised as active strategic vectors to project asymmetric instability deep into an adversary's internal perimeter.

The dangerous synergy of this **junta**-insurgent alliance has severely compromised the border security of Mizoram and Manipur, transforming the geographic periphery into a primary catalyst for the devastating ethnic conflict that broke out in Manipur on 03 May 2023 when Kukis and Meiteis clashed in Manipur.

While Mizoram has primarily grappled with a massive humanitarian crisis-absorbing thousands of unarmed Chin refugees fleeing the *Tatmadaw*-Manipur has become the explosive epicentre of cross-border security spill-overs. When ethnic frictions over land rights, political representation, and state benefits reached a boiling point in May 2023, this unchecked frontier ecosystem acted as a catalyst. Battle-hardened insurgent cadres, heavily armed and emboldened by their survival pact with Naypyidaw, easily traversed the fluid border to reinforce local militias. This influx of high-grade weaponry, black-market drug capital from the Golden Triangle, and tactical expertise systematically weaponised local ethnic anxieties into an unmanageable

internal security crisis. Consequently, the frontier has ceased to be a simple boundary, functioning instead as a vital sanctuary and supply conduit that sustains prolonged violence, deepens the geographical segregation of communities, and constantly compromises New Delhi's internal stabilisation efforts.

The India-Bangladesh Vector: Demographic Inundation as Kinetic Lever

Historically, the Indo-Bangladesh frontier has demonstrated how demographic mobility can be weaponised. While much of Western literature views migration through a humanitarian lens, state actors in South Asia have frequently treated cross-border population flows as a tool of geopolitical pressure.

Engineered or unmitigated migration into the demographically sensitive states of North East India (such as Assam and Tripura) has structurally altered local voting patterns, strained land resources, and triggered severe ethnic anxieties. By allowing or subtly facilitating the demographic altering of an adversary's frontier, a state can create permanent internal friction points within the target nation.

The ouster of Sheikh Hasina's regime in Bangladesh has triggered severe internal security concerns for India, drastically elevating the risk of radical Islamism spilling across the border into Assam. With the return of the Jamaat-e-Islami, which acts as the primary ideological fountainhead of the global Salafi movement in South Asia, the operational containment of radical networks has collapsed. This political transition has re-energised long-dormant Islamist ecosystems, shifting them from a state of survival to active asymmetric posturing. The vacuum created by the retreat of

secular border management enables hostile actors to exploit historical migration pipelines. Consequently, the frontier is transformed into an active theatre for non-linear, grey-zone warfare designed to directly degrade India's internal security cohesion.

This latent threat environment is historically rooted in operational realities. Following the accidental Burdwan Blast of 2 October 2014, as the Chief Principal Adviser to the Assam Police's Special Branch (Intelligence), I had interrogated several apprehended cadres of the Jamaat-ul-Mujahideen Bangladesh (JMB) and unearthed deeply embedded, cross-border infrastructure linking radical cells in Bangladesh directly to the highly volatile districts of Lower Assam. This led me to critically conceptualise these specific spaces and coin the phrase **"demographic jungle,"** a term characterising dense, unmonitored enclave populations where state administrative reach was weak at the time (much policing has improved the situation considerably), law enforcement tracking was limited, and radical elements could seamlessly blend into local communities to evade detection.

Analytically, these **"demographic jungles"** of Lower Assam have provided an indispensable safe haven for a complex array of Bangladesh-based Islamist groups. Proscribed outfits such as the JMB, the Harkat-ul-Jihad-al-Islami Bangladesh, the Ansarullah Bangla Team (ABT), and the Hizb ut-Tahrir actively exploited this unregulated expanse. This peripheral corridor does not merely function as a local sanctuary; it serves as a critical strategic entry point to transport terror deeper into the Indian heartland - I hence termed this as **"gateway theory"**. By utilising these borderlands as a logistical transit hub, transnational

networks coordinate directly with Pakistan-sponsored tanzeems like the Lashkar-e-Toiba and Jaish-e-Mohammed. This convergence effectively bridges external geopolitical adversaries with local radical cells, transforming Assam's fluid borders into an active gateway for pan-India asymmetric disruption.

Islamist groups like the ABT function as critical domestic proxies and operational vanguards for Al-Qaeda in the Indian Subcontinent (AQIS). The AQIS relies on ABT's deep localised networks to navigate the complex **"demographic jungles"** of the region, utilising their safe havens for logistics and recruitment. In return, the AQIS provides the ABT with sophisticated ideological guidance, specialised cyber-capabilities, and asymmetric tactical training. This structural alliance elevates the ABT from a localised threat into a potent, transnational asset, allowing the AQIS to project its violent reach directly into the Indian heartland.¹

Theoretical Scaling: From Regional Friction to Global Doctrine

Therefore, the dynamics observed in the North East India-Myanmar-Bangladesh matrix are not isolated regional anomalies. Rather, they serve as a predictive blueprint for global security. The lessons from this region can be abstracted into a universal three-part conceptual model, as under:

- **Demographic Inundation as a Geopolitical Weapon.** When a hostile actor uses human displacement to overwhelm an

¹ Report of the "Special Task Force on the al-Qaeda Threat to Assam" that was constituted on 8 October 2014.



The radical Islamic organisation Hizb-ut-Tahrir (HuT), banned since 2009, took out a 'March for Khilafah' in Dhaka on March 7, 2025 (Image: AP)

adversary's infrastructure, it transforms civilians into asymmetric ammunition. One witnesses the exact conceptual framework playing out globally. In Europe, the deployment of Middle Eastern migrants by the Belarusian regime against Poland and Lithuania mirrors the historic, unmitigated flows across the porous India - Bangladesh and India-Myanmar borders. The strategic objective is to trigger domestic political polarisation, paralyse the legal frameworks, and weaponise humanitarian values against our national security apparatus.

- **The Geographic Black Hole: The Jungle-to-Cyber Nexus.** Modern frontiers are no longer merely physical spaces defined by dense jungles or rugged mountains. They have evolved into hybrid zones where physical lawlessness blends seamlessly with digital lawlessness. As a global manifestation, in the lawless borderlands of Myanmar, trans-regional criminal syndicates operate sophisticated cyber-scam networks and narcotics conduits. Foreign mercenaries and crypto-currency laundering hubs work under the protection of localised armed factions. Similar lawlessness is witnessed in the Darién Gap in Latin America or parts of the Sahel region in Africa. Frontiers are no longer just staging grounds for guerrilla warfare; they are now digital launchpads. From these weakly policed zones, actors can execute global ransomware attacks, fund transnational terror networks, and disrupt Western financial systems, all

while remaining shielded by grey-zone border sovereignty.

- **Cognitive Jurisdiction and Sovereign Erosion.** Hostile powers exploit cross-border ethnic and cultural continuities to erode the target state's sovereign authority. By exporting a specific cultural or political identity across a border, an adversary can claim a form of "cognitive jurisdiction" over the frontier population. This turns them against their own central government, a strategy regularly utilised along the Sino-Indian Himalayan border and mirrored by Russian grey-zone tactics in the Donbas

region of Ukraine. Gratefully, China has not been able to de-Indianise the frontier human capital. Indeed, the credit for this aspect must go to the Indian Army who has relentlessly battled the enemy in the domain of psychological warfare on these remote borders.

De-Weaponising the Border: The "Integrated Frontier Resilience" Doctrine

To counter this real threat, democratic states must abandon outdated border defence strategies centred solely on physical walls and static military deployments. Instead, Western and Indo-Pacific nations should adopt "Integrated Frontier Resilience" which would include:

- **Digital Edge Sovereignty:** States must replace easily bypassed physical barriers with smart borders driven by AI-powered satellite reconnaissance, biometric tracking, and block chain-secured identity ledgers. Security forces must be able to monitor data and financial flows across borders just as effectively as they patrol the physical terrain.
- **Cognitive Shielding and Psychological Operations:** The Central Government must actively counter the ideological and psychological manipulation of the frontier populations. This requires investing heavily in the socio-economic development of border communities, building robust local digital media infrastructure, and launching targeted counter-radicalisation programmes to neutralise foreign disinformation campaigns.
- **Minilateral Border Architecture:** Traditional multilateral organisations, like the United Nations, are often too slow and

rigid to manage fast-moving grey-zone border crises. Instead, states should form agile, small-scale coalitions ("**minilaterals**") focused on intelligence sharing and joint law enforcement along shared, volatile frontiers.

In this context, New Delhi must actively leverage the diplomatic outreach by Naypyidaw which culminated in Myanmar President Min Aung Hlaing's landmark official visit to India between 30 May 2026 and 3 June 2026. This high-level engagement opens a vital strategic window for India to institutionalise border security cooperation beyond traditional, ad-hoc military dialogues. By capitalising on Myanmar's willingness to re-engage, New Delhi should spearhead the creation of a permanent joint intelligence task force. This dedicated **minilateral** mechanism would enable real-time tracking of insurgent movements, map cross-border safe havens, and interdict illicit weapon and drug flows traversing the porous frontier. Rather than relying on sporadic bilateral assurances, an institutionalised task force establishes an ongoing, operational framework capable of pre-empting asymmetric shifts.

Conclusion: The Frontier as the New Centre

The security architecture of the twenty-first century for the frontiers of India will not be decided solely in conventional theatres of war but in complex, grey-zone spaces, increasingly defined by the expanding Chinese threat and the leveraging of peripheral dependencies to encircle Indian strategic interests.

The profound shift in Bangladesh's political and ideological trajectory is clearly evident in the current post-Hasina

landscape. The weakening of a secular framework and the resurgent influence of the Jamaat-e-Islami have fundamentally altered the situation in Bangladesh. The delicate balance that once favoured cultural nationalism and regional security cooperation has succumbed to Salafist resurgence, transforming a previously collaborative neighbour into a highly unpredictable launching pad for cross-border instability.

Moreover, the accelerating strategic proximity between Bangladesh and China demands heightened vigilance across the North East frontier. This shifting geopolitical alignment raises the alarming possibility of a coordinated asymmetric front, wherein Pakistan and Bangladesh—actively chaperoned and bankrolled by China—could cultivate an enduring arc of instability along India's Eastern peripheries. By leveraging

Bangladesh's critical geographical position, Beijing can deepen its strategic footprint near the sensitive Siliguri Corridor, while simultaneously enabling resurgent cross-border proxy networks to flourish.

For India, this trilateral alignment effectively transforms a once-manageable neighbourhood into a highly volatile, multi-directional threat vector, forcing security planners to treat the Eastern frontier not merely as a border-management challenge, but as an active front of major-power contestation.

The fluid borderlands of today are no longer distant peripheries. They have become central arenas of conflict, where the classic Westphalian definition of sovereignty is being actively challenged, reshaped, and weaponised.



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Jaideep Saikia

PEOPLE'S LIBERATION ARMY STRATEGY SHIFTS

POLICY CHANGES ALONG THE LAC POST-GALWAN 2020

The unconventional and resolute response of the Indian Armed Forces to the China initiated May-June 2020 Galwan incident triggered major Chinese policy resets along the Line of Actual Control (LAC). The LAC, less a line, more an argument conducted through patrols and area domination instruments, has undergone a transformational change since 2020. The structured metamorphosis, at state and People's Liberation Army (PLA) levels, transcends the military, infrastructure, demographic, legal and civilizational domains. This all-encompassing evolution has reset the strategic calculus along the entire 3,488 km frontier across the Western, Central and Eastern Sectors. In response, India too has changed its traditional approach to the LAC, bringing military modernisation, infrastructure build-out and doctrinal innovation to bear against these changes. The result is a fragile environment in which diplomacy is finding enhanced space in managing frictions, while the military balance is increasingly getting defined by technology, speed and digital dominance.

PLA Ground Forces: Episodic to Permanence

Force Restructuring. The pre-2020 model of PLA force posturing, wherein Border Defence Regiments held the Line while the main combined arms formations of the 76th and 77th Group Armies located deep in Qinghai, Gansu and Sichuan were to be mobilised in a crisis, is dead. It has been replaced by a **reinforced, permanently forward deployed configuration.** Both the Xinjiang Military District (opposite the Western Sector/Aksai Chin) and the Tibet Military District (opposite the Central and Eastern Sectors) have been upgraded in operational status, facilitating the induction of altitude-optimised, state-of-the-art equipment tailored for plateau warfare. The order of battle has been reorganised into highly mobile Combined Arms Brigades (CABs). By current assessments, the Western Theatre Command (WTC), responsible for the India Front, fields some **20 CABs across the three sectors.** Each CAB deploys **4500-5000 troops,**



Chinese troops participate in a winter drill in Tibet (Photo: Xinhua)

equipped with Type 96/99-series tanks and Type 15 light tanks, PCL-181 155mm howitzers, CSK-181 wheeled armoured vehicles and short-range air defence systems such as the HQ-17.

Posturing. Many of these brigades have **remained forward deployed** even after the October 2024 Depsang-Demchok disengagement agreement, with a principle of rotation rather than withdrawal. Widely reported Indian and international estimates place **PLA strength at 50,000 to 60,000 troops in the Western Sector alone,** held within tactical depth (100-150 km of the LAC). This allows the PLA to claim de-escalation, while retaining the ability to surge back to forward positions within two to three hours using newly constructed all-weather roads and helipads.

In consonance with this policy shift, the PLA has also addressed the high altitude habitability problem, investing heavily in oxygen enriched barracks, thermally insulated

modular accommodation and plateau-adapted rations. Taking a leaf out of the Indian book, it has created rotational acclimatisation pipelines **enabling formations to winter troops forward rather than withdraw them, as was the practice before 2020.**

Training and Jointness. Current PLA ground doctrine emphasises “integrated joint operations” under a unified theatre command, with ground forces closely coordinating with air, rocket and Electronic Warfare (EW) assets. General Wang Haijiang, WTC commander since August 2021 (though long absent from public view amid reported scrutiny of the WTC leadership), oversees this integration, with Lieutenant General Yang Yi commanding the WTC Ground Force. Exercises have grown in scale, duration and jointness, and high-altitude live-fire drills have become routine, **signalling deliberate acclimatisation of both personnel and equipment.**

PLA Rocket Force: Asymmetric Leverage

Doctrinal Shift. Though the PLA Rocket Force (PLARF) is primarily a **strategic asset**, its growing presence along the LAC has blurred the distinction between strategic deterrence and tactical coercion. It remains the principal instrument of the PLA’s strategy of achieving anti-access/area-denial dominance against Indian forces. Although there are no open-source reports of deployment of nuclear capable missiles, the PLA has increasingly **positioned conventional short and medium range ballistic missiles within striking distance of Indian forward airbases, logistics hubs and troop concentrations.** The policy shift here is stark: the PLA, instead of matching India soldier for soldier in gruelling infantry battles, is augmenting

PLARF for escalation management to inflict disproportionate costs on India in a limited conflict.

Resources. PLARF’s Base 64, headquartered at Lanzhou, has its brigades oriented towards the Western and South-Western strategic directions. Assessed brigade positions and support infrastructure across Qinghai, Xinjiang and the Tibetan plateau (available through open-source analyses) have expanded **steadily since 2020.** It fields the following systems:

- **DF-11/15/16 and DF-21/26.** Short and Medium Range Ballistic Missiles capable of striking vital Indian command centres, airfields and logistics hubs across Northern and Eastern India with high-precision conventional warheads.
- **DF-17 Hypersonic Glide Vehicles.** Positioned to evade conventional Indian defence networks, creating a psychological and kinetic umbrella under which ground units can operate.

- **CJ-10 Cruise Missiles.** Deployed to surgically target communication nodes, mountain passes and railway bridges, isolating forward Indian units from their supply bases.

Employment Philosophy. The PLARF’s plateau garrisons follow the **force’s standard pattern of tunnelled storage, camouflaged launch pads** pre-surveyed along highway networks and rail-served logistics. Road mobile transporter-erector-launchers can scatter across thousands of kms of masked terrain along the G-219 and Qinghai lateral highways, creating a needle-in-a-haystack detection dilemma for Indian surveillance. Instead of serving as a “last resort” nuclear umbrella, the PLARF gives Beijing a theory of victory that begins even before the ground battle is joined, **a conventional counterforce opening salvo executed under the shadow of nuclear ambiguity.**



Chinese People's Liberation Army (PLA) soldiers assembling during military training at Pamir Mountains in Kashgar, northwestern China's Xinjiang region on January 4, 2020 (Photo AFP)



Long range CJ 10 Cruise Missile Launch (credit Military Watch Magazine)

Electronic Warfare and Battlefield Transparency

The most doctrinally interesting PLA policy shift along the LAC is the least visible. The PLA has invested heavily in EW and Artificial Intelligence (AI)-enabled surveillance, creating a “digital iron curtain” along the LAC. PLA EW units, falling under the Cyberspace Force and theatre-level electronic countermeasures units, with the Information Support Force underpinning network communications, have installed an extensive array of EW towers, signal-intelligence stations and jamming facilities. WTC formations now train habitually in what Chinese doctrine terms a “complex electromagnetic environment”, practicing both offensive jamming and operations under denial of their own networks.

Fixed SIGINT and radar infrastructure has proliferated near friction points. The PLA inducted a new variant of FH-95 drone series, capable of electromagnetic jamming alongside armed reconnaissance, reportedly first to Xinjiang Military District, making the region’s importance clear. In the air domain, the J-16D, a dedicated electronic-attack variant of the J-16, has been deployed to Tibetan airbases during exercises.

PLA EW strategy along the LAC includes:

- **Communication Denial** - Neutralising Indian military satellite communications and line-of-sight VHF/UHF tactical radios, and disrupting drone feeds, using high-powered broad-spectrum jammers positioned along high-altitude ridges.
- **GPS Spoofing** - Disrupting the navigation systems

of Indian patrol aircraft, helicopters and precision-guided munitions - a major hazard in the jagged terrain of Himalayas.

- **Network Intrusions** - Executing localised cyber-attacks to disrupt the Indian Army’s regional automated command-and-control systems, delaying decision-making processes.

Structure. The establishment of theatre - level intelligence and reconnaissance brigades has given the WTC an organic, multi-layered Intelligence, Surveillance and Reconnaissance (ISR) architecture: dismounted teams, ground sensors, tactical quadcopters and drones. The PLA’s drone

arsenal has expanded from reconnaissance to armed-strike and loitering-munition roles, closing the gap with global leaders such as the US and Israel. Key systems include:

- **WZ-7 and CH-4/5** for continuous, long-endurance ISR.
- **Wing Loong II and GJ-11** - The Wing Loong II deployed from forward airbases like Shigatse using laser-guided munitions, and the GJ-11 stealth Unmanned Combat Aerial Vehicles (UCAV), imaged at Shigatse in an extended deployment in late 2025, signals PLA intent to operate stealth combat drones on the plateau.
- **Micro Unmanned Aerial Vehicles (UAVs), quadcopters and tactical loitering munitions** for autonomous swarms and real-time tracking of Indian patrols and troops.

For the Indian soldier deployed along the LAC, the practical translation is stark: the LAC is becoming a transparent battlefield, albeit one tilted towards the PLA. PLA drones patrol and photograph every Indian activity and position. The PLA has also operationalized drones as logistics instruments, and the WTC inventory of unmanned systems across echelons now numbers in the thousands - a mass India is yet to match.

Forward Airbases and Heliports: Solving the Altitude Penalty

Historically, air power was India’s one structural advantage on this frontier. The high altitude of the Tibet Plateau severely restricted the payload and fuel of Chinese fighter jets, giving the **Indian Air Force a distinct tactical advantage from its low-altitude bases in the plains.** Post-2020, the PLA undertook a systemic policy response, executing a massive airbase modernisation programme across Tibet Autonomous Region (TAR) and Xinjiang to negate this anomaly. Notable facets of this air power expansion include:

- **Runway Extension and Hardening** – Airbases at Shigatse, Kashgar, Ngari Gunsu, Hotan and Lhunze have seen their runways extended to support heavy transport and bomber aircraft. Blast pens and hardened underground shelters have been built to protect platforms from pre-emptive Indian strikes. These bases now host fourth and fifth generation fighters (J-20, J-16), H-6K bombers, KJ-500 AWACS and reconnaissance aircraft.
- **Heliport Network** – The PLA has constructed dozens of new or upgraded helipads and heliports within 20-50 km of the LAC. This rotary wing lattice enables rapid vertical envelopment and faster medical evacuation. The helipads are often co-located with border villages and roadheads, creating a hub-and-spoke logistics network that bypasses traditional chokepoints.

The net assessment is uncomfortable: response time from Chinese high-altitude bases to the LAC is now in minutes and the **historical Indian advantage, while not erased, has been substantially mortgaged.**

Roads, Rails and Tunnels: All Weather Trans-Himalayan Grid

Indian defence planning on the LAC rested for decades on a comfortable assumption, that any PLA build-up into Tibet would be slow, observable, and would provide India weeks of unambiguous warning. The PLA's infrastructure policy shift prioritises building redundant, high-capacity, all-weather transit corridors precisely to neutralise this assumption. Tibet's highway network grew from about 7,800 km to nearly 12,000 km between 2015 and 2020, the fastest growth of any Chinese province-level region, according to official figures compiled by CSIS's

ChinaPower project, and has been given further impetus through the 14th and now 15th Five-Year Plan periods. Tunnelling itself has become a signature Chinese policy instrument; combined with underground facilities co-located with airbases and missile garrisons, it **reduces both seasonal friction and vulnerability to precision strikes.**

The **strategic arteries** remain the G-219 Xinjiang-Tibet highway and the G-318, both upgraded to all-weather, multi-lane standards, with avalanche-control systems and emergency bypasses. From the G-219, at least eight feeder roads have been made towards the LAC opposite sensitive locations from Daulat Beg Oldie through Galwan to Pangong and Chumar. A second lateral, the **G-695, is under phased development running provocatively close to the LAC through disputed tracts**, offering the PLA an additional forward East-West axis.

The **bridge across Pangong Tso**, built brazenly through India-claimed territory, cuts North-South switching time between the Lake's banks from a day's drive to under an hour, directly **neutralising the manoeuvre logic that**

underpinned India's August 2020 Kailash Range operations.

The **changes in rail policy** are even more consequential. The **Lhasa-Nyingchi line**, operational since 2021, with 47 tunnels, longest being the 17-km Dagala tunnel and some 120 bridges, brings electrified rail within striking distance of the Arunachal Front and carried PLA troops to exercise within weeks of opening. The **gargantuan Sichuan-Tibet railway** from Ya'an to Nyingchi, an engineering undertaking of staggering ambition, with a bridge-tunnel ratio of 94 to 95%, running through tunnels bored beneath some of the most tectonically hostile terrain on earth, continues to advance section by section, with completion projected around the end of the decade. When finished, it will connect the **Chengdu military-industrial heartland to the Eastern LAC in roughly a day's transit**, largely immune to weather and interdiction.

The assessed cumulative effect is that PLA mobilisation windows into key sectors, once measured in half-day blocks, have narrowed to under four hours where the grid is densest and a



Fighter jets and UAVs at Shigatse Airport (credit TheWarZone/Twitter)



Chinese UAV Wing Loong II on static display during the 52nd Paris Air Show at Le Bourget Airport near Paris, France June 20, 2017 (Photo: Pascal Rossignol/CFP)

threatened point can now expect reinforcements at brigade strength within a day or two. Overall, India's **warning-time cushion has shrunk from weeks to days**, arguably in some sectors, to hours.

Dual Use Infrastructure: Weaponising Development

A key pillar of China's border policy shift is the strategic weaponisation of the civilian population through the **construction of "well off" (xiaokang) border villages**. Under a plan issued by the TAR Government, Beijing sanctioned the construction of 628 villages across 112 border townships, resettling, by credible estimates, approximately a quarter of a million Tibetans close to the frontier. Most of these xiaokangs face India's Eastern Sector and the Bhutan-Nepal frontage, raising fears of creeping *salami slicing*.

These villages serve a dual purpose:

- **Legal and Political** – Populating uninhabited, disputed zones with ethnic Tibetans and Han settlers manufactures "*facts on the ground*" and allows Beijing to assert administrative "*effective control*". The logic is to leverage international legal norms regarding settled populations to complicate India's territorial counter-claims.
- **Tactical and Logistical** – Each village is built to rigid military standards, featuring underground ammunition storage, reinforced concrete bunkers, multi-spectral communication towers, secure fibre-

optic connectivity and helipads. Villagers double as the eyes and ears of the border-defence system. In times of crisis, these civilian hamlets transform into forward assembly areas and logistic checkpoints for the PLA Ground Force.

- **Military-civil fusion is the ideological engine of this programme**. Crucially, because these assets are civilian, India would face diplomatic constraints in targeting them during a conflict, giving China a significant coercive advantage.

Permanence In and Behind Buffer Zones: The New Normal

Another critical PLA policy shift is the **establishment of a permanent fortified presence in and behind buffer zones previously considered no man's land**. The buffer zones created between 2020 and 2022 at Galwan, on both banks of Pangong Tso and at Gogra-Hotsprings, supposedly temporary confidence-building measures with a moratorium on patrolling to prevent accidental contact between troops, have morphed into semi-permanent arrangements. Even after the October 2024 Depsang-Demchok agreement, which restored coordinated patrolling at those two legacy points, the situation elsewhere has fundamentally not changed.

The PLA, despite these disengagements, has continued to **establish a permanent military geography just behind these zones**, which includes climate-controlled troop shelters, interlocking trenches and solar-powered supply depots. This permanence doctrine turns temporary buffer arrangements into de-facto containment zones, restricting Indian patrols from accessing areas they had historically patrolled for decades. It allows China to consolidate territory and to achieve deterrence and escalation control, converting a temporary tactical freeze into a permanent territorial gain. **The LAC is now no longer a line but a zone of overlapping claims, with the PLA setting the terms of access and movement.**

Hanisation of Human Terrain: The Ethnic Unity Law

The newest and perhaps the most consequential policy instrument is not military at all. The Law on **Promoting Ethnic Unity and Progress**, passed by the National People's Congress on 12 March 2026 and in force since 1 July 2026, is a basic law of the highest legislative status. It is legal machinery for **changing the human terrain of the LAC, which is Tibetan**. It codifies Xi Jinping's ethnic policy around the

directive to “forge a strong sense of community of the Chinese nation”: mandating Mandarin as the primary language of schools and Government; requiring curricula, and even parenting, to inculcate loyalty to the Party-state; banning loosely defined acts that “undermine ethnic unity”; and, through Article 63, extending jurisdiction to individuals and organisations abroad.

Many international organisations have warned that the law legalises the erasure of minority linguistic, cultural and religious identity, building on a boarding-school system through which an estimated one million Tibetan children have already been separated from family and community.

Taken together with the xiaokang village programme, the law aims first to populate the frontier and then to dissolve the distinct Tibetan identity of its population into a state-defined national identity. The PLA has stepped up the direct recruitment of Tibetan youth into specialised border militias (such as the *Mimang Cheton*), utilising their local knowledge to support forward military units. A Sinicised, surveilled, militia-integrated border population is, from the PLA's perspective, reliable border human terrain. The historical Tibetan cross-border linkages, monastic, linguistic and familial, are being legislated out of existence.

The law also provides fresh legal cover for the toponymic and administrative Hanisation of the area. The standardisation of place names and administrative practices in border areas is already visible in successive rounds of Chinese renaming of localities in Arunachal Pradesh. Assimilation law inside Tibet and cartographic aggression across the LAC are two edges of the same blade, asserting that the

frontier is, and has always been, integrally Chinese.

The law further enables the strategic decapitation of the Tibet issue itself. With the Dalai Lama's succession looming as a flashpoint, it arms Beijing with domestic, and extraterritorial, legal instruments to delegitimise the exiled leadership in India and to criminalise transnational Tibetan advocacy. Since India hosts the exiled Central Tibetan Administration and a Tibetan diaspora of roughly a hundred thousand, Article 63's extraterritorial reach is, in part, aimed at Indian soil. The Tibet question is likely to become sharper, not quieter, in the coming years.

Conclusion

The PLA's policy shifts along the LAC represent a fundamental reordering: a contested line managed by episodic patrolling has become the forward edge of a consolidated strategic zone. That “Zone” now contains acclimatised

combined-arms formations; is covered by missile and hypersonic fires; is serviced by all-weather roads, rail and tunnels; is watched by a saturated unmanned and electromagnetic sensor grid; is anchored by dual-use villages; and is now underwritten by a legal regime designed to remake the very identity of the frontier's population.

India's response to these changes clearly recognises this shift and has been significant. By matching Chinese infrastructure development, overhauling its multi-layered air-defence network and leveraging its natural geographic advantages, it has raised the strategic cost of any potential Chinese miscalculation. The LAC now presents a contested equilibrium between Chinese assertion and Indian denial, a dynamic balance dictated by constant vigilance, rapid infrastructure building, technology and willpower.



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**Lt Gen
Amarjeet Singh Bedi**

BORDER INFRASTRUCTURE FOR CREDIBLE DETERRENCE:

Is India Risking a Fiscal Plateau on Its Strategic Frontiers?

The June 2020 border crisis between India and China highlighted the critical role of logistical readiness in safeguarding territorial integrity and enabling swift mobilisation. Well before this confrontation, Indian strategists had argued that geography favours nations that invest consistently in infrastructure. In contemporary strategy, deterrence is increasingly engineered through infrastructure long before it is tested in crisis. This article argues that infrastructure should be understood not merely as developmental capital but as a foundational instrument of deterrence and reframes frontier connectivity as an enduring component of national security planning. By introducing the idea of the “political economy of deterrence infrastructure,” it highlights how sustained capital investment — rather than episodic surges — shapes long-term strategic advantage.

Infrastructure as the New Currency of Deterrence

In today's evolving battle space, connectivity has shifted from being a peripheral concern to becoming central to defence strategy. Roads, tunnels, bridges, and logistics networks now determine not only how militaries operate but also how states project deterrence. Late Mr K. Subrahmanyam, India's renowned strategist often stressed that national security rests as much on economic and technological strength as on military capability, implicitly recognizing infrastructure as a cornerstone of strategic power.¹

In the aftermath of the 2020 Ladakh border crisis, India accelerated frontier development through the Border Roads Organisation (BRO), signalling a decisive move toward mobility-driven deterrence. General Staff (GS) Roads allocations increased sharply, marking a shift from piecemeal construction to capital formation aligned with defence preparedness. Yet recent budgetary trends suggest moderation. The Financial Year (FY) 2026-27 GS Roads allocation stands at ₹7,394 crores—an increase, but one that points to fiscal consolidation.²



Atal Tunnel (Rohang Tunnel), 07 September, 2022
(credit common.wikimedia.org)

China has sustained large-scale investments across the Tibetan plateau, integrating transportation, energy, and logistics networks in ways that strengthen military reach.³ Infrastructure now anchors Asia's balance of power.⁴ The question is whether India risks slowing momentum before the transformation begun in 2020 fully matures.

Infrastructure and Mobility

The link between infrastructure and military power is not

¹ K. Subrahmanyam, *Shedding Shibboleths: India's Evolving Strategic Outlook* (New Delhi: Wordsmiths, 2005)

² Government of India, Ministry of Finance, Union Budget 2026–27: Budget at a Glance

³ M. Taylor Fravel, *Active Defense: China's Military Strategy Since 1949* (Princeton: Princeton University Press, 2019)

⁴ C. Raja Mohan, *Samudra Manthan: Sino-Indian Rivalry in the Indo-Pacific* (Washington, DC: Carnegie Endowment for International Peace, 2012)

new, but its importance has grown sharply in an age defined by rapid mobilisation and contested borders. Classical military thought has long stressed that the side able to concentrate force faster often shapes battlefield outcomes and crisis dynamics. What is different today is the extent to which infrastructure itself acts as latent deterrent capability rather than serving only as logistical support.

For much of the post-Cold War era, India relied on forward deployment backed by modest improvements in connectivity. This reflected fiscal caution and the belief that large-scale confrontation was unlikely. Yet analysts warned that infrastructure gaps along the Himalayas limited operational flexibility. Brahma Chellaney noted that China's systematic expansion of transport networks across Tibet had altered the strategic geometry of the frontier, enabling rapid mobilisation while leaving India reliant on narrower corridors.⁵

The events of 2020 confirmed these concerns. Strategic mobility—the ability to reinforce sectors, rotate formations, and sustain high-altitude deployments—emerged as central to deterrence. Infrastructure was no longer peripheral; it became integral to the military options available to leadership.

This realisation aligned with India's broader rise in public capital spending, underscoring that economic strength and security are mutually reinforcing. Yet deterrence infrastructure is cumulative: depth, redundancy, and resilience build advantage gradually, often revealed only in crises. **Strategy bridges military means**

and political purpose.⁶ Infrastructure performs this role by turning geography from constraint into operational space. Continuity of financing, not intent alone, will determine whether India sustains deterrence credibility.

Institutional Transformation: Increase in Execution Capacity

Strategic ambition carries weight only when backed by institutional capability. Any evaluation of India's infrastructure trajectory must therefore consider the transformation of the BRO from a construction agency into a central pillar of frontier preparedness.

Created in 1960 to aid border management and regional integration, the BRO long operated under severe geographic and financial constraints. Projects stretched over years, mechanisation was limited, and contracting ecosystems remained weak. Over the past decade, however, its execution capacity has strengthened through administrative reforms, delegated financial powers, and greater

reliance on Engineering, Procurement, and Construction (EPC) models.

This evolution matters beyond efficiency. Reliable execution reflects state capacity, a quality political scientists often link to deterrence credibility. **Great powers are defined not only by military strength but by their ability to mobilize economic resources for sustained strategic ends.**⁷ Infrastructure agencies thus serve as quiet markers of national resolve.

Equally significant is the thrust toward permanent, all-weather connectivity. Tunnels, hardened bridges, and climate-resilient engineering compress response timelines and expand escalation options, reinforcing deterrence stability. By the early 2020s, India's institutional machinery had matured. The challenge now lies not in building, but in sustaining investment to complete the transformation already underway. If institutional capacity defines what a state can build, fiscal



BRO Team on Road Tama Chung Chung (TCC) – Galemo – Maja in Upper Subansiri District, Arunachal Pradesh

⁵ Brahma Chellaney, *Water, Power, and War: Confronting the Global Water Crisis* (Ithaca: Routledge & Littlefield, 2013).

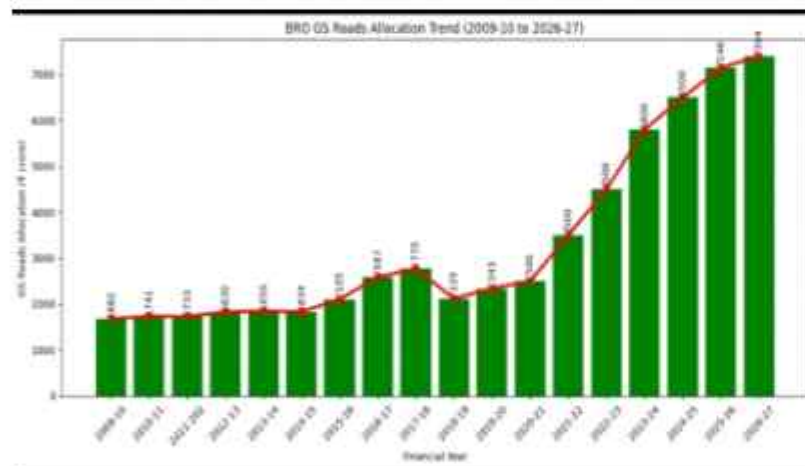
⁶ Colin S. Gray, *Modern Strategy* (Oxford: Oxford University Press, 1999).

⁷ Paul Kennedy, *The Rise and Fall of the Great Powers* (New York: Random House, 1987).

commitment ultimately determines how far that capacity is translated into strategic effect.

Two Decades of Spending: Reading the Fiscal Signal

Public budgets often reveal strategic intent more clearly than official doctrine. A review of GS Roads allocations over the past eighteen years shows that India's deterrence infrastructure has advanced not gradually but through distinct phases shaped by shifting threats and policy priorities. The figure shown below depicts GS Roads Budget allocation for past 18 years.



Fiscal Rise of Infrastructure-Led Deterrence GS Roads Allocation (2009–2026)

- **Strategic Stagnation (2009-2014).** This phase reflected strategic stagnation, with allocations largely flat. Infrastructure was not yet embedded within defence planning, and deterrence relied mainly on troop presence.
- **Gradual Awakening (2015-2019).** A second phase in the mid-2010s signalled growing awareness of mobility gaps. Funding rose unevenly, suggesting recognition without structural commitment. Yet strategic infrastructure rarely thrives on episodic financing; depth requires steady capital flows.
- **Crisis Driven Acceleration (2020-2023).** The decisive break came in 2020. The border crisis triggered what defence economists call catch-up investment - rapid capital expansion to close capability gaps revealed during the Galwan confrontation. Allocations nearly tripled, marking India's shift from incremental construction to deterrence-oriented capital formation. As Ashley Tellis noted, logistical readiness had become inseparable from credible military posture along the Himalayan frontier.⁸
- **From Acceleration to Consolidation (Post 2024).** A fourth phase now demands scrutiny. Since FY 2024–25, growth has moderated.

Normalization is routine, yet timing matters. Infrastructure advantage builds through continuity; slowing investment before networks mature risks leaving transformation incomplete. India has entered the era of infrastructure-led deterrence, but enduring capability depends on sustained capital commitment. Whether consolidation represents maturation or premature normalisation remains the central strategic question.

2020 and the Doctrinal Reorientation of Indian Deterrence

Strategic shocks often condense years of doctrinal evolution into moments of clarity. For India, the 2020 border crisis did exactly that, exposing the costs of infrastructure asymmetry and forcing a reassessment of how deterrence must be built along contested frontiers. Before this episode, India relied largely on positional deterrence - visible troop presence intended to signal resolve. While psychologically potent, such deployments depend on the logistical networks that sustain them. The crisis revealed that density without mobility risks creating a posture that looks strong but remains operationally fragile.

The policy response went beyond temporary alarm. Road construction accelerated, bridges multiplied, and all-weather connectivity became central to defence planning. These measures reflected John Mearsheimer's enduring logic of conventional deterrence: denying adversaries rapid gains depends on how quickly defenders can marshal combat power.⁹ Mobility, in this sense, is deterrence in motion.

⁸ Ashley J. Tellis, "Hustling in the Himalayas: The Sino-Indian Border Confrontation," *Carnegie Endowment for International Peace*, 2020

⁹ John J. Mearsheimer, *Conventional Deterrence* (Ithaca: Cornell University Press, 1983)

Indian thinkers had long gestured toward this link. K. Subrahmanyam emphasized that national security rests on mobilizing resources effectively, tying infrastructure to readiness.¹⁰ The post-2020 surge was thus less a departure than a delayed realization.

*Doctrine evolves from material capabilities as much as threats.*¹¹ Ultimately, 2020 embedded mobility into India's deterrence logic. Yet credibility now hinges not on conceptual acceptance but on sustained fiscal execution.

The Emerging Fiscal Plateau: Consolidation or Strategic Risk?

The moderation in GS Roads allocations after FY 2024–25 presents a complex puzzle. On the surface, absolute spending continues to rise, suggesting stability rather than retrenchment. Yet the slowing growth rate points to fiscal normalization after a period of accelerated investment. Such consolidation is neither unusual nor inherently unwise. Public finance must balance strategic expenditure with macroeconomic stability, and governments often pause after capital surges to assess execution and absorption capacity. Defence economists have long argued that

sustainable capability depends less on dramatic spikes than on predictable flows aligned with long-term planning.¹²

Infrastructure, however, is a distinctive category of strategic spending. Its value is cumulative: roads, tunnels, and logistics hubs generate advantage through density and redundancy, attributes that cannot be improvised during crises. *Military advantage often accrues to states sustaining preparatory investments in peacetime rather than those reacting only to immediate threats.*¹³

Normalization thus carries strategic weight. India has narrowed mobility gaps since 2020, yet parity remains elusive as competitors expand networks and dual-use facilities. Importantly, institutional capacity has strengthened. When execution improves but funding growth moderates, the constraint shifts from administration to strategy – risking deferred deterrence. The challenge lies not in justification, but in timing.

Understanding the China Contrast

Infrastructure gains strategic meaning most clearly when viewed

comparatively. For India, the issue is not simply whether frontier connectivity has improved, but whether its pace matches the evolving capabilities of its principal continental competitor.

For more than two decades, China has treated infrastructure on the Tibetan plateau as integral to military preparedness. Highways, rail corridors, airfields, and logistics hubs have steadily reduced the friction of altitude and distance, enabling rapid force concentration across sectors. M. Taylor Fravel notes that such networks enhance operational flexibility while strengthening Beijing's ability to signal coercion short of open conflict.¹⁴

What sets China apart is not just the scale of projects but the continuity of investment. Guided by long-horizon planning, expansion has advanced with consistency. *This persistence reflects a strategic culture that sees connectivity as both economic and geopolitical.*¹⁵

India's post-2020 surge corrected earlier asymmetries, yet recent moderation creates contrast: China

¹⁰ K. Subrahmanyam, *India's National Security: Annual Review 1988* (New Delhi: Lancer, 1988)

¹¹ Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars* (Ithaca: Cornell University Press, 1984)

¹² Keith Hartley, *The Economics of Defence Policy: A New Perspective* (London: Routledge, 2011)

¹³ Andrew F. Krepinevich Jr., *7 Deadly Scenarios: A Military Futurist Explores War in the 21st Century* (New York: Bantam Books, 2009)

¹⁴ M. Taylor Fravel, *Active Defense: China's Military Strategy Since 1949*

¹⁵ Nadege Rolland, *China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative* (Seattle: National Bureau of Asian Research, 2017)



Zojila Pass - Connectivity across the Pass to Ladakh has improved vastly

sustains momentum, while India edges toward normalization. Infrastructure advantage, however, compounds through steady capital flows. *Long-term competition is often decided by enduring investment rather than episodic strength.*¹⁶ For India, the imperative is continuity—interruptions risk reopening structural gaps. Continuity signals resolve.

The Geography of Vulnerability

Strategy ultimately unfolds across terrain. Budgets and doctrine acquire meaning only when mapped onto geography—mountains that restrict manoeuvre, valleys that channel movement, and rivers that need bridges to shape projection. India's frontier landscape is uniquely demanding, and the consequences of slowing infrastructure expansion differ sharply across sectors.

In the **Middle Sector**, the need for lateral connectivity remains critical. Historically, India's infrastructure emphasis has centred on North–South axes leading to the Line of Actual Control (LAC). While vital for forward deployment, this alignment limits flexibility if East–West routes remain underdeveloped. Military geographers stress that lateral corridors allow rapid redistribution of forces without rearward manoeuvres—a decisive capability in fast-moving crises.¹⁷ Plateauing investment before such redundancy is achieved risks embedding rigidity into India's defensive posture.

Further East, **Sikkim** highlights resilience over reach. Fragile mountain ecology, steep gradients, and rising climatic volatility make networks vulnerable to disruption. Infrastructure here must be engineered for

survivability, not just access. Security scholarship increasingly views climate resilience as integral to readiness, especially in high-altitude theatres where environmental shocks can degrade logistics as effectively as adversaries.¹⁸ Sustained capital is essential to ensure dependable connectivity under stress.

Arunachal Pradesh underscores infrastructure depth. Sparse networks lengthen mobilization timelines, shaping escalation dynamics. John Mearsheimer notes that rapid reinforcement strengthens bargaining leverage by complicating adversary calculations.¹⁹ Shortfalls, by contrast, narrow options when flexibility is most vital.

Beyond the Himalayas, the maritime domain is equally consequential. BRO has got a Task Force working at a consistent pace upgrading the critical infrastructure in Andaman and Nicobar Islands. Investments in jetties, airfields, and logistics extend surveillance and distributed posture. *Island infrastructure amplifies deterrence by enhancing presence without permanent concentration.*²⁰

Together, these sectors reveal that infrastructure gaps are uneven—some affect speed, others resilience, yet others reach. Fiscal plateauing thus carries differentiated risks. The real question is whether investment sequencing matches strategic geography. Infrastructure-led deterrence must therefore be guided by cartographic logic as much as by fiscal arithmetic. Plateauing too early risks freezing the map midway through transformation.

Avoiding the Normalisation Trap

If the post-2020 surge marked a strategic correction, the emerging plateau presents a subtler challenge: how to consolidate gains without letting normalization erode momentum. Capability development unfolds across long investment cycles, and once disrupted, these cycles are costly to rebuild.²¹ Policymakers must therefore look beyond annual allocations and align infrastructure financing with the extended horizon demanded by mobility-centric deterrence.

- **Non-lapsable Frontier Infrastructure Fund.** Frontier infrastructure requires a multi-year funding architecture insulated from annual volatility. Projects such as tunnels and strategic highways span several fiscal cycles, making year-to-year fluctuations inefficient. A non-lapsable frontier infrastructure framework could signal durable political commitment while shielding critical projects from short-term pressures.
- **Capital Prioritisation.** Capital Prioritisation must shift from linear expansion to network depth. Early phases rightly emphasised reaching forward areas, but the next stage must focus on redundancy—lateral connectors, alternative axes, and climate-resilient engineering—ensuring mobility even under disruption. Deterrence rests not only on access but on reliability.

¹⁶ Hal Brands, *The Twilight Struggle: What the Cold War Teaches Us about Great-Power Rivalry Today* (New Haven: Yale University Press, 2022).

¹⁷ Colin S. Gray, *Modern Strategy*.

¹⁸ Caitlin Talmudge, "The Impact of Climate Change on Military Operations," *Parameters* 51, no. 2 (2021).

¹⁹ John J. Mearsheimer, *Conventional Deterrence*.

²⁰ David Brewster, *India and China at Sea: Competition for Naval Dominance in the Indian Ocean* (New Delhi: Oxford University Press, 2018).

²¹ Keith Hartley, "The Economics of Defence Policy Revisited," *Defence and Peace Economics* 25, no. 6 (2014).

- **Differentiated Budgeting.** High-capital assets like tunnels demand differentiated budgeting. Their expenditure profiles are non-linear, with concentrated outlays during peak phases. Treating them under conventional ceilings risks artificial slowdowns that delay capability formation.
- **Unified Budget Planning.** Continental and maritime planning must be integrated into a single deterrence ecosystem. The Andaman and Nicobar Command illustrates how island infrastructure extends surveillance reach and supports distributed posture across the Indo-Pacific. Unified planning reduces theatre-specific imbalances.
- **Sequencing and Scale.** Sequencing matters as much as scale. Strategic cartography, not administrative convenience, should guide allocation. Gaps constraining flexibility must precede projects aimed at expanding capacity.

Underlying these recommendations is a principle: normalisation must not outpace transformation. Fiscal prudence is vital, but in strategy it means sustaining investment until vulnerabilities are reduced. *Long-term competition rewards states that maintain preparatory momentum even after crises fade.*²² Avoiding the normalisation trap requires treating frontier connectivity as a continuing strategic commitment. **History suggests that infrastructure corrections undertaken after crises are invariably more costly than those sustained through anticipatory investment. Maintaining double digit annual**



Siyom bridge in Arunachal Pradesh is the first signature arch bridge made by BRO

growth in GS Roads allocations would help ensure that India's deterrence posture evolves by design rather than by compulsion. India now stands closer than ever to embedding infrastructure within deterrence.

Conclusion - Deterrence Cannot Be Episodic

India's evolving border infrastructure reflects more than development; it marks a transformation in strategic thinking. Connectivity has shifted from the margins of defence planning to its operational core, shaping how the state prepares for crises and how it seeks to deter. The surge in spending after 2020 represented a doctrinal awakening — recognition that mobility underpins military credibility. Infrastructure, in this sense, is deterrence

made durable: latent power that influences adversaries without requiring immediate deployment.

The current fiscal plateau invites reflection rather than alarm. Consolidation is natural in public finance, yet the strategic concern is whether normalisation is arriving before the transformation it seeks to stabilize has fully matured. Infrastructure asymmetries close not through single bursts of investment but through sustained capital discipline over time.

Great-power competition is often decided less by dramatic surges than by steady persistence. Continuity signals resolve, reassures partners, and gradually expands strategic options. Interruptions, by contrast, risk slowing capability formation precisely when momentum yields disproportionate advantage.



Lieutenant General Rajeev Chaudhry, VSM (Retd) served as Director General of the Border Roads Organisation, where he led one of the most accelerated phases of strategic infrastructure development from end 2020 to end 2023. With over four decades of military service, he brings practitioner insight into the intersection of logistics, mobility, and deterrence. He writes on contemporary national and international issues, strategic implications of infrastructure development towards national power, geo-moral dimension of international relations and leadership nuances in changing social construct.



**Lieutenant General
Rajeev Chaudhry**

²² Michael Beckley, *Unrivaled: Why America Will Remain the World's Sole Superpower* (Ithaca: Cornell University Press, 2018)

THE CHANGING NATURE OF MILITARY PREPAREDNESS

INDIA'S TRANSITION FROM TECHNOLOGICAL CAPABILITY TO INDUSTRIAL READINESS

Industrial preparedness has become an integral component of deterrence itself. A nation that can rapidly replenish combat losses, adapt production to emerging operational needs and sustain capability over prolonged periods is less vulnerable to coercion and better positioned to shape strategic outcomes. Industrial strength is no longer merely an economic asset; it is a critical element of national security. Military power, ultimately, depends not only on the sophistication of weapons but on the industrial capacity to manufacture and replenish them; in modern warfare, industrial readiness has become an integral element of military preparedness.

What ultimately decides the outcome of a modern war—the high-tech weapon used in the opening strike, or the assembly line that keeps replacing it? Recent conflicts around the world have brought this question back to the centre of strategic thinking. Military power can no longer be measured simply by counting ships, aircraft, or missile stockpiles; a nation has on day one. Readiness now hinges as much on industrial endurance as on technological edge.

This shift reveals a deeper reality about modern warfare. Advanced and evolving software, autonomous drones, and precision strikes have changed how armies fight, but they have also transformed the industries needed to back them up. Modern weapon systems depend on specialised material, advanced electronics and resilient supply chains. *A scientific breakthrough might capture the initial headlines, but only a strong, resilient manufacturing base can turn innovation into lasting military capability.*

The ongoing Russia-Ukraine conflict has reinforced this reality. As the war extended beyond initial expectations, both sides discovered that the defining challenge was no longer simply the availability of advanced weapon systems, but the ability to replenish losses, expand production and sustain operations. Russia placed its defence industry on a war footing,



European missile manufacturer MBDA unveiled the Deluge turbojet powered loitering munition at the Eurosatory 2026 defence exhibition in Paris, June 2026 (credit mbda-systems.com)

while Ukraine rapidly mobilised a distributed production network built around private industry, technological innovation and international partnerships. **Their approaches differed, but the lesson was the same: military endurance depends as much on industrial resilience as on operational skill.**

At Eurosatory 2026, the world's leading defence and security show, discussions on industrial resilience, production capacity and wartime manufacturing reflected a broader shift in strategic thinking: defence planners are no longer only asking what systems nations can develop, but how rapidly they can manufacture, replenish and adapt them during a prolonged conflict. **History offers us a consistent lesson - nations rarely lose wars because they stop innovating; more often, they lose because they cannot sustain the industrial stamina that war demands.** Peacetime stockpiles are sized for peacetime assumptions; a high-intensity front burns through drones, artillery shells and even

electronics at a rate no standing inventory is built to absorb. Ukraine's drone losses have often run into thousands per month - a number no pre-war stockpile anywhere could have anticipated, and one that made continued operations possible because production itself became a wartime activity, not a pre-war routine.

These are not theoretical warnings; they are lessons learned at a steep price in India's own recent history. During **Operation Parakram** in 2001, when the Indian Armed Forces mobilised to the borders following the Parliament terror attack, the military faced a harsh reality. The surge exposed critical gaps in equipment and ammunition reserves. Rushing forces to the front line means little if the industrial engine behind them is not geared to sustain a high-tempo conflict.

A decade later, these concerns resurfaced in stark terms. In March 2012, a confidential letter from the then Chief of Army Staff to the Prime Minister entered the public domain, highlighting critical deficiencies in ammunition holdings and operational preparedness - underscoring the consequences of prolonged procurement delays and inadequate industrial responsiveness.

India has reached a significant point in this evolution. Over the past two decades, it has shown growing competence in developing advanced military technologies across multiple domains, from strategic missiles and long-range rocket systems to complex warships, defence electronics and advanced aerospace programmes. The next challenge, however, is no longer technological - it is industrial: to create the manufacturing depth, production resilience and institutional partnerships required for converting technological capability into sustained military readiness.

This transition demands more than expanding production capacity. It calls for

an integrated national enterprise in which research institutions, public-sector undertakings, private industry, start-ups, Micro, Small and Medium Enterprises (MSMEs) and academia function as complementary partners. **Industrial readiness cannot be improvised after a crisis begins; it is built patiently in peace and tested in war.**

India's defence modernisation is therefore entering a new phase. The defining challenge is no longer confined to developing sophisticated technologies, but to building the industrial readiness needed to manufacture them at scale, upgrade them continuously and sustain them throughout their operational life.

Technology Wins Battles, Industry Sustains Wars

For much of the modern era, technological superiority has been regarded as the principal determinant of military advantage. Better aircraft, longer-range missiles and smart munitions were expected to deliver decisive outcomes. While technology remains indispensable, recent conflicts

have exposed a critical limitation in this assumption: military advantage depends not only on what a nation can develop, but on what it can continue to produce, replenish and improve once operations are underway.

Advanced military systems are far more demanding to manufacture than to demonstrate. Sustaining sophisticated capabilities requires specialised production facilities, secure supply chains, precision engineering, rigorous quality assurance and a highly skilled workforce. Today's weapon systems integrate electronics, software, advanced materials and propulsion technologies into highly complex systems. A disruption in any critical component can delay production, affect readiness and constrain operational flexibility. Production lines, maintenance facilities, repair ecosystems and logistics networks become as strategically significant as frontline formations.

Military success depends not only on battlefield skill but on the ability to sustain combat through continuous



LESSONS FROM CONTEMPORARY CONFLICTS: INDUSTRIAL READINESS AS COMBAT POWER.			
CONFLICT OBSERVATION	RUSSIA	UKRAINE	STRATEGIC LESSON
PRODUCTION • Scale, agility, output	Expanded wartime production Nationalisation of key sectors, scaling up existing manufacturing outputs	Built distributed manufacturing Decentralised production hubs, small-scale manufacturing	Industrial mobilisation determines endurance Sustaining high-tempo operations requires scalable production
INNOVATION • Technological edge, adaptation speed	Improved missile and drone production Development of new capabilities, mass production of low-cost systems	Rapid drone innovation Tech integration from civilian and commercial partners, leveraging open-source software	Adaptation must continue during conflict Continued technological development is essential for maintaining superiority
SUPPLY CHAINS • Diversification, securing flows	Domestic restructuring Strategic localisation, reducing over-reliance through new partners	International industrial partnerships Strategic alliances with Western manufacturers, component sourcing	Supply-chain resilience is critical Securing diverse and secure flows is as important as fostering strength
SUSTAINMENT • Regenerating forces, field support	Continuous replenishment Large stockpiles, constant manufacturing flows for replacements	Rapid repair and replacement Agile maintenance close to the front lines, utilising a distributed facilities	Readiness depends upon regeneration capability The ability to repair, replace, and restore forces quickly is a critical power multiplier

strategic autonomy by reducing dependence on external suppliers. The relationship between research laboratories and production facilities is becoming as significant as the relationship between scientists and soldiers. *The debate today is no longer confined to what should be acquired; it has expanded to a more fundamental question: can a nation sustain the capabilities on which its military strategy depends?*

Lessons from Mature Defence Industrial Ecosystems

The world's leading military powers offer valuable lessons in building industrial resilience. Although their institutional models differ, they share several defining characteristics. The United States sustains

production. During the later stages of the Second World War, Germany continued to field technologically advanced tanks, aircraft and weapon systems, yet its warfighting capability steadily declined as Allied bombing, fuel and raw-material shortages, and the collapse of industrial production prevented it from replacing losses at the pace the battlefield demanded. *During the 1999 Kargil conflict, Indian artillery fired roughly a quarter of a million rounds in less than three months, illustrating the extraordinary rate at which modern conflicts consume ammunition.* The unexpected demand for 155 mm Bofors ammunition compelled India to resort to emergency overseas procurement to sustain operations. While India achieved a decisive military victory, the conflict also exposed a critical vulnerability: the risks of depending on limited domestic production and external suppliers during war.

This reality has changed the economics of defence manufacturing. Establishing advanced production facilities demands sustained investment in specialised tooling, testing infrastructure, digital engineering and workforce development - investments that require long-term confidence and a predictable procurement environment.

The implications extend even beyond manufacturing. Industrial capability shortens the time between innovation and operational deployment, accelerates technology absorption and strengthens

multiple competing manufacturers through long-term procurement, consistent defence investment, and large scale defence exports, thus preserving production capacity even in peacetime. France has retained sovereign capabilities across critical defence sectors, enabling it to design, manufacture and support complex military systems with minimal external dependence. Israel's close integration of the Armed Forces, industry, academia and start-ups enables operational lessons to be rapidly translated into technological innovation and production. China has integrated military requirements with national industrial policy, civil manufacturing capacity and technological development to create a defence-industrial base capable of sustained mobilisation.

Despite their different approaches, these nations recognise a common reality: industrial resilience cannot be improvised in war. It is built through sustained investment, resilient supply chains, technological innovation and close collaboration between government, industry and academia. Industrial capacity is treated as an enduring strategic asset rather than merely a manufacturing function. India has demonstrated impressive technological progress across multiple domains; the next phase lies in creating the industrial depth needed to sustain these capabilities over prolonged periods of competition and conflict.

Building Our Industrial Readiness

Traditionally, India's defence-industrial base was built around a model wherein a small number of large public-sector units produced at a fixed, planned rate. That works for peacetime budgeting. It however, does not survive a war of attrition. Closing this gap means qualifying multiple smaller private manufacturers for the same components in advance - so capacity already exists to scale the moment it's needed,

rather than being contracted for after the losses start. The need is to stockpile depth itself as a strategic metric, alongside satellites and software. **A force that can out-innovate the adversary but cannot out-produce its own combat losses will still lose the war of attrition.**

As military technologies become more complex and innovation cycles accelerate, it is clear that future growth will require a broader industrial ecosystem. Today, established private companies, MSMEs, start-ups, academia and research institutions complement public-sector expertise, creating a more diverse and technologically capable manufacturing base.

The government has also played the role of enabler in this transition. Measures such as the **corporatisation of the former Ordnance Factory Board, Defence Industrial Corridors, iDEX, Positive Indigenisation Lists, higher FDI limits, export promotion** and evolving procurement frameworks are best understood not as isolated policy initiatives but as components of a larger strategic effort to strengthen industrial capacity.

The results are now becoming visible across multiple domains. The **BrahMos** programme has evolved beyond a successful missile into an integrated production enterprise involving research institutions, public-sector organisations and private industry, while establishing India's credibility in the export market. Its success also demonstrates that India can sustain serial production while meeting demanding quality and reliability standards. The **Pinaka Rocket System** demonstrates a similar evolution, with indigenous design now supported by distributed manufacturing, continuous technological improvement and scalable production.

India's progress is equally evident in complex Naval platform development. The

Indigenous Aircraft Carrier, Project 15B destroyers, Project 17A frigates and Scorpene-class submarines demonstrate the ability to integrate thousands of components through an extensive national supplier network. The strategic achievement extends beyond individual platforms; it lies in the industrial ecosystem capable of designing, manufacturing and supporting some of the world's most complex engineering systems.

The same trajectory is emerging in aerospace. The **Advanced Medium Combat Aircraft (AMCA)** programme seeks not merely to develop a fifth-generation fighter but to create an indigenous aerospace manufacturing ecosystem involving Defence Research and Development Organisation, Aeronautical Development Agency, Hindustan Aeronautics Ltd and private industry. Together with India's growing capabilities in defence electronics, radars, electronic warfare and mission systems, it reflects a broader transition from programme-based success to ecosystem-based capability supported by an expanding private sector.

Viewed individually, these programmes represent notable technological achievements. Seen collectively, they reveal something more significant: India is steadily creating the industrial foundations necessary to sustain military capability across land, maritime, aerospace and strategic domains. The transition remains incomplete, but its direction is unmistakable.

Recent government decisions to adopt a competitive, private-sector-led execution model for the AMCA programme mark a significant departure from the traditional approach of relying on a single public-sector integrator. It

reflects a broader strategic objective - to expand national aerospace manufacturing capacity, foster competition, leverage specialised industrial capabilities and build multiple centres of technological excellence.

While public-sector organisations will continue to play a critical role in India's defence ecosystem, future military preparedness will increasingly depend on an integrated industrial architecture in which government, industry, start-ups, academia and research institutions function as complementary partners. The strength of a nation's defence industry lies not in the dominance of any single organisation, but in the collective capacity of the entire ecosystem to innovate, scale production and sustain military capability during prolonged crises.

To achieve true industrial resilience, India must look beyond simply assembling weapons locally and focus on securing the entire foundation of its defence manufacturing. First, this requires **deep-technology self-reliance** - developing domestic capabilities in critical components like specialised semiconductor chips, advanced electronics and aerospace metallurgy, so that global supply disruptions cannot stall factory floors. Second, India needs to overhaul its **procurement pipelines, turning slow bureaucratic processes into agile partnerships** that give private defence start-ups and smaller enterprises the long-term financial confidence to scale up production quickly during a crisis. Finally, the country must **protect its supply chains by stockpiling rare earth materials and creating highly localised component networks**. Strategic depth is ultimately achieved

VISIBLE MILITARY CAPABILITY



EVERY ROCKET FIRED IS THE FINAL PRODUCT OF RESEARCH, ENGINEERING, MANUFACTURING AND INDUSTRIAL RESILIENCE.

them, and the institutions that bring all these elements together. **Military power is displayed by Armed Forces. It is sustained by industry.**

"Self-reliance in defence is not just a matter of production or economy for us, it is first and foremost a matter of our strategic autonomy and is directly linked to our sovereignty... It's about the self-confidence that the weapons our Armed Forces use are made on our own soil, created with the talent of our own scientists and engineers."

- Shri Rajnath Singh, Raksha Mantri



when a nation does not just own the blueprints for its weapons, but commands every link in the industrial chain that builds them.

India's **National Critical Mineral Mission**, alongside sourcing partnerships with Australia, Japan and other resource-rich nations, is an early response to this vulnerability. Strategic reserves, domestic refining capacity and multiple qualified suppliers strengthen resilience upstream of the factory floor - without which even an advanced manufacturing base risks being constrained by access rather than capacity.

End Note

Military history is often written around battles, campaigns and exceptional weapon systems. Yet the enduring foundations of military power have always been less visible. Behind every successful campaign lies a network of scientists, engineers, production facilities, suppliers and skilled workers whose contribution rarely attracts public attention but often determines strategic outcomes.

The changing nature of military readiness therefore calls for a broader understanding of national power. Soldiers, ships, aircraft and missiles will remain the visible symbols of military strength; their combat effectiveness, however, will depend on something far less visible - the factories that build them, the supply chains that sustain them, the engineers who improve

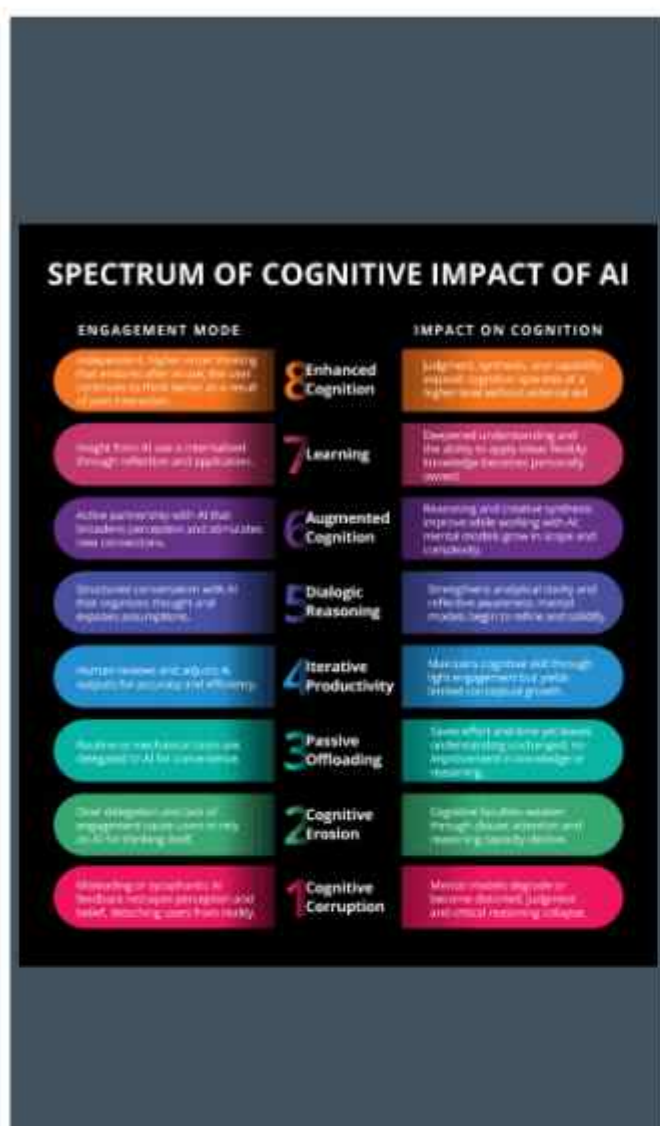
Lieutenant General Tarun Chawla, PVSM, AVSM (Retd) was commissioned into 8 Field Regiment in June 1984, a unit he subsequently commanded. His extensive operational experience encompasses the command of a Medium Regiment in the Western Sector, an Artillery Brigade along the Line of Control in Jammu & Kashmir, and an Artillery Division.

He has also served as the Director General Financial Planning and, later, Director General Artillery. His military service extends globally, having served as a United Nations Military Observer in Liberia, West Africa.

Demonstrating visionary leadership, he pioneered the establishment of the Army Design Bureau. He has been an instructor at both the College of Defence Management and the School of Artillery. Post retirement, he is associated with various Defence Think Tanks and Educational Institutions. He is a prolific communicator, speaking and writing extensively on issues related to Firepower, Defence Technology and Defence Procurement.



**Lt Gen
Tarun Chawla**



(Credit humansplus AI)

The strategic importance of digital platforms in contemporary environment was illustrated in late July and early August 2026, when the Government of India raised concerns over Meta's content governance following the temporary removal of a video posted by Prime Minister Narendra Modi and reports of child sexual abuse material (CSAM), deepfake content and other moderation failures on its platforms. The episode underscored how major social media platforms have emerged as strategic components of the information environment. The algorithms, recommendation systems and content governance policies of these platforms can influence public trust, shape perceptions and affect national security.¹ This has elevated the cognitive domain, encompassing perception, reasoning, judgement, emotions, and beliefs, to a strategic frontier alongside the physical, cyber, and information domains, as all political, military, and societal decisions originate within it.²

COGNITIVE DOMAIN

NEW FRONTIER OF MODERN WARFARE

Contemporary conflicts are increasingly fought through information, narratives, algorithms, and influence rather than military force alone. While traditional power was rooted in territory, military strength, and industrial infrastructure, strategic advantage now increasingly depends on Artificial Intelligence (AI), data, digital platforms, and information networks that shape public opinion and decision-making. As these technologies become critical national infrastructure, states must safeguard cognitive sovereignty by investing in domestic AI capabilities, digital infrastructure, and governance while reducing dependence on foreign-controlled platforms. Consequently, the objective of modern warfare has shifted from the destruction of an adversary's capabilities to shaping perceptions, influencing decisions, and eroding public trust.

Information warfare shapes the information environment by controlling narratives, spreading disinformation and manipulating digital ecosystems. Psychological operations (PSYOPS) influence emotions, attitudes and behaviour through carefully designed communication and persuasion.³ At the most personalised level, techniques such as military honey traps exploit individual vulnerabilities to obtain intelligence, recruit assets or influence decision-making. Together, these instruments constitute the practical architecture of cognitive warfare.

¹ Aditi Tandon and Rinku Behera, "Zuckerberg Says Sorry for Meta Removing Modi Video, Hosting Child Abuse Content," *The Tribune*, August 5, 2026.

² Pavithran Rajan, "Cognitive Sovereignty and the Strategic Geography of the Algorithmic Age," *Substack*, May 12, 2026, <https://pavithranrajan.substack.com/p/cognitive-sovereignty-and-the-strategic>.

³ Bonnie Rushing, William Hersch, and Shouhuai Xu, "Defining Cognitive Warfare: AND/AA Mandate Response," *Small Wars Journal*, May 5, 2026, <https://smallwarsjournal.com/2026/05/05/defining-cognitive-warfare/>.



Chairman of the Joint Chiefs of Staff General Dan Caine conducts a press briefing on Operation Epic Fury at the Pentagon, March 10, 2026. (DOW Photo by Chief Mass Communication Specialist James Mullen)

Within this emerging battlespace, information warfare, psychological operations and targeted human exploitation, though often discussed independently, represent different levels of the same strategic enterprise. Even though military power remains indispensable, strategic advantage increasingly depends upon the ability to shape how individuals, institutions and societies perceive reality and make decisions. Understanding the relationship between information warfare, psychological operations and human exploitation is imperative for comprehending the character of contemporary conflict.

Cognitive Domain as a Centre of Gravity

Traditionally, the Centre of Gravity in warfare was military power, industrial might or political leadership. Today, many military thinkers view society and the human mind as both the target and terrain of conflict. Cognitive warfare seeks to shape perceptions, decisions and behaviour rather than merely destroying physical assets. It integrates information warfare and psychological operations to achieve lasting cognitive effects, often without targets recognising this manipulation. Advances in social media, AI, recommendation algorithms and behavioural analytics have made influence operations swift, cheaper and precise, enabling both state and non-state actors to exploit societal divisions, spread disinformation and erode trust in institutions. Resultantly, cognitive

warfare increasingly undermines social cohesion and weakens democratic resilience without the use of conventional military force. National security therefore depends not only on military strength but also on cognitive resilience, which is the ability of citizens to recognise manipulation, critically evaluate information and make informed decisions.

Weaponizing the Information Domain

Information has always been a tool of warfare, but technology has vastly amplified its speed, scale, and precision. Information warfare uses disinformation to shape perceptions, sow confusion and erode trust. Unlike misinformation, disinformation is deliberate and exploits human biases and emotions. The proliferation of social media, AI-generated deepfakes, synthetic media and bot networks has made influence operations cheaper, more convincing and increasingly difficult to detect.

Information warfare becomes particularly significant during military crises, when public perception can influence diplomatic, political and operational decision-making. The Galwan Valley clash of 15 June 2020 illustrates this dynamic. Following the confrontation, conflicting narratives regarding casualties, troop deployments and the prospects of further escalation circulated widely across traditional and social media. Subsequent unverified reports of Chinese troop movements in Arunachal Pradesh further fuelled public anxiety, intensified media speculation and increased pressure on political leaders to respond amid uncertainty.⁴ These developments demonstrated how modern military confrontations are increasingly accompanied by cognitive competition, in which shaping perceptions and strategic narratives become as important as events on the battlefield.

The information environment through **Operation Sindoor** (7–10 May 2025) illustrated how modern military operations are fought simultaneously in the physical and cognitive domains. Even as India conducted precision strikes against terrorist infrastructure, social media platforms were flooded with AI-generated images, recycled combat footage and unverified claims regarding aircraft losses, missile strikes and battlefield outcomes.⁵ Competing narratives sought to influence domestic morale, international opinion and perceptions of military

⁴ <https://www.indiatoday.in/india/story/3-separate-brawls-outside-chinese-troops-more-most-detailed-account-of-the-brutal-june-15-galwan-battle-1691185-2020-06-21>

⁵ <https://www.orfonline.org/research/post-op-sindoor-a-battle-for-narrative-dominance>

effectiveness before official information became available. The episode demonstrated that in the contemporary information domain, shaping perceptions and strategic narratives can be as consequential as demonstrating military capability.

The Israel – Iran conflict in June 2025 again established that modern warfare extends beyond the battlefield into the cognitive domain. Alongside military operations, both sides undertook coordinated information campaigns, cyber activities and leveraged social media to shape public perception and morale. AI-generated images, fake videos, old footages, and questionable claims spread rapidly, turning the information environment into a contested battlespace. The conflict highlighted that contemporary military success depends not only on battlefield outcomes but also on controlling the narrative⁶.

Psychological Operations – From Narrative to Behaviour

The objective of psychological operations is to shape how people interpret events and respond. By fostering emotional narratives and competing realities, they erode trust in institutions, increase polarisation and influence behaviour, making them a key component of cognitive warfare. Traditionally, psychological operations used propaganda, rumours, leaflets and radio broadcasts to shape human behaviour by influencing perceptions, attitudes and decisions. Rather

than relying on information alone, they exploit emotion, identity, trust and cognitive biases to achieve strategic objectives. Today, digital technologies, AI, behavioural science and social media analytics enable highly targeted, personalised and data-driven influence campaigns with far greater precision.

Unlike traditional propaganda, which delivers a single message to a broad audience, modern psychological operations use micro-targeting to tailor narratives for specific groups based on their beliefs, fears and aspirations. Rather than attempting to create new beliefs, these campaigns reinforce existing biases, amplify emotions and deepen social divisions. Influence campaigns exploit powerful psychological drivers such as fear, uncertainty, anger, identity and belonging. By amplifying political, ethnic, religious and regional divisions, adversaries can weaken social cohesion and complicate government decision-making without resorting to conventional military conflict.

Honey Trap - Personalised Cognitive Warfare

While information warfare and psychological operations primarily target populations, intelligence services apply the same principles at the individual level through personalised influence techniques such as honey traps. The modern day honey trap is a form of cognitive warfare which manipulates a person's psychology to influence strategic decisions. Military honey traps are personalised HUMINT operations that use trust and not romance as the primary tool to gather intelligence, exert influence, and recruit targets. Although popular culture emphasizes seduction, modern intelligence agencies rely on behavioural psychology and relationship-building rather than physical attraction alone.

The process starts with careful target selection. Intelligence services identify individuals with access to sensitive information and assess vulnerabilities such as loneliness, ambition, financial stress, ideological beliefs or a desire for recognition. They then establish seemingly legitimate contact through professional networks, social media, conferences or messaging apps. By building trust through shared interests, empathy and support, the relationship gradually deepens, creating opportunities for long-term exploitation. Before requesting for classified information, operatives first normalize small, seemingly harmless disclosures to build willing compliance. As the relationship deepens, requests become increasingly sensitive, gradually transforming an ordinary acquaintance into a source for intelligence collection, influence, or recruitment.⁷

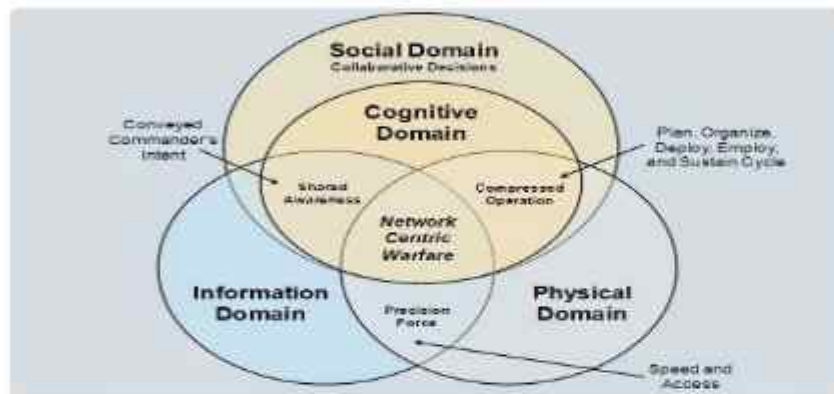
The effectiveness of such operations lie in their subtlety. Unlike coercive espionage techniques, honey traps encourage voluntary cooperation. Targets often believe they are helping a trusted acquaintance rather than compromising national security, allowing emotional trust to override professional judgment. The digital age has amplified this threat through AI-generated identities, encrypted communications and extensive online data, enabling intelligence services to profile, approach and manipulate targets with greater sophistication.

Military Personnel in Cognitive Battlespace

Lieutenant General DS Hooda (Retd), Co-Founder, Council for Strategic and Defence Research (CSDR), and Lieutenant Colonel Pavithran Rajan (Retd), Advisor, Centre

⁶ <https://theishub.com/upsc/iran-israel-war/>

⁷ "The Anatomy of a Military Honey Trap: Recruitment Tradecraft, Psychological Manipulation, and Counterintelligence Responses," Centre for New Age Warfare Studies (CNAWS), accessed August 6, 2026, <https://cnaws.in/explainers/the-anatomy-of-a-military-honey-trap-recruitment-tradecraft-psychological-manipulation-and-counterintelligence-responses>.



The Cognitive Domain (Source NATO and STO)

for National Security Studies, Ramaiah University of Applied Sciences, bring out that in the Socio-Technical-Cognitive Battlespace (STCB), military personnel no longer operate solely in the kinetic domain but are also participants in the cognitive battlespace. Consequently, their digital footprint, including social media activity, online networks, geo-location, and personal information, can become an intelligence source for adversaries to identify vulnerabilities, conduct influence operations, and compromise operational security, underscoring the need to treat cognitive resilience, digital hygiene, and disciplined information practices as integral components of military readiness.⁴

Integrating the Instruments of Cognitive Warfare

Contemporary strategic discourse often tends to describe every form of influence as "warfare." Much of what States experience today is not conventional warfare but a continuous, 24-hour strategic competition across cognitive, information, cyber, economic, technological, diplomatic and military domains. The objective is to achieve strategic advantage by shaping perceptions, and securing long-term dominance without necessarily crossing the threshold of armed conflict. Some military analysts also argue that cognitive warfare merely rebrands longstanding concepts such as propaganda, political warfare, and influence operations. However, the

unprecedented scale, personalization, and speed enabled by AI, social media, and behavioural analytics distinguish contemporary cognitive warfare from earlier forms.

In the present day environment, smartphones have evolved into an extension of human cognition. More than a communication device, it functions as an interface through which individuals perceive, interpret, and interact with the world. Through continuous digital engagement, vast quantities of personal data, including preferences, biases, behavioural patterns, emotional responses, routines, and vulnerabilities are collected, analysed, and profiled, often without the user's full awareness.

At an opportune moment, these cognitive profiles enable highly personalised influence operations designed to exploit specific vulnerabilities. This threat extends equally to military personnel, political leaders, bureaucrats, and ordinary citizens.

The implications extend beyond information manipulation. The traditional Data-Information-Knowledge-Wisdom (DIKW) pyramid progressively transforms information into judgement. However, when the underlying data and information streams are deliberately manipulated, the entire cognitive decision-making process becomes corrupted. The result is cognitive corruption, leading to decisions based on distorted perceptions of reality.

Cognitive warfare is thus an overarching framework encompassing information warfare and psychological operations. While information warfare shapes narratives and psychological operations influence behaviour, honey traps apply these principles by exploiting human relationships. Together, they aim to shape perceptions and decision-making, extending conflict beyond the battlefield into continuous competition over information, psychology and cognition, where strategic advantage depends as much on influencing minds as on military strength.⁵

Building Cognitive Resilience

The growing significance of cognitive warfare requires a shift in the national security culture. Beyond military strength, nations must safeguard their information environment and build cognitive strength to identify manipulation, critically assess information, and make informed

⁴ D. S. Hooda and Pavithran Rajan, "Beyond the Kinetic: Deconstructing Warfare in the Socio-Technical Cognitive Battlespace" (New Delhi: Council for Strategic and Defence Research, 2026), 3-10.

⁵ 11 Sharma, Abhijit. "Cognitive Warfare: The War for Our Minds." Institute for Conflict Research & Resolution (ICRR). July 27, 2026. <https://www.icrr.in/Vincy/2026/7/27/cognitive-warfare-war-for-minds-.html>

decisions. Taiwan, for instance, has strengthened cognitive resilience through collaboration among government, technology companies, fact-checkers and civil society. Rapid fact-checking, transparent public communication and media literacy strengthens public trust and reduces the effectiveness of foreign influence operations. Taiwan's experience demonstrates that while information alone rarely changes behaviour, when combined with psychological operations it can significantly shape emotions, trust and decision-making. Ultimately, resilience depends on public trust, credible information and strong institutions, which make societies more resistant to external manipulation.

Media literacy and critical thinking are the first line of defence against disinformation. Education should prioritise digital literacy and responsible information consumption to strengthen cognitive resilience. Governments must reinforce public trust through transparent, timely communication and rapid fact-checking to counter information vacuums. AI can support cognitive defence by detecting bots, manipulated media and disinformation campaigns, but it should complement human judgement. For military organisations, regular security awareness, counter-intelligence training, disciplined digital behaviour and a culture that encourages prompt reporting of suspicious interactions are essential to prevent psychological manipulation and strategic compromise.

The Armed Forces should institutionalize social media and digital footprint management as a core component of operational security. Periodic profiling and vulnerability assessments of personnel's online presence, continuous awareness training on the intelligence value of innocuous

information such as geo-tagged photographs, social networks, routines, and personal interests, should be mandatory. Given that modern adversaries exploit AI-enabled data analytics, surveillance technologies, and social media profiling to aggregate digital footprints, safeguarding the digital identities of military personnel should be treated as a strategic force protection measure."

Building resilience also demands secure and trusted digital ecosystems. Filtered or security-hardened smartphones and digital platforms for personnel occupying sensitive positions need to be instituted. Such systems would reduce exposure to malicious applications, intrusive data collection, hostile algorithmic manipulation, and targeted influence campaigns while preserving essential functionality. China's emphasis on tightly controlled digital ecosystems illustrates one approach to reducing external cognitive vulnerabilities. Democratic societies will need to explore alternative models that strengthen cognitive security without compromising fundamental civil liberties.

To Sum Up

Warfare has expanded beyond the physical battlefield into the cognitive

domain, where perception, belief and decision-making are decisive. Information warfare, psychological operations and targeted human exploitation work together to shape narratives, influence behaviour and exploit vulnerabilities, making influence as important as military force. As modern conflicts increasingly unfold through disinformation, AI, algorithms and human relationships below the threshold of war, democratic societies must strengthen cognitive resilience rather than restrict openness. Building public trust, media literacy, strategic communication, counter-intelligence and digital resilience is now an essential component of national security and military preparedness.

Future conflicts will be shaped as much by influence as by military power. Success will depend on the ability to shape perceptions, influence decisions and strengthen cognitive resilience. **In the era of cognitive warfare, protecting the human mind is as vital as defending territory, making the cognitive domain a decisive arena of national security.**

"D. S. Hooda and Pavithran Rajan, "Beyond the Kinetic: Deconstructing Warfare in the Socio-Technical Cognitive Battlespace" (New Delhi: Council for Strategic and Defence Research, 2026), 3-10.



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**Brigadier
Preet Pal Singh**

INSIDE REDLAND WAR-ROOM

OPERATION PAIGHAM

This is a fictional description of discussions in the Redland Army Headquarters (HQ) Operations Room while planning a 'revenge' terror attack in Blueland.

The perceptive narrative (though conjectural) has correlation to events that have transpired in this region in the recent past, and the narrative has been anchored around these events. The characters in this narration are imaginary and any resemblance to actual persons is purely coincidental. The account brings out that major terror strikes in Kashmir by non-state actors are often orchestrated with state support of our adversary.

12 March 2025

There was hectic activity in the Redland War-room, as the operations staff prepared to brief the Army Chief - General Sheikh Arif Murtaza. The Jalalabad Express had been halted, surrounded and taken over by the **Fateh Squad** of the Balochistan Liberation Army (BLA) near the Bolan Pass. A number of soldiers and Frontier Corps troops were also on the train. It was a grim situation, the train had in effect been hijacked, and there were hundreds of hostages. Latest updates from the Quetta based Corps HQ were being monitored, and discussions turned to the need to retaliate and take revenge on Blueland. Redland has consistently blamed Blueland for orchestrating violent terror attacks in Redland, and for supporting the BLA and *Fitna-al- Khawarij* (a term used by Redland for the militant groups).



Baisaran Valley, Pabagham (photo Laikot Kalam Tourism on Facebook)

The Army Chief walked in, and the discussion commenced. *"We should bomb the train using gunships or fighter aircraft,"* a visibly agitated Brigadier opined. Air Chief Marshal Zulfiqar Ali Malik, the Air Chief pointed out that the collateral damage would be unacceptable, many soldiers and civilians including women and children would be killed. Lieutenant General Bakhtiyar Khan, Director General Military Operations (DGMO) recalled that Russian troops had tackled Chechen terrorists in the Dubrovka Theatre in Moscow in October 2002, using sleeping gas to neutralize the terrorists and then storming the auditorium. Lieutenant General Waseem Sherwani, Chief of General Staff (CGS) highlighted that 132 hostages had died in the theatre because of the effects of the gas, though the 40 terrorists were killed too. The DGMO indicated that the enclosed space in the theatre had multiplied the effect, whereas in this case the area was open. The Quetta Corps Commander interjected, *"I leave the operational conduct to the troops on the spot. Three commando teams have reached the site, we will illuminate the train and the terrorists at night, and storm them. We will lose some troops, but we will finish the terrorists."* The Army Chief agreed and gave him the go ahead, but cautioned him to minimize the collateral damage to civilians and innocents.

The discussion veered towards retaliation against BlueLand. The CGS emphasised that tourists have been flocking to Kashmir in BlueLand, a return to normalcy, peace and development is a visible outcome - we need to counter this perception and story. *"In effect, we need to spoil their party,"* he stated. The Army Chief brought out that the internal political situation within Redland is also worrisome. Imprisoned former Prime Minister Israr Khalid's party continues to face a sweeping state crackdown. Thousands of supporters

participated in protests demanding his release, resulting in mass arrests, detentions, and convictions in military courts throughout the winter. The need to divert the attention of the people and push Israr Khalid's party protests off the media channels was important.

Looking towards the Director General Military Intelligence (DGMI), the Army Chief queried about the international situation. Lieutenant General Asif Ahmed, the DGMI felt that the international situation was favourable. He informed that the Prime Minister was scheduled to lead a delegation to Jeddah and Riyadh next week, security and defence cooperation was a major agenda point, possibly a security alliance and mutual defence agreement would come about. The Army Chief confirmed that he was accompanying the Prime Minister.

The Air Chief indicated that the global superpower has approved \$397 million for Redland's F-16 fighter jet fleet maintenance, and rapprochement with

them is a good sign. He indicated that there was good news on the economic front too, and Redland's continued progression under the International Monetary Fund (IMF) programme has been secured, with IMF staff and Redland authorities reaching a staff-level agreement (SLA) under the country's 37-month Extended Fund Facility. The SLA also included a new 28-month arrangement under the Resilience and Sustainable Facility. Now, the IMF's Executive Board will consider the approval of approximately \$2.3 billion in loans, with expectations that Redland would secure the money in the first week of May 2025, ahead of the upcoming budget.

Expanding further on the global dynamics, the DGMI stated that our lobbyists in Washington have reached out to the superpower leadership. They are looking for alternative sources for rare earth minerals and we can facilitate their crypto-currency business interests too. The appreciation from the US



Supporters of jailed former Pakistani Prime Minister Imran Khan's party, the Pakistan Tehreek-e-Insaf PTI throw stones during an anti-government rally in Islamabad, Pakistan, October 5, 2024 (Photo REUTERS File)



Pakistan Army Chief General Asim Munir chairs 265th Corps Commanders' Conference held at the General Headquarters in Rawalpindi, Pakistan, on July 5, 2024 (Photo ISPR)

President on our role in counterterrorism hints at greater cooperation in times to come. He has lauded Redland's unfettered support in nabbing a key terrorist involved in the 2021 Kabul Airport bombing. Our Prime Minister has reciprocated and has reaffirmed our determination to combat terrorism. This calls for renewed coordination in defence and intelligence spheres. Washington's realisation testifies that Redland is not isolated anymore, and there are enough common denominators to act upon, concluded the DGMI.

The Army Chief smiled and the grim mood disappeared. The military leadership was undoubtedly happy that the 'pariah' status of the nation was ending, and international ties were looking up. The CGS added that Yellowland, their strategic partner would undoubtedly support Redland fully. The Army Chief queried whether we need to keep Yellowland in the loop. The CGS indicated that since they are our strategic partner, and we need many weapons and munitions from them on an urgent basis, we should inform them. General Murtaza looked askance at the Director General Inter-Services Intelligence (ISI). Lieutenant General Farhan Jameel, the DG ISI said that we should not give details, but inform them that a violent confrontation is possible because of an act of

terror being planned by Mujaheddin that we have learnt of.

What hereafter was the query visible on the Army Chief's countenance. Lieutenant General Farhan Jameel stated that he will have a word with the Mujaheddin at Bahawalpur and Muridke and then revert. The Army Chief nodded in agreement and asked the audience to also deliberate on the likely BlueLand reaction to a 'revenge' attack. He directed that the next meeting be held in the coming week to discuss the way forward and these aspects.

The DGMO summed up the discussion, and repeated the aspects covered as under:-

- Retaliation and a revenge attack on BlueLand were justified.
- Countering the BlueLand narrative of return of peace and normalcy in Kashmir was important.
- Diverting the people's and media attention away from the internal political unrest was required.
- The economic and international situation was better than the previous year and could be managed favourably too.
- The way forward was to be planned and likely BlueLand reaction was to be assessed.

18 March 2025

The Redland military leadership assembled and continued their discussions. In his opening remarks, General Murtaza, the Army Chief stated that the DG ISI has informed the contours of the Mujaheddin plan to him, in private. All that need be known is that the Mujaheddin will be carrying out a major terror attack, and BlueLand would possibly retaliate strongly. He asked the DGMI to give his assessment of their reactions.

Lieutenant General Asif Ahmed felt that punitive retaliation by BlueLand must be expected. This could be in the form of air attacks on Mujaheddin camps, as had happened near Balakot in 2019 after the Pulwama car bomb attack. Along the Line of Control (LC), intense artillery bombardment and firing would also take place. BlueLand may launch some offensive actions to seize some of our defended posts along the LC. The conflict could escalate to other sectors too.

Lieutenant General Bakhtiyar Khan, the DGMO gleefully stated that the days of speedy contact battles are gone. The Russians have not been able to launch large scale attacks on Ukrainian positions, and Ukrainian drones engage large troop concentrations effectively. In the

'kill zone' of Ukraine, surveillance and attack drones swarm the skies, hunting anything that moves. Along the LC too, BlueLand will have to attack with small groups of soldiers, as sizeable movement will be detected easily. Progress will hence be slow, gains will be much lesser and troop casualties will be more. And we have large numbers of Mujaheddin who will join us in the forward areas and create havoc for BlueLand forces. We will surely give BlueLand Army a bloody nose and foil their designs. Nowadays, battlefield transparency and situational awareness has resulted in a preference for long range rockets and missiles in contemporary warfighting. BlueLand would hence launch long range rocket and missile strikes. We need to be prepared for these and formations can shortlist possible BlueLand targets; then take precautionary steps to foil the BlueLand strikes.

Lieutenant General Farhan Jameel, the DG ISI emphasized that troops should not be alerted or brought to a higher state of vigil at this stage, and maintenance of secrecy was crucial. Lieutenant General Waseem Sherwani concurred, but stated that we will quietly check our war reserves, munition stocks and equipment functionality. He pointed out that we need to substantially increase the drones and quadcopters available, and asked the DGMI to get in touch with friends in Ankara to boost the numbers available. Procurements from YellowLand also must be fast-tracked; but such purchases should be discreetly effected.

The Air Chief indicated the necessity of upgrading the Air Defence network. Better and additional radars are required, air to air missiles need to be procured swiftly. He informed that he is scheduled to visit YellowLand in the coming fortnight, but additional procurement funds should be released to the Air Force immediately.

He elaborated that BlueLand Air Force is extremely potent, they have modern Beyond Visual Range (BVR) Air to Air missiles, airborne warning and control systems and their integrated air picture systems are force multipliers. The Army Chief sceptically stated that it seemed that RedLand Air Force has not remained operationally ready. Taking offence, the Air Chief pointed out that potent airpower costs money, which has mostly gone to the Army. He placed on record that the RedLand Air Force would be able to contest the BlueLand Air Force for a few days, but if the conflict is prolonged, the RedLand Air Force would suffer debilitating losses – the air situation would be difficult.

Realising the import of the Air Chief's analysis, General Murtaza accepted the need to have a short duration conflict only. He highlighted that this would be the Army's endeavour too, as the Army has many reserve formations committed in Balochistan

and the Northwest. He asked the Air Chief to speedily procure radars and missiles from YellowLand, to coordinate with YellowLand authorities during his forthcoming visit and that requisite funds will be released immediately.

General Murtaza addressed the officers, and said that the Armed Forces are able to defend the motherland, because of the great strength of the warriors and since we have been able to arm ourselves effectively to counter our large enemy. In the coming months we will need to act and show our steel and fibre. He asked all present to work on the logistics readiness, prepare the munitions and equipment required, and that he will take stock in the next meeting.

09 April 2025

The mood was upbeat in the RedLand War-room as the core group met to take the planned revenge against BlueLand forward. This perception was



Pakistani move to acquire China's HQ-19 is one of the most consequential strategic defence transactions (credit defencesecurityasia.com)



At the 2024 International Defence Exhibition and Seminar (IDEX) in Karachi, Pakistan unveiled its most ambitious unmanned aerial vehicle (UAV) programme, the Shahpar-III (credit defechtimes.com)

providing some PL-15 BVR Air to Air missiles, configured for the JF-17 fighter aircraft. These will help us bring down a few BlueLand aircraft. They are also deploying some HQ 19B Air Defence radars near our vital areas. But the Air Chief pointed out that BlueLand has a far better S-400 Air Defence system, and also has many more and better BVR missiles. He emphasized that BlueLand capabilities should not be underestimated.

The Army Chief realized the balance of airpower situation. In the last discussion, the Air Chief had emphasized the need to limit the conflict to a short duration only, and the Army Chief repeated that the endeavour will be to end

reinforced when the Army Chief entered and cheerfully met the military brass. "So what is the update on our previous discussion", he queried.

The CGS responded and informed that the good news is that they have procured large numbers of drones and quadcopters from Yellowland and Ankara. He however highlighted that most of these are surveillance drones, with limited range and endurance. Hence, the effect will be mostly limited to border areas. As regards loiter munitions and armed drones, the quantities available were less, as most of these are shipped to the Russians. Lieutenant General Bakhtiyar Khan, the DGMO brought out that these surveillance drones can provide targeting details, which will help us engage enemy targets more accurately. The Air Chief interceded and indicated that most of these drones and quadcopters are not hardened for electronic warfare, and will easily be jammed or neutralized by BlueLand assets. Nevertheless, these numbers may help us clutter the enemy radars and confuse their Air Defence response. The Army Chief agreed and directed that we should plan to launch hundreds of drones daily in the first few days of the conflict when it starts, even though these drones may not be able to strike at BlueLand targets.

Looking at the Air Chief, General Murtaza inquired about the outcome from his visit to Yellowland. Bringing out the factual position, the Air Chief stated that the good news is that Yellowland is

the conflict within a few days. He elaborated that we should not suffer too many losses, or else we would cut a sorry figure.

Lieutenant General Nadeem Ansari, the Director General Inter Services Public Relations (DG ISPR), clarified that they will be able to manage the information and cognitive campaign. All electronic and print media adhere to instructions given by DG ISPR, and hence they would not report most of our losses, not indicate many of our casualties, while amplifying and exaggerating enemy losses. He stated that we will amplify the notion of victory amongst the people. But he also opined that in a prolonged conflict it would not be feasible to hide the losses. The Army Chief asked him to also keep a lid on social media. The DG ISPR responded and said that there are enough persons with nationalist spirits who will trumpet the winning story, and we also control many handles on social media. So the cognitive situation would remain in our favour.

Lieutenant General Waseem Sherwani suggested that as in previous clashes with BlueLand, we should play up the nuclear card, and raise the nuclear bogey. The superpower and Western powers would immediately be alarmed and start pressuring BlueLand for a ceasefire. This strategy has always helped shorten the conflict duration. Lieutenant General Asif Ahmed added that the lobbyists in Washington have enabled us to enter into a crypto-currency business venture with the family of the leadership in Washington. They are hence likely to intervene actively to ensure that the confrontation is curtailed.

The Army Chief asked the CGS if Yellowland had been informed of the general situation developing. Replying in the affirmative, the CGS stated that they heard our briefing, but have neither green-lighted nor red-lighted the plan. He indicated that possibly the confrontation suits them and would enable them to check their equipment capabilities. The

Air Chief, who had returned from Yellowland the earlier day, indicated that the support from Yellowland in terms of munitions and equipment being provided on an urgent basis is a positive signal, though their leaders remained non-committal. They are probably looking forward to test Blueland warfighting capabilities. The CGS added that Yellowland asked as to what we want from Yellowland. We told them that we needed drones, quadcopters, munitions immediately and also if they could provide us satellite imageries of Blueland movements, and information about Blueland plans. Yellowland has agreed to share intelligence with us. The Army Chief exclaimed, "superb, good news."

The Air Chief inquired if the Prime Minister has been informed of the action planned. The CGS smilingly replied in the negative, and said "we are not doing anything, and are not aware of what the Mujabeddin are upto! After all, they are non-state actors".

As the discussions came to a close, the DGMO summed up the discussion points, as under:-

- There is clear improvement in the availability of drones, quadcopters, though most of the inventory is of the surveillance variety with limited range and endurance; and susceptible to electronic and other counter measures. But these assets can clutter the enemy's air picture.
- As regards Air Defence radars and Air to Air Missiles, Yellowland has provided additional numbers to boost our capability. However, the S-400 Air Defence System and larger number of BVR Air to Air Missiles with Blueland will be a cause of concern.
- Support from Yellowland is clearly available, and the superpower is unlikely to be antagonistic. The



During Operation Sindoor, Pakistani Air to Air Missile PL-15 components came down intact in India (credit twz.com)

business relationship developing with the leadership in Washington would be helpful.

- Considering the overall balance of power equation, it would be necessary to end the conflict soon. The nuclear card should be played up to cause alarm in the global arena, and ensure Blueland is pressured to end hostilities.
- The information campaign within Redland can be controlled easily, to enhance the notion of victory, especially if the clashes do not cause substantial damage.

The Army Chief took the rostrum and addressed the military leadership. "We are undertaking a risky operation, and Blueland can inflict major damage to our military assets. Airpower is the critical factor, where we have vulnerabilities. But it is imperative to give a strong 'revenge' message to Blueland - a Paigam, since they have been the main support to the BI.A. We are hence calling this mission as **Operation Paigam**, and interestingly, the Mujabeddin are planning their

action near a similar sounding place in South Kashmir. But, no readiness signals or alert messages are to be sent down to the troops and formations till the action commences'.

Continuing his comments, General Murtaza said "I thought about calling off the attack, but since Yellowland is very supportive, the international environment is also positive; and since the internal unrest needs to be dampened and diverted, I have decided to take the risk and give the green signal to the Mujabeddin. Since we have lost many troops in the Jalalabad Train hijacking, our retaliation in the same grey zone is justified. And, this will also undercut the return of normalcy in Kashmir narrative of Blueland. But, we must ensure that we do not cut a sorry figure, our citizens do not perceive us as the loser in this battle. So, we have to achieve a ceasefire quickly, and have to win the narrative warfare and information campaign".

As he concluded, he hinted that the action can be expected later in the month. The meeting ended in optimism with everyone in high spirits.

■ Lt Gen JS Sandhu (Retd) Editor

THE GLOBE I THOUGHT I KNEW

WHY CIVILIAN STRATEGIC EDUCATION MATTERS

*"War is merely the continuation of policy by other means."
— Carl von Clausewitz, On War*

Strategic education is often regarded as the preserve of military professionals. Yet national security depends on institutions far beyond the Armed Forces. Civil servants, diplomats, lawyers, legislators, researchers, academics, and industry leaders all make decisions that influence defence preparedness, strategic capability, and national resilience. Their effectiveness depends not merely on expertise in their respective fields but also on their understanding of how military professionals think about power, risk, escalation, and operational constraints. This essay amplifies.

Seeing the World Differently

The Warfare and Aerospace Strategy Programme (WASP), instituted by the Indian Air Force in 2022 represents an important departure from conventional professional military education.¹ Rather than merely producing tactically proficient officers, it seeks to cultivate strategic thinkers capable of connecting military power with statecraft through rigorous reading, critical discussion, and interdisciplinary engagement. Built around intensive reading and seminar-style dialogue, the programme deliberately exposes participants to history, political theory, economics, technology, international relations, military thought, and emerging domains such as cyber and space. Its purpose is not simply to impart knowledge but to reshape how participants think about complex strategic problems.² This reflection is not an attempt to claim such understanding after a few months of study. Rather, it is about how participating in WASP changed the way I see the world and why that transformation matters for civilians working in the field of national security.

¹ Rajesh R. Chaudhury, "The Air Force's Leap of Faith into Strategic Thinking: Warfare and Aerospace Strategy Programme (WASP)," *Defence and Diplomacy Journal* 13, no. 3 (April–June 2024): 1–12.

² *Ibid.*



Scholars from think tanks attending WASP being briefed inside a military transport aircraft at Hindan Airbase, 10 January 2026 (Photo PIB India)

There was a time, not very long ago, when the word theatre meant only one thing to me: dimmed lights, overpriced popcorn, and the hope that the film would be better than its trailer. I arrived at WASP as a civilian, and perhaps more importantly, as a lawyer trained in the precise, load-bearing vocabulary of international law, where words are expected to mean exactly what they say and nothing more. So when I first encountered "*theatres of operation*," some small, unreconstructed part of me still reached instinctively for a seat number and a tub of popcorn. It is a humorous memory, but it captures something larger.

WASP did not simply teach me new concepts. It altered the lens through which I understand strategy, security, and ordinary life. Once that lens changes, it cannot easily be set aside.

That transformation is particularly significant for civilians. Modern national security is no longer shaped exclusively within military Headquarters. Decisions taken in ministries, legislatures, courts, universities, laboratories, and corporate boardrooms increasingly influence strategic outcomes. The military may execute strategy, but civilians frequently shape the legal, economic, technological, and institutional conditions within which strategy is formulated and implemented. Bridging these intellectual worlds is

therefore not an academic luxury; it is a national necessity.

A Lawyer's Globe

Before WASP, my globe was a lawyer's globe. It was a neat arrangement of sovereign territories, coloured borders, treaties, jurisdictions, and legal obligations. Water was simply the blue space separating states. The sky was where aircraft flew and satellites orbited, largely a matter of registrations, licensing, and legal responsibility. My mobile phone was exactly what I assumed it to be: a useful piece of technology that occasionally ran out of battery.

That globe no longer exists. Looking back, I realise that what changed was not merely my understanding of warfare. It was my understanding of the relationship between ordinary objects and extraordinary contests of power. Strategy ceased to be something discussed only in Ministries of Defence or military academies. It became visible in everyday life—in the technology I used, the infrastructure I relied upon, and even the assumptions I made about peace itself.

Reading Chris Miller's *Chip War* was the moment my phone stopped being an appliance and became a geopolitical map. It became a story of semiconductor fabrication in Taiwan, export controls in Washington, critical manufacturing capability in the Netherlands, and technological dependence that could reshape the balance of power across entire regions. Strategy, I realised, had long escaped the battlefield. It now lived in supply chains, standards, technology, finance, and industrial policy.

The sea changed in a similar way. Through Alfred Thayer Mahan and Julian Corbett, water ceased to be scenery and became a network of sea lines of communication, chokepoints, denial

strategies, logistics, and maritime influence. Oceans were no longer empty blue spaces between nations; they were active strategic environments through which prosperity, deterrence, and military power flowed.

The sky changed as well. Through Colin S. Gray, John Sheldon, John Warden, John Andreas Olsen, Everett Dolman, and others discussed during the programme, aerospace power emerged not simply as an extension of traditional military operations but as a domain with its own strategic logic. Bowen's concept of the **"Original Sin"** of space power and Dolman's *Astropolitik* revealed that the competition for strategic advantage had merely expanded upward. The technologies were new, but the underlying questions remained remarkably familiar: **who controls the commanding heights, and what follows from that control?**

Even cyberspace which I had unconsciously categorised as an information technology problem revealed itself as a continuously contested operational domain. Persistent engagement, cyber-resilience, information dominance, and cognitive

competition demonstrate that conflict today often unfolds without declarations of war or clearly identifiable beginnings and endings. Strategic competition had become continuous rather than episodic.

None of these domains exist in isolation for India. The country's maritime geography, expanding space ambitions, digital economy, and aspirations for technological self-reliance mean that national security increasingly depends upon decisions extending well beyond the battlefield. Strategic competition today is as likely to unfold through supply chains, satellite constellations, cyber networks, and critical technologies as through conventional military force. Understanding these interconnections is no longer the responsibility of military professionals alone. Interestingly, the more I encountered Clausewitz, Mahan, Corbett, and other classical strategists, the more I found myself returning mentally to Kautilya.

Technologies evolve. Human nature does not. The instruments of statecraft change from elephants to satellites, from messengers to fibre-



Scholars from think tanks attending WASP on the tarmac at Hindan Airbase, 10 January 2026 (Photo PIB India)



Scholars from think tanks attending WASP at Hindon Airbase (Photo PIB India)

optic cables, from fortifications to semiconductor supply chains. Yet the underlying logic of power, competition, deterrence, and statecraft remains surprisingly consistent across centuries.

None of this is particularly comfortable knowledge. Like many civilians, I grew up with a straightforward confidence that peace was the normal condition of international politics, occasionally interrupted by conflict. WASP did not diminish that optimism, but it certainly complicated it. Peace increasingly appears not as the absence of competition but as its most carefully managed expression. Beneath everyday life lay continuous contests over technology, logistics, maritime access, satellite infrastructure, rare earth minerals, undersea cables, and information networks. Today, I cannot look at the moon, the sea, or even the phone on my desk without recognising the strategic architecture beneath them. Once someone has shown you where the wiring runs behind the walls, it becomes impossible to pretend it is not there.

Strategic competence cannot be developed through lectures alone. It must be cultivated through sustained reading, disagreement, reflection, and intellectual humility. At WASP, we were deliberately challenged to engage with competing schools of thought rather than search for definitive answers. The programme emphasises discussion rather than instruction and forces participants to defend, revise, and sometimes abandon deeply held assumptions. In doing so, it develops habits of critical thinking that are

as valuable for policymakers as they are for military professionals.

That, perhaps, is precisely why programmes such as WASP matter not only for military professionals but also for civilians. Earlier I could comfortably write about deterrence, aerospace power, escalation, or jointness. I possessed the vocabulary, but I lacked an appreciation of the operational realities behind those words. The difference is significant because it shapes how civilian analysis meets strategic reality.

A policy recommendation drafted in a ministry, a legal opinion prepared for the Government, or a research paper

proposing strategic reform ultimately affects individuals responsible for implementing those decisions under real operational constraints. Without exposure to that perspective, a civilian analysis risks remaining technically correct yet strategically incomplete.

'Legally speaking..'

I had spent years asking whether an action was lawful. That phrase became something of a running joke during WASP discussions because it was how I instinctively approached almost every strategic problem. Lawyers are trained to begin with legality. Strategists, I gradually discovered, often begin elsewhere: Is it feasible? Is it sustainable? What second- and third-order consequences might follow? The legal question remained important but it was no longer the first question.

The greatest lesson I carry from the programme is not a collection of theories but a habit of asking different questions, rather than stopping at "Is this legally permissible?" I now instinctively ask, "Is this operationally feasible? What strategic assumptions does it rely upon? What costs would implementation impose on those expected to execute it?" Those are questions I did not ask before.

Civil-military relations are often discussed in terms of institutional arrangements or constitutional principles. I had studied them academically, written about them, and debated them professionally. Yet reading about the bridge between civilian institutions and military organisations is not the same as learning to stand upon it. Democracies depend upon informed dialogue between civilian and military institutions. Military professionals cannot be expected to shoulder strategic understanding alone, just as civilian policymakers cannot discharge their responsibilities through legal or administrative expertise in isolation. Effective national security requires a shared vocabulary—one that allows strategic advice, operational realities, legal frameworks, and

policy decisions to speak to one another rather than past one another.

Democracies require more than healthy civil-military relations; they require shared strategic literacy. Civilian oversight is most effective when it is informed rather than merely institutional. Likewise, military advice is most valuable when it is understood within the broader political, legal, economic, and diplomatic context in which national security decisions are made. Programmes that enable meaningful interaction between military professionals and carefully selected civilian practitioners contribute to building precisely this common language.

Courses such as WASP build precisely that vocabulary. As the only civilian lawyer in my cohort, I did not leave believing that I had become a strategist. I left with something far more valuable: a deeper appreciation of how strategists think, what they prioritise, and why elegant civilian formulations often collide with operational reality. That insight will possibly shape every policy recommendation, legal opinion, and research paper I write in the future. The globe I once understood as a collection of coloured territories has become something altogether different—a living network of interconnected contests where supply chains, satellites, fibre-optic cables, fishing vessels, algorithms, and aerospace power all intersect within a larger strategic landscape. Clausewitz and Kautilya described the enduring logic of power long before any of these technologies existed. The objects have changed; the strategic questions have not.

Beyond the Uniform

My experience also raises a broader question. If strategic competition increasingly spans technology, law, economics, space, cyber, and information domains, should strategic education remain



57 research scholars, from leading think tanks, visited Air Force Station Hindon on 10 January 26 (Photo PIB India)

confined largely to uniformed professionals? There is merit in exploring carefully designed opportunities for greater participation by civilians whose professional responsibilities intersect with national security—whether lawyers, diplomats, civil servants, scientists, academics, researchers, or representatives from strategic industries. Such initiatives would strengthen India's strategic ecosystem by fostering deeper mutual understanding between those who formulate policy and those entrusted with implementing it.

I do not think I will ever again look at the world—the sea, the sky, or the stars and simply call it peaceful. At first, that felt like a loss. I have since come to regard it as something else entirely.

It is the beginning of seeing the

globe as it truly is. More importantly, it is the beginning of recognising that strategy is not solely a military discipline but a national one. **In an era where satellites influence deterrence, semiconductors shape geopolitical competition, cyber networks underpin critical infrastructure, and legal frameworks increasingly intersect with military operations, strategic literacy must become a shared national endeavour.** If programmes like WASP can help cultivate that shared vocabulary between soldiers and civilians, they will have contributed not merely to professional military education, but to the strengthening of India's national security itself.



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Dr. Shrawani Shagun Jha

FUTURE READINESS

INDIA'S MILITARY HELICOPTER TRAJECTORY

The helicopter is no longer a support platform. It is a sovereign projection instrument. Over three decades, rotary-wing aviation has redefined what is possible in contested environments — from the deserts of Kuwait to the jungles of Sierra Leone, from Afghanistan to the skies above Kyiv. The trajectory points in one direction. The helicopter is rising, not receding.

Global Trajectory: From Battlefield Mobility to Strategic Instrument

Task Force Normandy in January 1991 established the doctrinal template. Nine AH-64A Apaches and one MH-53J Pave Low helicopters destroyed two Iraqi early warning radar stations in under four minutes — at night, at ultra-low level, in total radio silence — before a single coalition fixed-wing aircraft had crossed into Iraqi airspace. **Operation Neptune Spear** in 2011 took that template to its strategic apex — four aircraft, 200 kms inside Pakistani sovereign airspace. With zero warning, the mission to take out Osama Bin Laden was accomplished in 38 minutes. The modified stealth Black Hawk helicopter employed was never officially acknowledged. The ability to project force unilaterally into denied airspace, at night, without detection, is now a legitimate instrument of statecraft.

Ukraine has since delivered two contrasting lessons. The Russian Hostomel Airport operation on 24 February 2022 was a masterclass in what not to do. Approximately 34 Ka-52 Alligator helicopters, Mi-8 assault transport helicopters, and Mi-24 gunship helicopters attempted a coup-de-main without Suppression of Enemy Air Defence (SEAD), without Electronic Warfare (EW), without adequate Intelligence, Surveillance and Reconnaissance (ISR). At least seven Ka-52s were downed by Ukrainian



MH 60R 'Seabawks' at INS Garuda, Kochi, 06 March 2024 (Photo PIB India)

Stinger and Igla-S Man-portable Air Defence missiles (MANPADS). The follow-on IL-76 airlift could not land. Kyiv was not taken. The lesson is unambiguous: a massed rotary-wing assault fails without SEAD, EW shaping, and deception. Conversely, by October 2025, Ukraine had formally expanded helicopter groups for counter-Unmanned Aerial Vehicles (UAV) operations — Mi-8 and Mi-24 helicopter crews intercepting Shahed-type loitering munitions over critical infrastructure. The helicopter now fights the drone. Meanwhile, the United States Army's Bell V-280 Valor tilt-rotor aircraft — optionally unmanned, 280 knots, initial operational capability by 2030 — sets the next generational benchmark.

The Indian Imperative: A Fleet in Transition

India currently operates approximately 600 military helicopters, mostly ageing, across three services and the Coast Guard. The phase-out of the Cheetah and Chetak fleet, stalwarts of six decades, is scheduled to begin by 2027. Their replacement, the HAL Light Utility Helicopter, is in the final stages of development and the induction pipeline is accelerating. A landmark order for 156 Light Combat Helicopters (LCH) Prachand was formally signed in March 2025, valued at Rs 62,700 crores, with 90 earmarked for the Army Aviation Corps and 66 for the Indian Air Force (IAF), deliveries continuing through 2033.

The Prachand is significant for a single operational reason: it is the only Indian attack helicopter that operates effectively above 6,000 metres. The Apache AH-64E - formidable against armour in the desert - has altitude limitations. The Prachand combat squadrons have been deployed proximate to the Line of Actual Control (LAC) with China. India's contested borders require a platform that can fight where the air is thin, and that platform is indigenous.

A critical structural shift has occurred simultaneously. The Army Aviation Corps has now surpassed the IAF in rotary-wing numbers and, in several role-specific categories - operating Advanced Light Helicopter (ALH) Dhruv, ALH Rudra, LCH Prachand, and six AH-64E Apaches at Jodhpur configured for desert anti-armour operations. The primary drivers of rotary-wing expansion in India are now the Army and the Navy. This demands doctrinal clarity: joint doctrine for synchronised multi-domain employment of these growing inventories remains nascent and must be urgently codified.

The Pivot West: A Strategic Realignment

The most visible marker of India's strategic realignment is the pivot from Soviet-origin to Western-origin rotary-wing platforms. For four decades, Indian military helicopters meant the Mi-8, Mi-17, Mi-25, and Mi-35 - Soviet designs, supply chains, doctrine. A \$1.1 billion deal for 48 additional Mi-17s was cancelled in favour of expanding indigenous Rudra helicopters production. The AH-64E Apache is now in service with both the IAF and Army. The MH-60R Romeo Seahawk helicopters in the Indian Navy squadrons were used operationally during **Operation Sindoor** in May 2025 and a second tranche

of 24 helicopters has been contracted. The formula is clear: Western platforms for the bleeding edge, indigenous platforms for the mass.

Western platforms bring NATO-standard interoperability, LINK-16 data fusion, and Hellfire-Stinger missiles - Mk54 torpedoes integration. They also bring dependency; India's MH-60R sustainment package signed in December 2025 carries a value of Rs 7,995 crores, a strategic commitment as much as a logistical one. In the maritime domain, decades of deficit are ending. The MH-60R conducts anti-submarine warfare with dipping sonar, sonobuoys, and Mk-54 torpedoes; prosecutes anti-surface missions with Hellfire missiles; and has undergone deck trials on INS Vikrant. The Navy's standing requirement is 123 naval multi-role helicopters - 48 MH-60Rs contracted is a beginning. Ten MQ-9B Sea Guardian unmanned systems provide the wide-area surveillance layer; helicopters provide the kill chain closure. The MQ-9B cues the MH-60R; the MH-60R validates and engages. This ISR-to-strike integration in the maritime domain must be institutionalised as standing doctrine.

Three Redefining Trends

The first is the systematic outsourcing of non-combat helicopter tasks - air maintenance, parachute training lifts, offshore warship support, and search-and-rescue in permissive environments - to civil aviation. These tasks do not require combat-trained crews in combat-configured aircraft, and every hour a Mi-17V5 helicopter crew spends on administrative lifts is an hour not spent on Night Vision Goggles (NVG) - Nap of Earth (NOE) proficiency, Combat Search and Rescue (CSAR) rehearsal, or

joint SEAD integration. India's civil helicopter leasing market grows at 12.1 per cent Compound Annual Growth Rate (CAGR). The military must leverage this ecosystem fully. Combat helicopters and their crews must be reserved exclusively for combat tasks; the outsourcing model must be deepened, formalised, and protected from institutional resistance.

The second trend is the emergence of manned-unmanned teaming as the defining operational model. The US Army's 3rd Combat Aviation Brigade already augments Apache, Black Hawk, and Chinook platforms with organic unmanned systems; the Future Long Range Assault Aircraft's (FLRAA) optionally unmanned capability is an explicitly stated Army requirement, enabling commanders to approve missions into environments unacceptable for crewed aircraft. For India, the rotary unmanned programme is nascent and no production-ready unmanned helicopter with meaningful payload and range yet exists. The manned-unmanned team doctrine - command relationships, Rules of Engagement (ROE) delegation, communications protocols - must be developed and exercised now, with available surrogates rather than waiting for the platform.

The third trend is the inversion of the hunter-prey relationship. The helicopter is now a target for the drone. First Person View (FPV) drones - cheap, fast, and increasingly autonomous - ambush helicopters during low-speed and hover operations. India's Defence India Start-up Challenge (DISC) 14 has formally acknowledged this, calling for a flight-certified counter-Unmanned Aerial Systems (UAS) solution integrated onto



Prachand Light Combat Helicopters at Jodhpur (Photo IAF)

helicopters. During **Operation Sindoor**, Pakistan employed drones and loitering munitions; India's counter-UAS grid neutralised them. The lesson is not that the threat failed - it is that it was attempted. The adversary has these capabilities. They will be used against helicopters in every future conflict across every theatre - high altitude, jungle, desert, and maritime alike.

Crystal Grazing – Trinity Holds the Key

Against this backdrop, three questions deserve clear-eyed examination. What should India prioritise in its expeditionary helicopter employment? Where must training be concentrated? And which disruptive technologies require urgent harnessing - both as offensive tools and as threats demanding active counter measures?

Three Doctrinal Investments. Three operational domains demand immediate doctrinal investment. Precision strike and SEAD integration is **the first**. Every conflict examined - from Normandy to Neptune Spear to the 3rd to 5th April 2026 Iran CSAR - confirms that the helicopter is most lethal when air defence threats are suppressed before the rotor turns, and India's AH-64E Apache helicopter fleet combined with Su-30MKI anti-radiation strike capability represents a credible pairing that must become standing doctrine - no helicopter assault order

should be issued without a concurrent SEAD plan. CSAR is **the second** domain; India has no formal CSAR doctrine, no designated platform, no standing task force, and every IAF crew flying over contested airspace deserves a recovery plan - special operations configured helicopters will be required, and the doctrine, the unit, and the annual live exercise must be established within the current planning cycle. High-altitude rotary-wing operations is **the third**; the Prachand's deployment along the LAC is correct, but the doctrine for high-altitude attack - counter-insurgency, anti-armour, close air support in thin air - must be codified with the same rigour applied to plains and desert operations.

Three Training Emphases. NVG Generation-III/III+ proficiency and NOE flying are **the foundation** - every decisive helicopter operation of the past thirty-five years was conducted at night, Gen-III NVG provides a four-to-five times improvement in detection range over Gen-II, NOE flying below fifty feet defeats radar coverage and complicates MANPADS targeting, and a minimum of 600 flying hours per year per crew member in expeditionary-task units - with a formal eighteen-month NOE pipeline - is the benchmark. **Radio silence and joint emissions control doctrine is the second**: from Normandy to Abbottabad, operational success was built on radar-off approach profiles and pre-planned data-link windows, requiring no new equipment but demanding deliberate and sustained practice. **Manned-unmanned teaming and active drone threat awareness is the third**, examined at every operational readiness evaluation, encompassing the assignment of surveillance sectors to unmanned wingmen and the detection of and manoeuvre against incoming FPV threats.

Three Disruptive Technologies. These must simultaneously be harnessed and countered. The FPV and kamikaze drone is **the first** - units of organic drone operators embedded within Army Aviation brigades, analogous to Ukraine's Swarmer model, must suppress MANPADS teams and blind radar ahead of helicopter assault, while the helicopter-mounted C-UAS solution sought under DISC 14 must be urgently fielded for self-defence. Autonomous drone swarms are **the second** - Ukraine's Swarmer has demonstrated 8-to-25 drone coordination across over 100 combat missions, and Atlantic Council modelling describes 800-drone swarms operating on Edge Computing alone in GPS-denied conditions, requiring India to pursue coordinated swarm capability as an urgent programme while developing counter-

swarm measures in parallel. The AI-enabled optionally-manned rotary platform is **the third**, we need to produce a feasibility study for autonomous flight certification of the ALH Dhruv or its successor, enabling MEDEVAC, resupply, and decoy missions where crewed flight is unacceptable.

The Binding Dimension

Expeditionary helicopter operations – in the jungles of the Eastern sector, the high deserts of Ladakh, or across the maritime littoral – share one characteristic: they happen far from the base, and the support chain sustaining them must be resilient, redundant, and independent. Forward Area Refuelling and Rearming Points, mobile and camouflaged, capable in GPS-degraded environments, must be established as standing joint assets with codified Electronic Emission Control requirements and air defence coverage. Digital Terrain Elevation Data covering the entire operational arc – from the Sino-Indian border through the central Himalayan chain to the Kutch and Rajasthan deserts and down to the maritime littoral – must be mapped at the resolution required for low-level autonomous and crewed flight. Hardened, frequency-agile, satellite-based communications must equip every helicopter crew and command chain; the crew that cannot communicate is operationally blind. And forward logistics and field-expedient maintenance for unmanned systems must be designed into every concept of operations from the outset, since a rotary UAV with an electric motor failure at Siachen, or a maritime drone with a sensor malfunction above the Indian Ocean Region, is operationally useless without a forward repair capability on hand.

Conclusion

The question this article set out to examine – whether India should pursue a wide bandwidth of operational helicopter capability or concentrate on role-specific specialisation – deserves a direct answer. The answer is neither a pure binary nor a comfortable compromise. It is a sequenced strategy.

In the near term, India must close critical gaps: CSAR doctrine and a dedicated unit; SEAD-helicopter integration in joint doctrine; helicopter-mounted C-UAS; Gen-III NVG and NOE training pipelines; Directional Infra-Red Counter Measures on all expeditionary-task rotary platforms. None of these are aspirations. They are minimum operational requirements that can be initiated within the current planning cycle. **In the medium term**, manned-unmanned teaming capability must be built – doctrine before platform, training before acquisition – with platform decisions aligned to the joint operational concept. **In the long term**,

genuine specialisation must be cultivated: the MH-60R crew must aspire to be among the finest maritime helicopter operators in the Indo-Pacific; the Prachand crew must operate at the edge of performance in thin mountain air; the CSAR unit must be amongst the best in the world.

Mass without mastery is an illusion of capability. India has sufficient rotary-wing assets. The helicopter is not going away – the conflicts of Ukraine, the Iran CSAR, and India's own **Operation Sindoor** have confirmed it. The platform and the threat have evolved. The doctrine must evolve faster than both. India's rotary-wing renaissance is underway. The question now is whether the men and women who fly these platforms, the staff who doctrine them, and the institutions that train them are keeping pace with the speed of the battlefield. That question can only be answered by the Indian Armed Forces – **and the clock is already ticking.....**



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Air Commodore
Ashutosh Lal

TOWARDS A COMPOSITE FLEET

India needs a composite Fleet which should include aircraft carriers, major surface combatants, submarines, maritime aviation and support ships at the core, a distributed layer of uncrewed aerial, surface and underwater systems around them and a resilient command architecture joining the two. The purpose of the uncrewed layer is to extend the reach, persistence, protection and combat effectiveness of the crewed core. Neither should conventional build-up slow nor should uncrewed systems replace major platforms. This article is based on a shorter version published by the author on the web page: <https://dras.in/integrating-unmanned-systems-composite-fleet-for-indian-navy/>

There is an enduring question in naval strategic planning, one that resurfaces with every major change in the character of warfare: are we building the right Fleet for the war ahead? The question is not new; it is the essential discipline of force planning. For the contemporary naval planner, however, it has acquired a sharper operational form: can the Fleet sense, decide, disperse, fight and reconstitute in a battlespace increasingly shaped by autonomous systems, Artificial Intelligence (AI) and contested communications?

The question is particularly relevant because the Indian Navy is undertaking one of the most ambitious expansions in its recent history. In May 2026, Vice Admiral Sanjay Vatsayan, the then Vice Chief of the Naval Staff, stated that about 45 platforms under construction would be delivered within the next three to four years. The Navy has stated an ambition of 175–200 ships and submarines by 2035. These figures reflect the maturation of India's naval design and shipbuilding ecosystem, the expansion of its defence-industrial base and a sustained political commitment to maritime power. The commissioning of INS *Tamral* in July 2025 as the Navy's last warship to be inducted from a foreign source marked an important transition to a construction pipeline centred on Indian shipyards.



The future of mine hunting - RNMB Harrier, an Autonomous Mine Counter Measures vessel, part of a recently formed Maritime Autonomous Systems team in UK Navy (photo by L.Phot Stevie Burke, credit commons.wikimedia.org)

The Changing Character of Naval Warfare

Recent conflicts have demonstrated that naval warfare is no longer exclusively a contest between large, crewed combatants. Lessons from the Red Sea reveal that relatively inexpensive uncrewed aerial and surface threats compelled some of the world's most capable navies to maintain intensive surveillance and expend costly defensive weapons. In the Black Sea, uncrewed surface vessels extended striking power into waters in which conventional naval operations had become increasingly hazardous. Across Ukraine and the Middle East, uncrewed systems have shortened the interval between detection and engagement, increased battlespace transparency and placed sophisticated platforms at risk from systems that can be produced and employed at far lower cost.

Operation Sindoor brought several of these lessons closer to India. Although its principal uncrewed engagements occurred in the land and air domains, the operation demonstrated the importance of integrated sensors, counter-uncrewed systems, Electronic Warfare (EW) and networked command and control. At sea, the rapid deployment of the Indian Navy's carrier battle group, surface combatants and submarines reaffirmed the continuing strategic value of major crewed platforms. Taken

together, these experiences do not suggest that uncrewed systems will replace conventional forces. They demonstrate that future combat power will depend on how effectively the two are integrated.

Uncrewed systems should therefore be treated neither as auxiliary equipment nor as stand-alone technology projects. They can undertake a myriad of missions such as persistent surveillance, mine countermeasures, forward reconnaissance, decoy operations, communications relay and selected strike tasks. Major crewed platforms nevertheless remain indispensable. Aircraft carriers, major surface combatants, submarines and maritime aviation provide sustained combat power, command presence, strategic mobility, magazine depth and the human judgement required to manage uncertainty and escalation. They must remain the organising centre of the Fleet. They are also expensive, scarce and increasingly exposed to persistent surveillance and high-volume attack. The operational purpose of uncrewed systems is therefore not to make these platforms irrelevant, but to extend their reach, improve their survivability and release them from tasks that do not require the presence or capability of a major platform.

This is consistent with classical maritime theory in which Mahan's emphasis on concentrated fighting power remains relevant, but concentration need not mean placing every sensor and weapon on a small number of increasingly complex hulls. Corbett's understanding of sea control as control of maritime communications places a premium on persistent awareness and distributed presence. The strategic test is therefore not how many drones a Navy possesses, but what operational uncertainty they remove, what vulnerability they reduce and what action they enable. For India, the

implication is to concentrate command authority and decisive combat power in the crewed core while distributing sensing, screening and selected effects across the battlespace.

Where India Stands

The Unmanned Roadmap for the Indian Navy, released in October 2021, provided the initial direction for capability development across the aerial, surface and underwater domains. Rotary Naval Shipborne Unmanned Aerial Systems were inducted in early 2024 and integrated aboard selected ships. DRDO's High-Endurance Autonomous Underwater Vehicle has progressed from surface runs to submerged sea trials, while indigenous surface craft such as *Matangi* have demonstrated autonomous navigation over extended distances. These developments show that India is no longer starting from a technological blank sheet. The critical gap is that these initiatives have not yet been integrated at Fleet scale into mission packages that routinely support ships, submarines, aircraft and shore commands.

How Other Navies Are Adapting

Three foreign approaches illuminate different parts of the problem. The United States Navy offers an operational model. Task Force 59, established in 2021, has integrated AI and more than twenty types of uncrewed systems into Fifth Fleet operations, demonstrating the value of a Fleet-led mechanism that can test, adapt and employ new systems in the same theatre.

The United Kingdom offers a force-design principle. In 2025, First Sea Lord General Sir Gwyn Jenkins described a Hybrid Navy guided by the principle "*uncrewed wherever possible; crewed only where necessary.*" Crucially, this approach does not discard major warships. It seeks to retain crewed combat power while using uncrewed systems to enlarge, protect and increase the resilience of the Fleet.

China demonstrates strategic direction and institutional intent. Its 2019 defence white paper identified intelligent and unmanned weaponry as a prevailing direction in military



Illustration: A Future Indian Naval Task Group Operating with Uncrewed Systems
 Source: AI-generated illustrative image, based on the author's concept

command facilities and trained personnel through which decisive force is applied. The Composite Fleet must therefore be designed around preserving and increasing the effectiveness of this crewed combat core. The crewed formation, rather than the individual uncrewed vehicle, should remain the basic unit around which composite capability is designed. A carrier battle group, surface action group, submarine force or maritime patrol detachment should define the operational problem; the uncrewed mission package should be configured to support it.

The second component is a distributed layer of uncrewed aerial, surface and underwater systems. Its initial operational integration should be organised around three mission families: persistent maritime awareness and contact verification; underwater awareness and mine countermeasures in approaches and littorals; and task-group screening through forward scouting, communications relay, deception and distributed sensing. These are persistent, repetitive and high-risk tasks that need not consume the endurance or expose the crews of major platforms. Where operationally required and authorised, uncrewed systems may also deliver kinetic or non-kinetic effects within established rules of engagement.

The third element is its command, control, communications and data architecture. Persistent sensing has operational value only when information can be validated, fused and converted into timely decisions and action. Crewed platforms may act as command hubs, but information and control must also be distributed sufficiently to allow the force to continue operating when communications, navigation or individual nodes are degraded. The operational chain must connect sensor, commander and effector without allowing automation to obscure

responsibility. The commander remains responsible for intent, prioritisation, escalation and the use of force. Automation should reduce delay and workload; it must not obscure accountability.

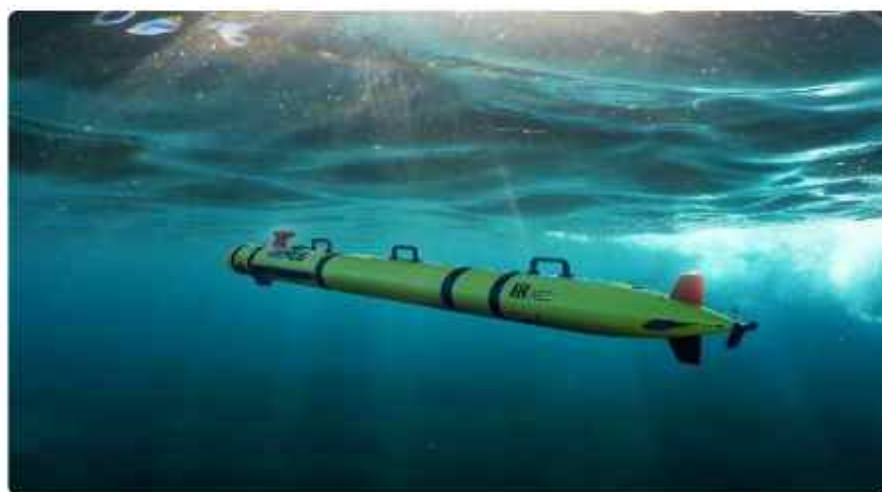
From Construct to Fleet Capability

The Unmanned Roadmap released in 2021 established the direction. The requirement now is to convert that direction into a force-integration programme aligned with the induction, modernisation and refit cycles of the conventional Fleet. Uncrewed capability cannot develop along a separate track and be integrated only after ships, submarines and aircraft enter service. The interfaces, control arrangements and mission packages through which it will support the crewed combat core must be designed from the outset.

Naval Headquarters should establish a Fleet led Composite Fleet Integration Cell within its existing operations and capability-development framework to own this transition. Its

mandate should be to translate Fleet operational problems into sea trials; convert trial evidence into tactics, techniques and procedures; and turn validated procedures into specifications and funded capability requirements. Operational commands, training establishments, design agencies, shipyards, research organisations and industry should support this process.

The development sequence should be progressive and evidence-based. In the **near term**, selected operational units should assemble mission packages from systems already available or in advanced stages of development. These packages should be tested alongside ships, submarines and aircraft against clearly defined Fleet tasks. In the **medium term**, the Navy should standardise control, payload, communications and data interfaces across aerial, surface and underwater programmes. In the **longer term**, mission packages that demonstrate operational value should be incorporated into task-group doctrine, training syllabi, deployment



DRDO's Man Portable Autonomous Underwater Vehicle for Mine Counter Measures (Photo ANI)

plans and force-generation cycles. Progression at every stage must be earned through evidence at sea. Each participating formation should have a defined mission package, a readiness standard and an annual integrated-exercise objective. No package should proceed to wider induction until it has demonstrated operational utility, resilience and sustainment at sea.

People, Sustainment and Resilience

The Composite Fleet will ultimately be manned by specialist officers, operators, maintainers and mission commanders. Technology may extend the Fleet's reach, but the work force will determine whether that reach produces operational advantage. Operators and watch keepers require a common understanding of the recognised maritime picture, the capabilities and limitations of automation, the boundaries of delegated authority and the procedures to be followed under communications denial. Commanders must understand what an uncrewed system can do and when its information or behaviour should no longer be trusted.

Simulators and shore establishments can develop basic proficiency, rehearse emergency procedures and expose personnel to complex multi-system operations. Competence must subsequently be tested at sea. Integrated sea training and exercises against a thinking opposition should determine whether operators can manage multiple systems.

Sustainment will determine whether an experimental capability becomes an available Fleet capability. Launch-and-recovery arrangements, shore detachments, mother ships, containerised control stations, payload reconfiguration, trained maintainers, spares, batteries and repair capacity all affect whether a system is ready when required by the Fleet Commander. Availability must therefore be measured across the complete mission package rather than against the serviceability of the vehicle alone.

Indigenous design and manufacture can provide a significant operational advantage by shortening the path from Fleet experience to technical improvement. That advantage will be realised only if operational feedback is captured and converted into predictable upgrades to software, sensors, batteries, communications, payloads and countermeasures.

Resilience must be designed into the architecture and demonstrated under realistic conditions. The Composite Fleet should be capable of continuing its mission after the loss of satellite navigation, satellite communications, a data link or an individual control node. Multiple communications paths, local-control options, autonomous recovery modes, secure data architecture and clear pre-planned responses should preserve command continuity.

Readiness also requires a force-generation rhythm. Selected units should conduct routine experimentation, designated task-group elements should undertake periodic integrated trials, and major Fleet exercises should validate the complete crewed-uncrewed force against a thinking and adaptive opposition. This progression will allow doctrine, training, maintenance scales, command arrangements and capability requirements to mature together, with clear ownership at every stage.

A Way Ahead

The immediate requirement is to move from platform-specific experimentation to deliberate force integration. The Navy should define force structure and readiness targets for uncrewed mission packages, designate a Fleet led integration mechanism and mandate common standards for control, communications and data exchange across aerial, surface and underwater programmes. Each package should be developed around a designated crewed formation and adopted only after sustained testing at sea.

India's future Fleet should therefore be designed as one fighting system: crewed platforms providing command, endurance and decisive combat power, uncrewed systems extending their reach, persistence and protection while accepting risks that need not be imposed on ships or personnel and resilient networks connecting both. **The measure of success would be determined in the Composite Fleet seeing farther, deciding faster, distributing risk and fighting effectively in a contested maritime environment.**



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**Captain (IN)
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IMPLICATIONS OF THE PAKISTAN NAVY'S HANGOR CLASS SSKs

In the July 26 Issue of our magazine, we had included a report on the Pakistan Navy's Hangor Class submarines acquisition programme. Our Editor (Navy) dwells on the impact of the acquisition and amplifies the implications of this capability enhancement. The aim of this article is not to go into the contractual or build-history and plans of the PN's Hangor class, except to say that the contract between Pakistan and China was signed in 2015. This article has been abridged and edited, the original article appeared on bharatshakti.in on 31 August 2026 and has been published herein with their permission.

In the past couple of months, much has been written about the commissioning in China of the first of the Chinese-built conventional attack submarines (usually designated Ship Submersible Hunter-killer or SSK) on 30 April 2026 for the Pakistan Navy (PN). PNS *Hangor* reached its home port, Karachi on 11 June, having made a visit to Colombo enroute with an escorting flotilla.

Background on the Hangor-class

The basic design is called the *Yuan* Type 039 A with S-26 being the evolved, export variant. The genealogy of the *Yuan* class itself traces to the Soviet/ Russian conventional boats of the 877/636 Classes. Much of the world knows them by the NATO "reporting name" as Kilo-class. In fact, the Indian Navy (IN) purchased 10 of the type Project 877-EKM variant from the mid-1980s which were named *Sindhughosh* class after the first submarine. A few of the K Class have been decommissioned over the years.



Helicopters hover over the Hangor submarine upon its arrival in Karachi, June 26 (credit Dawn)



Agosta 90 B Submarine (file photo from dailysabah.com)

What's in a Name?

The choice of name for the class is of interest to Indian readers. The first PNS *Hangor* (of French origin Daphne-class) had torpedoed the Indian frigate INS *Khukri* off the coast of Gujarat during the night of 09 December 1971. The IN frigate's dynamic and brave skipper, Captain Mahendra Nath Mulla went down with his ship. He occupies an iconic position in the Indian Navy's folklore and enduring memory. Likewise, on the Pakistani side, not only is the class-of-ship named *Hangor*, the fifth submarine of the class is to be commissioned as PNS *Tasnim* after its then skipper, Commander Ahmad Tasnim. PNS *Tasnim* will also be the first *Hangor* Class SSK to be built at the Karachi Shipyard and Engineering Works (KSEW). The first four have been/are being built in China.

Submarines Induction into PN and IN

Setting the symbolism of the class-name aside, there are a few noteworthy aspects of PN's stress on its submarine arm. Their quest for this capability started in 1958, although the need for one submarine was part of their 1953-1958 Plan. After some scouting around, including for Sweden's *Draken* class, Pakistan leased the former USS *Diablo* from the US as PNS *Ghazi*. This submarine was sunk/sank off Visakhapatnam on 03 December 1971 on the eve of the Indo-Pakistan war breaking out.

Similarly, in its first plan of 1947-48, the IN had proposals for submarine acquisition. Its quest met with rebuffs as well as some hope with Britain and France, but fruition was possible only after an agreement was initiated with the Soviet Union for the purchase of the Project 641 variant which NATO code-named the Foxtrot (or F) class. Twenty years after the first proposal in 1947, INS *Kursura* was commissioned at Riga in the Soviet Union on 08 December 1967.

In 1971, as expected, the PN deployed the *Ghazi* at long range off our East Coast in the Bay of Bengal. It had the option of entering East Pakistani harbours for turn-around if required later in the war.

At that stage, war planners in Rawalpindi and Karachi would not have expected such a swift and complete loss of East Pakistan leading to the birth of Bangladesh.

A PN Lead in Some Areas?

In the seventies, in submarine and anti-submarine warfare (ASW), the PN was a little ahead of the IN. **First**, in 1973 the PN began acquiring three French Atlantique maritime patrol aircraft (MPA). These were capable of not only long range ASW, but with the Exocet missiles on board, of anti-ship attacks as well. **Second**, they were quite astute in buying a fourth Daphne in 1975 from Portugal. Also, they acquired three Agosta 90B boats from France, two of which were licensed and built in KSEW. Around that time, the IN purchased two of the Type 209 German SSKs and built two at Mazagon Docks Ltd (MDL). The PN Agosta's were equipped with Exocet underwater-launched SM-39 anti-ship missiles, an early and astute step.

Around 2008-09, the PN began retrofitting their Agostas with Air Independent Propulsion (AIP) systems at the KSEW. They took a considerable operational risk because in sequence at least one of their boats would be out of service for a long time for the retrofit of the imported French MESMA AIP, at a time when their submarine force levels were low as it is.

A Recap of Fundamentals

A few general considerations and reiteration of fundamentals are important to clear misconceptions that span terms like sea control, sea denial, naval power projection and even naval presence.

Sea control is an enabling condition for naval operations and functions in a state of conflict - or when conflict is imminent- where a

nation and its forces need to use the sea for military operations and for keeping maritime trade going in the face of challenges. The stress is on the need to *use the sea for one's own purposes*. On the other hand, **sea denial** is an enabling condition when one side *does not need to use the sea* but sees strategic, operational and tactical advantages in denying the adversary the use of that space. Neither condition, just like favourable air situation in air warfare, or battlefield exploitation on land, is absolutely one-sided. These enablers are also limited in time and space. The third tasking for navies has often been **power projection** which is military action that directly applies pressure on land via strikes from multiple dimensions mainly from the sea. This could be via air, missile and drone strikes including missiles launched by submarines; or, amphibious assaults or raids; or special operations.

Naval presence of surface ships is well understood. In some cases, presence can be coercive, as in creating silent pressure. With surface ships, this is overt and obvious, but with caveats that a sudden outbreak of conflict (i.e. the "shooting" starts or is imminent) may disadvantage ships and aircraft thus deployed. Stealthy, submerged submarines add to the value "presence" provides to naval missions. Here submarines have great value due to the uncertainty, and pressure they can create via the virtue of "*covert presence*" that cannot be replicated by surface forces. A submarine missing from an adversary's bases creates positional uncertainty from the moment it is not seen in surveillance reports.

At its most strategically significant spectrum is the nuclear-strike capability of nuclear or conventional submarines firing ballistic or even cruise missiles with nuclear warheads. A commensurate degree of sea control becomes a necessary condition for

power projection to be effective. Sea control and sea denial should not be mistaken for strategy, or linked to a pecking order, with sea control as "prestigious" and behoving a larger navy. Sea control and sea denial should not be linked as illogical binaries to platforms for example, '*carriers are for sea control and submarines are for sea denial*'.

A relatively recent misconception is that manned, conventional and expensive assets are somehow better for sea control, while cheaper, more numerous unmanned craft are great for sea denial. The history of naval operations demonstrates many examples of forces moving **from sea control (to use the sea) to sea denial (to deny the enemy use of the sea)** or the other way around in different theatres and in different phases of a campaign or conflict. The Mediterranean theatre in World War II illustrates how the fort and fleet of both the Allies as well as the Axis fought under conditions of competitive sea control until sometime into 1944. The Battle of

the Coral Sea (May 1942) demonstrated Japanese carriers, submarines and shore-based aircraft and troops fighting for sea control as an enabler. The US led coalition used a largely similar spread of forces and dimensions in countering them by denying the Japanese the ability to land troops on the Papua Peninsula, thereby stemming the tide to an extent. A month later, in the Battle of Midway in June 1942, a similar spread of forces on a larger scale, fought hard over two-three days. Japan wanted to occupy Midway for military purposes (power projection). The Americans needed to retain the island as a vital base for further military operations and Sea Lines of Communication (SLOC) protection. Both sides needed to use the sea, hence the condition required was competitive sea control. Of essence is that, in terms of tactical actions and competence, forces often have to do similar things to obtain varying degrees of sea control and/or



China handed over the third Han-class submarine to Pakistan. The launching ceremony was held in Wuban, Central China on 14 August 2025 (photo PTT)



KSEW Shipyard, Karachi

sea denial. Secondly, these conditions are essentially platform agnostic.

Submarine Operations - The Rigours of Endurance

Submarine operations need to be looked at from their operational history since the First World War and also their role in changes to maritime warfare. The very early days of submarine warfare in the First World War show that the “legs” they had were surprisingly long even when navies thought they would be useful for limited, close-coast warfare and scouting before the war broke out. The Germans deployed their U-boats at long ranges including off the Atlantic Coast with no base support other than some resupply by cleverly coordinated supply ships, captured ships and from a few “milch cow” U-boats they had built. In World War II, the Germans, Japanese and American navies deployed at even longer distances, for more days (at considerable hardship to crews) and for various missions. Interestingly, Netaji Subhash Chandra Bose undertook a perilous passage on a German U-boat from European waters and transferred several weeks later at sea to a Japanese Navy submarine which took him to South East Asia where he led the Indian National Army.

Importantly submarines, due to their continuing and actually improving attributes of endurance, operating ranges, stealth, connectivity, ordnance variety and magazine capacity can and will be used with greater flexibility in years to come. Submarines, manned and unmanned, large and small, nuclear and conventionally propelled play a critical role at a time when surface and air domain awareness is improving with corresponding benefits and disadvantages depending on circumstances. Submarines of many navies today are almost as well networked with their national and maritime domain awareness (MDA) as are surface and airborne units because of trailing wire antennas; but with the added advantage of a much higher ability to maintain stealth due to being submerged for longer periods.

Hangors Deploying in the Bay of Bengal

That brings us back to the Hangors! In mid-June 2026 while the *Hangor* and accompanying ships were in Colombo, a Pakistan Navy senior officer mentioned that the PN could maintain a submarine presence in the Bay of Bengal. From the PN point of view, deployments in the Bay of Bengal at some distance from bases like Karachi are operationally and tactically possible, especially with the addition of AIP which permits some endurance for a Hangor. Pakistan is cultivating friends around the Bay of Bengal who may provide permission for port visits during peacetime. Besides, China and perhaps others may assist with domain awareness.

Strategic Rationale? Strategically, Pakistan may have more things in mind. Indian ballistic missile submarines (SSBN) may operate from so-called “bastions” somewhere within the Bay of Bengal on deterrent patrols. Such reports would be speculative, because deterrent patrol areas for any nation's SSBNs would be a very closely held secret. Besides, the term “*bastion*”, used in forts on land is a Western term somewhat incorrectly applied to Soviet SSBN patrol areas. The nature of maritime geography does not provide for bastions. Oceans and seas are relatively permeable and in non-conflict conditions, high seas are open for all. So, it can be expected that navies may deploy a range of manned-unmanned assets, including conventional and nuclear submarines, to shadow someone else's SSBNs. Japanese and NATO conventional boats and maritime patrol aircraft were regularly deployed to try and “*mark*” Soviet SSBNs. Likewise, the Soviets also would try and



Left: A type XXIII submarine, formerly U 2367, in service for the Federal German Navy as U Hecht, S 171 (photo Bundesarchiv/Bild from commons.wikimedia.org)
Right: Yuan (Type 039A) Class Attack Submarine (credit commons.wikimedia.org)

track NATO SSBNs, but this task was a little more difficult because their deterrent patrols were probably in relatively open and dispersed ocean areas. These tasks are termed Strategic Offensive and Strategic Defensive Anti-Submarine Warfare (SOASW and SDASW) and are an important national-naval effort.

Hangors as Part of Pakistan's Nuclear Architecture?

For long the PN has strived to create a tube-launched nuclear-tipped cruise missile capability as part of its own triad. Although definite information is not available, it is very likely that the HN-3 "Babur" can carry nuclear warheads. Torpedo tubes are usually 533 mm (or 21 inches) in diameter and that is not a small size for fitting a warhead considering that 155mm (6 inches) artillery shells can also be adapted to have a small nuclear warhead. The implications of equipping SSKs with nuclear cruise missiles are elaborated in a Policy Brief written for the Asia Pacific Leadership Network, 07 May 2026 (APLN, Seoul). (See <https://www.apln.network/analysis/policy-briefs/naval-competition-in-south-asia-and-the-limits-of-confidence-building-measures>).

The eight Hangors could pose concerns and to dent this, India would need to have an extensive set of capabilities for underwater awareness - manned and

unmanned submarines; intelligence fusion that includes space and cyber dimensions; and an ability to exert pressure on PN's boats and unmanned underwater vehicles. **Daunting, but necessary.**

Submarines of various types remain a bulwark of naval ability for sea control, sea denial, power projection and covert presence. There is little justification for further delays in building Indian

conventional and nuclear attack submarines and investing in a variety of Unmanned Surface Vessels. This is not only to counter Hangors or any other adversarial submarines, but enable sustained robust outcomes across the Indian Ocean Region and even beyond. An axiom for submariners goes, *Run Silent Run Deep* but can be suffixed to *Ruin the Enemy* like little else can.



Rear Admiral Sudarshan Y Shrikhande, AVSM, (Retd) was commissioned in July 1980. During his long service, he commanded IN ships Nishank, Kora and Khukri. He is a post-graduate (with distinction) of the Soviet Naval War College (1988), D.S.S.C. Wellington (Scudder Medal), Naval War College and of the US NWC with highest distinction (2003) winning the Levy, Bateman and Forrestal Prizes. He was the Defence Adviser in Canberra with concurrent accreditation to four other South Pacific nations from end 2004 to early 2008. He contributes as a strategic analyst and post retirement is involved in teaching strategy formulation, operational art, force structuring, leadership, ethics and diverse military subjects in several military and civilian institutions. He is associated with the Vivekananda International and Observer Research Foundations as well as FINS and the Stimson Centre, Washington DC. He has participated in Track 2 dialogues with a few countries as well as in other national and international conferences.



Rear Admiral
Sudarshan Y Shrikhande

THE LAST SALUTE

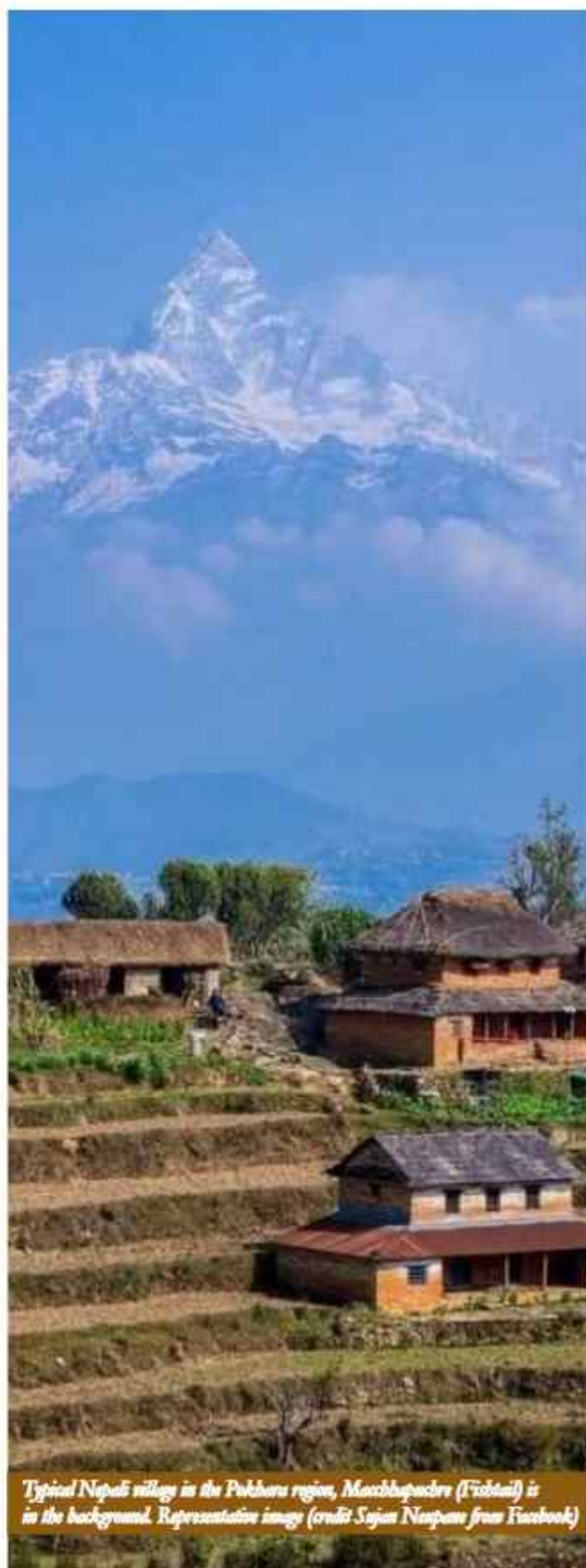
A COMMANDING OFFICER'S COVENANT

An Army is held together by discipline. A regiment is held together by memory. But what binds soldiers to one another for life is something far less visible. It is a moral contract that is never written, never spoken and never forgotten. A Commanding Officer's (CO's) responsibility does not end with a soldier's death. Sometimes, it begins there.

**Hathua Village, Bhojpur District, Eastern Nepal,
December 2004**

Winter arrives early in the Eastern hills of Nepal. By the middle of December, the forests of Bhojpur stand silent beneath skies of remarkable clarity. At dawn, frost settles gently upon the terraced fields, turning every blade of grass silver before the first rays of sunlight warm the mountain slopes. The higher ridges, clothed in pine and rhododendron, remain wrapped in a biting cold that penetrates wool and bone alike. The mountains decide when one travels, where one rests and sometimes, whether one reaches one's destination at all.

During one such winter I found myself travelling East from Kathmandu on a journey unlike any I had undertaken before. I was serving as India's Defence Attaché in Nepal, an appointment I thoroughly enjoyed, not merely because of its diplomatic responsibilities, but because it allowed me to reconnect with the extraordinary fraternity of Gorkha soldiers who had served the Indian Army with unwavering loyalty for generations. My official duties frequently took me to pension camps scattered across Nepal, where thousands of retired



Typical Nepali village in the Pokhara region, Macchhapuchhre (Fishtail) is in the background. Representative image (credit Sojan Neupane from Facebook)

soldiers gathered every few months. These camps were far more than administrative exercises. They were reunions of a military family. Old Riflemen met their former Company Commanders; Havildars embraced officers they had not seen for decades. Stories were exchanged, photographs produced from faded envelopes and memories revived with astonishing clarity.

Those journeys became the most rewarding part of my tenure. Whenever time permitted, I would leave the formal itinerary behind and travel into the villages where many old soldiers had returned after retirement. Each visit reminded me that a soldier never truly leaves the regiment. He merely carries it home. In December 2004, I was visiting the Pension Paying Office, Dharan, in Eastern Nepal. The District Soldier Board Secretary, Honorary Captain KK Saab, mentioned a name that immediately transported me back in time. "Saab," an elderly pensioner said quietly, "have you ever visited Chattrai Rai's mother?" The question caught me by surprise. For a few moments, I remained silent. Of course I remembered Chattrai. How could I not?

Rifleman Chattrai Bahadur Rai had served under my command in the 2nd Battalion, 11 Gorkha Rifles (Shingo). He was one of those young soldiers every CO instinctively trusted. He was quiet, dependable and utterly fearless. He never sought attention, never complained, and never failed in any task entrusted to him. Like countless Gorkha riflemen before him, he believed that duty was not something to be spoken about; it was something to be lived. Three years earlier, in December 2001, during counter-insurgency operations in Kashmir, Chattrai laid down his life while courageously pursuing a Pakistani terrorist through a dense forest. He had pressed forward without hesitation, determined that the

terrorist should not escape. He never returned from that operation. The terrorist did not escape for long. Our battalion continued the hunt. Within days, the terrorist too was dead. There was satisfaction in that, but no celebration. Nothing could return a young rifleman to the regiment he loved. Nothing could return a son to his mother.

Chattrai was unmarried, his father had passed away many years earlier. His seventy-six-year-old mother now lived alone in a remote village called Hathua in Bhojpur District, across the mighty Arun River, nearly twelve hours on foot from Dhankutta. I realised, with some discomfort, that although I had written to her after Chattrai's death and ensured that every assistance due to the family had been provided, I had never met her.

Some responsibilities cannot be fulfilled through official correspondence. A CO owes his soldiers more than paperwork. He owes something to those who entrusted their sons to his care. That evening, I quietly altered my travel plans, and decided to travel East to meet

Chattrai's mother. The following morning we left before first light.

The road from Dharan wound steadily upwards towards Dhankutta, climbing through forests that seemed almost suspended between earth and sky. The air grew colder, villages became fewer, houses more scattered, and the roads narrower. Occasionally we passed groups of children walking barefoot to school, their laughter echoing across the valleys despite the cold. Elderly women carrying enormous *doko* baskets supported by head straps moved with astonishing ease along mountain paths that left even experienced trekkers breathless.

By late afternoon we were at Dhankutta, the road ended here. Hathua lay beyond the Arun River, one of Nepal's great mountain rivers, its icy waters fed by glaciers far to the North. There were no motorable roads leading to the village in those days. Everything that entered or left Hathua travelled on human backs. The next morning, before sunrise, we set off on foot. The



11 Gorkha Rifles soldiers ready for action. Representative image (credit reddit.com)



Gorkha soldiers training in an exercise. (Representative image)

mountain trail descended steeply through forests of pine and oak. Frost crackled beneath our boots. Every breath produced little clouds of white mist. The silence was broken only by the sound of distant cowbells and the occasional cry of a hill bird disappearing into the trees.

Hours later, we reached the Arun. Wide, cold, and relentless, it flowed through the valley with a quiet authority that only great rivers possess. A boat ride took us across the mighty Arun, there were no suspension bridges then. We started climbing up from the river. Looking down at the rushing water far below, I found myself thinking about how many generations of young Gorkha recruits had crossed this same river on their way to recruitment centres, carrying little more than hope, courage and a determination to earn the coveted olive-green uniform of the Indian Army.

The climb was steep. The winter sun never seemed to warm the narrow trail. My thoughts drifted back to Kashmir. I remembered Chattré exactly as he had been: stocky, cheerful when among his friends, respectful almost to a fault, and utterly dependable during operations. Some soldiers impress you because of extraordinary acts of courage. Others earn your confidence through countless small acts of professionalism that rarely appear in citations. Chattré belonged to the second category. He was exactly the

sort of soldier every CO wanted beside him when the situation became uncertain.

I was no longer merely walking towards a remote village. I was walking towards a promise. A promise made silently by every CO on the day he assumes command - that if one of his soldiers falls, he will never forget those of his family left behind. As the afternoon shadows lengthened across the valley, my soldier stopped and pointed towards a distant hillside. "Saab," he said quietly "Hathua."

Scattered across the slope were a handful of stone and thatched houses, almost indistinguishable from the mountain itself. Thin columns of blue smoke rose into the crystal-clear winter sky. I adjusted the straps of my haversack, took a deep breath, and began the final climb.

I unconsciously straightened my shoulders. I was about to meet *Chattré's Amma*.

Amma

The final climb was the steepest. The narrow footpath wound between terraced fields that lay almost barren in the winter months. The harvest had long been gathered. Only short stubble remained, silvered by frost and swaying gently in the cold breeze that descended from the higher ridges. Every few hundred yards we passed neatly stacked piles of firewood, each carefully covered against the winter dew. In these hills, firewood meant survival.

The village emerged almost reluctantly from the mountainside. There could not have been more than twenty or thirty houses, built of stone, mud and timber, their thatched roofs weathered by decades of monsoon rains and Himalayan winters. There was no electricity then, no road, no school that I could see. No dispensary. Life here was lived much as it had been for generations. Children stopped playing as we entered the village.

News travels quickly in mountain communities. Before long, men and women began appearing quietly at their doorways. They looked at me with curiosity rather than surprise. Visitors were rare. A serving Indian Army officer, the Defence Attaché, accompanied by local ex-servicemen, was rarer still. Nobody asked why I had come, they already knew. My guide pointed towards the last house at the edge of the village. "That is Chattré's home." It stood slightly apart from the others, overlooking the valley below as though keeping a silent watch over the mountains. The house was small, built of rough stone plastered with

mud that had cracked in places under years of sun and rain. The thatched roof had darkened with age, and wisps of smoke escaped through the gaps in the straw.

Beside the house in a small bamboo pigsty, a single black pig looked up briefly before returning to its meal. Nearby, one solitary hen scratched patiently at the frozen earth, occasionally stopping to peck at grains scattered in the courtyard. There was no fence. No gate. Only a clean, swept earthen courtyard, immediately reminding me of the lines outside a Gorkha barrack room before morning inspection. Everything was simple, was in its place. Someone lived here with pride. An elderly woman emerged slowly from the doorway.

She wore the traditional dress of a Rai woman from the Eastern hills: a faded hand-woven *chanbandi* blouse beneath a dark wraparound *phariya*, covered by a well-worn grey woollen shawl drawn tightly around her shoulders against the December cold. Her silver hair was tied neatly into a small knot at the back of her head. Years of working the mountain slopes had bent her slightly, but there remained a quiet grace in the way she stood. Her face was deeply lined, not by age alone but by waiting. She looked at us for a long moment without speaking. One of the villagers stepped forward. "Amma," he said gently in Nepali. "Yo Chattré ko CO ba." This is Chattré's CO.

For a brief moment she simply stared at me. Then recognition slowly spread across her face. Not because she had ever met me before but because my name had travelled to this lonely village in the letters Chattré had written home. She took a hesitant step forward. "Shokin Saab?" I nodded. Before she could fold her hands in greeting, I instinctively went to hug her. She seemed startled. "No...no, Saab...." She tried to stop me, almost embarrassed.

I smiled, "Amma, I have come to meet you,

Chattré's mother." Her eyes filled instantly. Without saying a word she placed both her weathered hands gently upon my head, "Bhagwan tapailai lamo aayu diun." May God grant you a long life. I have received many honours during my years in uniform. None has remained with me as long as that blessing. She led me inside, the house consisted of a single room. The floor was smooth mud, hardened by generations of careful maintenance. One corner served as the kitchen. A clay hearth rested beneath a blackened wall where years of wood smoke had stained the timber almost ebony. Above the fire hung iron cooking pots, suspended from bamboo rafters.

Against another wall stood a narrow wooden bed covered with neatly folded quilts. Beside it rested an old iron black trunk. Every soldier knows such trunks. They travel with us from posting to posting. They hold uniforms, letters, photographs, small treasures collected over years of service. I knew whose trunk it had once been. Two brass vessels were

standing near the doorway. I remarked how brightly they shone. She smiled, recalling that Chattré always liked everything clean. I remarked too, "So did his Company Havildar Major." For the first time, she laughed softly. It lasted only a few seconds. But it transformed the room.

Outside, more villagers had begun gathering quietly. Someone brought stools borrowed from neighbours, another spread a woven mat upon the floor. This was not hospitality extended to a visitor. This was a village receiving the officer of its fallen son. As the afternoon wore on, I noticed that there was no water stored in abundance. Only two brass containers stood beside the kitchen wall. Seeing me look towards them, one of the elderly neighbours explained, "the spring dried years ago." He pointed towards the valley far below. "Now the women fetch water from the river, three hours...."

I looked at Amma. She was seventy-six. The neighbour understood



Map of the route from Dhankuta to HATHUA



11 Gorkha Rifles soldiers marching on parade (photo postcard)

from the bamboo beams was a single green chilli, tied carefully with a piece of string. It had been kept there to dry slowly in the warmth of the hearth, preserved for the days when nothing else remained to flavour a meal. She reached up carefully and untied it. Holding it gently in her hand, she smiled almost apologetically, *"I was saving this for later. But today my son's Saab has come."*

She quietly walked outside into the courtyard. A few moments later, I heard the unmistakable fluttering of wings. When she returned, she was carrying the solitary hen that had been scratching in the courtyard minutes earlier. I immediately understood what she intended to do. *"No, Amma,"* I said gently, *"Please don't."* She looked at me with quiet determination. *"It*

my unspoken question. *"She cannot go anymore. So someone from the village brings it for her."* That single sentence told me everything I needed to know about life in Hathua. In these mountains, survival was a community effort. As evening approached, I prepared to leave for the village headman's house, assuming arrangements had been made for me there.

Before I could say anything, Amma looked at me almost anxiously. *"No, Saab,"* she said, *"You will stay here."* I protested gently, *"Amma, there isn't enough room."* She looked almost offended, *"There is enough. It is Chattri's house. You are his Saab."* The matter was settled. There are moments when the only proper response is acceptance. I placed my haversack quietly beside the wooden bed. For that one winter night, the lonely home of Rifleman Chattri Bahadur Rai became my home as well.

As darkness descended swiftly, I had no idea that the most unforgettable conversation of my military life was still ahead of me. As the meal slowly took shape, I looked around the little kitchen. There were no baskets of vegetables, no fruits, no sacks of grain stacked against the wall. Winter had stripped the hills of abundance. The terraced fields lay bare until spring. Whatever had been harvested months earlier had to last until the next growing season. Amma glanced upwards towards the smoke-darkened rafters. Hanging

is our honour. This chicken curry was Chattri's favourite dish. Today it is for you." There are moments when refusing generosity would wound more deeply than accepting it. I said nothing more.

She disappeared behind the house. A short while later she returned carrying the bird, now cleaned and ready for cooking. With practised hands she lit the fire, placed an old, blackened pot upon the clay hearth and slowly prepared the meal. The aroma of wood smoke, fresh chicken, and the single green chilli soon filled the tiny room. This was probably the most expensive meal she would prepare all winter. Not because of money but because of what it cost her to give it.

We sat cross-legged on the mud floor and shared the meal. She apologised repeatedly. *"Saab, if Chattri had been here, I would have cooked better."* After a long silence, I finally said, *"Amma, I have eaten in officers' messes and state banquets across many countries. But I do not think I shall ever eat another meal prepared with so much love."* She smiled, not with happiness, but with the quiet satisfaction of a mother who believed she had honoured her son's memory.

A Mother's Question

After dinner, the little clay bowls were washed and placed upside down on a wooden shelf beside the hearth. Amma carefully swept the mud floor before spreading a simple mattress for herself near the dying fire after insisting that I take the bed. Outside, the village had fallen silent. There was no electricity in Hathua. Darkness belonged completely to the mountains. The only light came from the embers glowing softly beneath the cooking pot. The warmth of the fire seemed to invite memories.

Amma rose slowly and walked towards the old iron trunk standing beside the bed. She untied the small brass key from the corner of her shawl and unlocked it. Inside lay everything that remained of Rifleman Chattra Bahadur Rai. There was no disorder, every article had its place. His olive-green beret was wrapped in a piece of white cloth. Beside it lay his khukri, still gleaming despite the passing years. There were neatly folded letters, his identity card, service documents, photographs, and the medals that the nation had awarded after his death. She lifted each item with extraordinary tenderness, not as possessions but as memories. Finally, she took out a photograph – a young Chattra in the uniform of 2nd Battalion, 11 Gorkha Rifles (Shingo). His beret sat perfectly, his boots shone. There was confidence in his smile, the quiet confidence that I remembered so well. She handed me the photograph, “Saab, he looked happy.”

“Yes, Amma, he was,” I responded. “He loved being a soldier,” she continued. “He never complained, he was respected by everyone, he was brave,” I replied. For a while she simply looked into the fire. Then, without taking her eyes away from the flames, she spoke again.

“Saab, tell me honestly. Did my son suffer?” The question hung in the room. Three years. For three years she had carried that single question. Official letters had not answered it. The Army’s condolences had not answered it. The medals had not answered it. Only one man sitting in that room could. I moved closer to her. “No, Amma,” I said softly. “He did not suffer. He died as a Gorkha soldier would have wished to die.” She nodded gently and turned towards me. I could see that she wanted the truth. No comfort – the truth.

After a deep breath, I continued, “Chattra was part of an operation in Kashmir. We had information that a Pakistani terrorist was

hiding in dense forest. Our boys closed in. The terrorist tried to break through the cordon. Chattra saw him. And without thinking of his own safety, he chased him.” The fire crackled softly. “He could have waited. He could have stayed under cover. But that was not Chattra. He pursued him...fearlessly. The terrorist fired. Chattra was hit....” I felt the familiar heaviness that returns whenever one remembers a fallen soldier. “He fell while doing exactly what he believed was his duty.” There was complete silence. Then I continued. “The terrorist escaped that day, but only for a short while. Our battalion continued the operation. We tracked him, and we killed him.” Justice in war is never complete. It cannot restore a life, but it matters.

She remained silent for a long time. Finally, she asked almost in a whisper, “So...my son did not run away?” I looked directly at her. “No, Amma. He ran towards danger. He died chasing the enemy. He died with great courage. He brought honour to the battalion. And he brought honour to you.” Her hands tightened around the photograph. A single tear rolled slowly down her

weathered cheek. She did not wipe it away. Then, with remarkable composure, she said something I have never forgotten. “I gave him to the Indian Army. The Indian Army made him a good man.” Not a brave man, not a hero – a good man. Those words struck me more deeply than anything else she had said. For that is what every regiment hopes to achieve. Not merely to produce courageous soldiers, but to produce good men.

Amma carefully returned the photograph to the trunk. She folded Chattra’s uniform with the same care that she must once have folded his clothes before he left for recruitment. Nothing had changed. Except that now she folded memories instead. Before closing the lid, she rested her hand upon the beret for a few seconds almost as though blessing it. Outside, the wind sighed through the pine trees. Inside that little house in Hathua, I realised that the Army had sent a notification of death. It had provided financial



Battle ready Gorkha troops (Representative image credit reddit.com)



Typical Nepali village dwelling in the hills (Representative image)

assistance. It had honoured Chattré with military dignity. But none of those things had answered the question that had haunted his mother every single day since December 2001.

Sometimes, the last duty of a CO is simply to bring peace to a mother's heart. That night, long after *Amma* had fallen asleep, I remained awake beside the dying embers of the fire. I thought about Chattré and about the hundreds of young soldiers I had commanded. And I promised myself that whenever duty or destiny allowed, I would seek out the families of those who had served under me. Not because regulations required it, but because command does not end when the firing stops. Sometimes, that is precisely where it begins.

The Farewell

I slept little that night. The fire had long since died, but the smell of wood smoke lingered in the little house. From somewhere beyond the hills came the distant bark of a dog, followed by silence so complete that I could hear the Arun River far below, flowing steadily through the valley as it had for centuries. There are nights in a soldier's life that remain forever, this was one of them.

Before dawn, I heard a movement outside.

Amma was already awake. When I stepped into the courtyard, the Eastern sky was beginning to glow faintly behind the distant Himalayan peaks. Frost covered the terraces like a thin white blanket. Every blade of grass sparkled in the first light of morning. The air was so cold that each breath emerged in little clouds before disappearing into the stillness. Her shawl wrapped tightly around her shoulders, *Amma* was feeding the pig before absentmindedly scattering a little grain for the hen that no longer greeted visitors. She smiled when she saw me. "*Saab,*" she said, "*your tea is ready.*"

We sat together outside the house, warming our hands around small brass cups of tea. Neither of us spoke very much. We no longer needed to. The mountains have a way of teaching silence.

Soon it was time to leave. The long walk back to Dhankutta lay ahead, followed by the drive to Dharan and eventually Kathmandu.

But for those few moments, none of that seemed important. The villagers had gathered quietly in the courtyard. There were no speeches, no formal farewells, only warm smiles, folded hands, and simple good wishes. *Amma* disappeared into the house for a few moments. When she emerged, she carried a small brass plate. Upon it lay a little vermilion powder, a few grains of rice, and fresh flowers gathered before sunrise. Without a word, she stood before me. I instinctively bowed my head. With hands that trembled slightly from age, she placed a *tikka* on my forehead. The rice clung to the red mark. Then she looked directly into my eyes. There was neither sadness nor self-pity on her face, only the quiet strength that I had come to admire. Very softly she said, "*Saab, I had only one son.*" Her voice faltered. For a moment she looked toward the mountains. Then she continued, "*God took him away.*" She reached out and held both my hands in hers. Her palms were rough from a lifetime of working the hills. "*Today, when you leave this house, I shall again have one son. You must come whenever you can.*"

For several moments I could not speak. In all my years in uniform, in war, in peace, in command and in diplomacy, I cannot recall another moment that humbled me more. I bent down and touched her feet. She tried, as she had done the previous afternoon, to prevent me. "*No, Saab, no....*" But I persisted. She placed both her hands gently upon my head and blessed me once again. In that instant, I no longer felt like a visiting officer or the Defence Attaché. I felt like Chattré's elder brother returning home. As I walked down the mountain path, I turned once to



Gorkha Soldiers firing on a range (Representative image)

look back. *Amma* was still standing exactly where I had left her, one hand raised in blessing. I never saw her again, yet not a single year has passed without my thinking of that winter morning in Hathua.

People often ask soldiers whether they remember the battles they fought. Of course, we remember the gunfire, we remember the fear, we remember the men we lost. As the years pass, those memories slowly become quieter, what remains vivid are the people. Whenever I think of Rifleman Chattra Bahadur Rai, I no longer see the forests of Kashmir where he laid down his life while courageously pursuing a terrorist. I see instead a lonely figure wrapped in a grey shawl, standing outside a modest thatched house in the hills of Bhojpur, watching her son's CO disappear down a mountain path.

That journey taught me something no military academy, Staff College or command appointment ever could. Command is often described in terms of authority, responsibility, and decision-making. In Hathua I learnt that command is something much deeper. **It is a covenant.** When a young man joins a battalion, he entrusts his life to his CO. His family entrusts something even more

precious - their faith. If fate allows him to return, that trust is rewarded. If he falls, that trust does not end with the funeral, the bugle or the folded Tricolour. It becomes the CO's to carry - long after the last shot has been fired, long after the medals have been presented, long after the world has moved on.

As I descended towards the Arun River, I realised that I had gone to Hathua to pay a debt to one of my soldiers; I

returned with the knowledge that I had received a gift far greater. Meeting Chattra's mother had reminded me that the true strength of a regiment is measured not by the battles it wins, but by the bonds it refuses to break. That winter morning, in a tiny thatched house in the hills of Eastern Nepal, an old mother gave me the greatest honour of my military life. **She called me her son.**



Lieutenant General Shokin Chauhan, PVSM, AVSM, YSM, SM, VSM (Retd) was commissioned into the 11 Gorkha Rifles in December 1979. He has served as the Defence Attache' in Indian Embassy, Kathmandu, Nepal. He later commanded 1 Corps and was the Director General of Assam Rifles thereafter. He was awarded a PhD Degree post retirement for his comprehensive thesis on Indo-Nepal Strategic Relations in the 21st Century from the Punjab University, Chandigarh.



**Lt Gen
Shokin Chauhan**

MYGATE TO SUCCESS

A FIRESIDE CHAT WITH VIJAY ARISETTY

Ex-Squadron Leader Vijay Arisetty, an alumnus of the National Defence Academy (NDA), is an Indian entrepreneur, former Indian Air Force (IAF) officer, and the co-founder and CEO of MyGate, a digital security and community management platform for gated communities. Arisetty's journey from the defence services to the start-up ecosystem exemplifies innovation, discipline, and leadership. Under his guidance, MyGate has become a leading solution for residential security, trusted by millions of users across India. Vijay Arisetty's remarkable journey from a decorated Air Force officer to a pioneering tech entrepreneur reflects his unwavering dedication to public service and innovation. His leadership continues to shape the future of urban living in India. Our Editor (Air) had an interesting chat with him in Bengaluru.

From piloting helicopters in the blue skies to the corporate boardroom, it has been a long journey. Tell us about your childhood and where did this journey begin?

My father worked for Hindustan Aeronautics Limited (HAL). I often saw pilots who would come to the factory and that uniform motivated me. More importantly, when the pilots came, everybody in HAL used to run around them because the IAF was their biggest customer, and the business came from them. When I saw my father, whom I respect so much, clapping for somebody in uniform, I wanted to be that somebody. Besides I was more of an extrovert, always outside the house playing. Those days, there were only a few IITs, IIMs, and medical colleges, so, I decided to go where no one else was going and become a pilot. My parents encouraged me to work hard and that is how I got into NDA and joined the IAF.



Squadron Leader Vijay Arisetty receiving the Shourya Chakra from Dr. A.P.J. Abdul Kalam, the President



Vijay Arisetty in his Air Force office

How was your experience in the Service and how did it shape you?

Being in the Armed Forces is a rare experience that very few in the world get, and I consider myself very fortunate. Today, I take big critical decisions for my company probably once in a couple of years. But while in the Air Force, I used to take such decisions on a daily basis. In my ten-year career, I was posted to seven different places that gave me a wide exposure. Each area was geographically different and flying in each had its unique challenges. Not only were the tasks of each squadron different, the people in them were also different. Thus, the culture in each unit was unique. For example, my first posting was in Gorakhpur, where there were two fighter squadrons and one helicopter unit. The station's culture was therefore a mixture of all these units. In Andaman and Nicobar, with only one helicopter unit, the culture was different. It was almost like being in seven different organizations with different functions. The only commonality was the helicopters flying controls, the cyclic and the stick!

That kind of exposure at a young age is not something one gets easily. Whether it was flying VVIPs or disaster relief missions or carrying out routine forward area drops, very often we had no one to advise us. Once we went beyond the radio transmission ranges, or flew outside ground radar coverage, we were on our own. Those days, we did not have satellite communication systems or mobile phones. There was nobody to guide you and one had to take vital decisions on the spot. On returning to the base, and debriefing the flight commander or seniors, they would tell you whether you had taken the right decision or not. So, you were always under pressure to take the right decision with limited information available. That taught me a lot.

In the corporate world when people

come into a meeting, they require at least half an hour of preparation time to answer all questions. But when I go to meetings and questions are thrown, I'm able to give the right answers and decisions on the fly. The decision-making ability that we develop in the Armed Forces is incredibly different from the civil street.

At a very young stage of your service career, you were awarded the Shaurya Chakra for your courage, gallantry and devotion to duty. Tell us more about it.

I'll not take too much credit as I was in the right time at the right place, doing the right stuff. On 26th December 2004 when the tsunami struck, for all of us it was the first time we saw something like that. In fact, it was only from newspaper headlines later that we learnt it was a tsunami that had hit the Car Nicobar Islands. Car Nicobar is a coral island. I felt that the coral being fragile must have broken because of an earthquake and

that the island is sinking. The water level was rising so rapidly. Since the airfield was at an elevated part of the Island, I ran all the way and when I reached my technician informed me that my aircraft was ready. I started the Mi-8 helicopter, took on board whoever was around and got airborne. I quickly did my mental calculations as to whether I could reach Port Blair with the fuel available and realised that I would not be able to do so. As I turned back, I saw that the first wave which had hit was receding.

I thought, okay, the Island is not sinking, and it was just a disturbance in the ocean which had caused the first wave. I landed back, by now thousands of people had reached the airfield. I was telling everybody that the water had receded and that everything was okay now. As I spoke, the second wave came with much greater force, and there was panic in peoples' faces. I got airborne again and saw people on rooftops and tree tops in the low lying areas. My immediate thought was to start



Vijay Arisetty (left) chatting with Air Marshal D Choudhury (the author), June 26



Damaged Indian Air Force buildings on Car Nicobar island after the tsunami hit on December 26, 2004 (Photograph: Jayanta Shaw SD/SM/Reuters)

rescuing people where they were in large numbers as then I could save more lives. I lost count of how many people we rescued, but having flown continuously for three hours and 15 minutes, it must be close to 300 people. I was awarded the Shaurya Chakra for this action.

What was your take-away from that experience?

More than anything else, it was the learning of how people behave under extreme stress. We had some people who were senior to me, and many airmen who were junior in rank, but elder in age and life experiences. The way people behaved in crisis was entirely different from how they did on normal days. Stress makes people behave differently, and I saw them at their worst and their best.

I realised that under high stress conditions, most people take irrational decisions. Remaining calm is vital as such moments are usually for a limited duration. But then if you delay decisions, the stress will not go away. In the corporate world, you are mostly

under constant pressure to deliver revenue outcomes. I learnt that if you take that kind of stress on a 24/7 basis, your decisions may not be the right ones. One has to avoid constant or long-term stress. For example, worrying about my daughter's future from the moment she is born is avoidable long-term stress. The other is repetitive stress, and I've seen my seniors, course mates and juniors go through during promotion boards, year after year. They felt that they were not under stress, but I could sense it. We tend to double-click on everything around us under stress. If you continue doing your job diligently, things will happen. I know it is easy to say, but we have only so much band-width, so it is better to try and remain stress free.

Why did you leave the Air Force? What was the transition like?

In 2008, when I was posted to the Helicopter Training School to become a Qualified Flying Instructor (QFI), I dislocated my shoulder. The medical specialist said that surgery was needed, but there was no assurance that I would get back to flying. For the first time I felt that the time had come to leave. But then, one wanted to continue flying as being a QFI was a defining career high point. In 2010, I was placed in a low medical category permanently. I was given the option to continue in service but in the ground-duties branch. It was a very difficult decision.



An aerial view of Car Nicobar island (Photograph: Air Commodore Nitin Sathe)

Though almost everybody urged me to continue, I decided to leave. My Commanding Officer made me meet his seniors who had left service and gave me the choice, that should I want to stay he would get my release order cancelled. I had told several people that I was leaving, I did not want to contradict my own decision. Meanwhile, I had prepared for GMAT and applied to the Indian School of Business. Luckily, I got a call letter, and that made it easier for me to make the final transition.

Vijay the entrepreneur, was it always there in your blood or did you evolve over the years? Did your service experience help?

Leaving the Air Force was the beginning of Vijay, the entrepreneur. I believe that entrepreneurship is there inside everybody. I had served in the UN mission in Sudan for almost a year earlier, where we were paid in dollars. I invested it in trading

online since the market was doing well and realised that I was smart enough to make money. So, when I joined ISB, I began wondering whether I should go into marketing or sales or should it be finance and become an investment banker. I had applied for investment banking jobs, and luckily Goldman Sachs came to ISB. They wanted people with five to six years of experience, and since they hire the best, their employees are usually high maintenance. To manage such people, they needed someone with good leadership skills. My career in the Services and the financial knowledge that I gained in trading fitted their bill, and I was hired. From the time I joined them till I left, my salary increased six-fold. While I served with them for five years and was doing well, I also realised that I was too old for the game. Usually, by the age of 32-35 years investment bankers make so much money that they start something on their

own - they start a bank or a wealth management firm or something else. I had joined late at the age of 35, I had proven to myself and others that a *Fianji* could do it, and wanted to do something on my own.

Tell us how you created MyGate and what is the size of your Company today?

After leaving Goldman Sachs in 2015, I took a break for 2-3 months and switched off from all social media platforms. In Bengaluru, if you go from Indira Nagar to Koramangala, on the 100 feet road, you'll get to see all kinds of start-ups, from quick commerce to quick services. Flipkart, Ola, Uber, Myntra, all these had come up during that time. All kinds of ideas used to spin around in my head. But I did not want to do anything which already existed or was copied from the



Vijay Arisetty in conversation with Air Marshal D Choudhury (right)

US. Every day while sitting in the balcony facing the entrance of my gated community, I saw the large number of delivery boys. I realized that gated communities were designed not to let outsiders in, and that was a friction point at the entrance gate. I deliberated on how to use technology to solve that problem. And that's how MyGate was born.

I shared the idea with my wife, who liked it. When I bounced the idea off friends at ISB and Goldman Sachs, they liked it and a few told me that they would join me if I pursued it. That was a confidence-booster as friends were willing to leave high-paying jobs and join me. Unlike in the Armed Forces where we do a lot on intuition, for these guys it was all about data. My co-founder, Abhishek Kumar, one of my ex-colleagues from Goldman Sachs did a macro-economic study and told me that India was moving into gated communities. There were 150,000 gated communities in the country growing at a compounded growth rate of 14%, and e-commerce was also growing at 300% Compound Annual Growth Rate (CAGR).

My hypothesis that the coincidence of the two was going to create friction was real. We needed a technology guy to make this happen, so I called up Shreyant Daga, who was in ISB with me and a strong technology wizard. I flew down to Delhi to explain the idea to him, and before I landed back in Bengaluru, he

had resigned to join me! The three of us then started the company, and for the first three years we put in our own money and built the product. Actually, we didn't have a single customer for the first two years. And then suddenly, one community used it and then slowly from zero in 2017, we have close to 30-35,000 communities and 550 lakh homes, which use the MyGate product today. The company is around almost 2500 to 3000 crores. When we started, there were 150,000 gated communities. Today, in our view, there are at least 320 - 330,000 gated communities in the country.

Who is Vijay today? And is MyGate the only thing you are running with?

When I look back at the last twenty-five years, I think I'm an innovator. In the Air Force, my course mates, obviously, called me different names, but most of my seniors used to call me Smart Vijay because I used to come up with innovative ideas. Some I was able to implement, but there were many which I couldn't, because of service constraints. My education at ISB and service exposure gave me the confidence to implement the MyGate idea and luckily it became successful. It increased my risk taking ability. Presently, I am the Chairman of MyGate and the founder and CEO of Aurm, a new company, which provides secure vaults in gated communities.

I take a lot of pride that there are real problems that people live with and I am able to produce innovative solutions and build them at scale. I use the latest technologies and Artificial Intelligence (AI) tools that amplify the skill levels and capability of every individual. Right now, in Aurm, I have around 60-65 people who are actually doing the job of almost 200-300 people. The way I hire people in Aurm is entirely different from the way we hired people at MyGate. Today, I hire people who are hungry and just want an opportunity. Once hungry people get an opportunity, using these AI resources completely amplifies their capabilities and I am able to do more with less.

Is Aurm just another bus stop? What are your plans for the future?

Intellectually, one keeps getting challenged and there is no end to how much one can do. I want to get Aurm into a decent shape and then again hand it over to my co-founder. At 55, I want to retire and will probably end up as an Advisor. At the operational level, I don't want to do anything after Aurm and would like to focus on my own life. After all whatever money you earn is of no use if you can't enjoy it. I like being



An IAF Mi-8 Hip helicopter responding to severe flooding at an airport in Bangladesh, 1 January 1988, representative image (photo Mark Steele credit commons.wikimedia.org)

close to my near and dear ones. I like like-minded people around me. Spending quality time with coursemates or classmates matters to me. Post-Air Force, relations with professional folks at work is different. But with your coursemates and classmates, there is no judgment, no expectations, nothing. Just pure friendship, and that is very important.

Where do you get your ideas and how do you relax?

During weekends I meet people who are domain experts. If I get an idea, I meet an expert and talk to him to figure out how to take it forward. I enjoy the time spent in getting to the answer, and that keeps me going. I also spend a lot of time on the treadmill to stay fit, but it's a completely brain dead activity. That is also the time I think a lot, internalizing, going really deep into a problem statement to find a solution. I get into the thinking mode for my day-to-day business problems also. Sometimes I think while driving, and the maximum number of calls to my team is while I'm travelling.

What would you advice others who make the transition from the uniform to the civvy-street?

As we get deeply involved in our

careers, we tend to lose sight of what's happening in the external world. Staying abreast with what's happening outside in the world is a must. Spending a few hours a day just to educate yourself in fields other than what you're doing is important. Read books and use the internet for information on anything that you want to pick up and learn. Try and stay updated on things that are happening in the financial world.

Basically, widen your horizons beyond your profession, and be prepared to reorient yourself without getting consumed by your current achievements.

As the long chat came to an end, the Editor (Air) shook hands, bid goodbye and drove back. He was glad to have met Vijay Arisetty, whose success story was indeed an inspiration.



Air Marshal (Dr) Diptendu Choudhury, PVSM, AVSM, VM, VSM (Retd), an alumnus of the Royal College of Defence Studies, UK has a Masters from King's College, London. An experienced fighter pilot who has commanded several combat units, he has held various appointments handling air operations at tactical, operational and strategic levels. He was involved in policy formulation and strategy development for the IAF and led the IAF in three international air exercises, viz., with the USA, France and the UAE. He was the Commandant of the National Defence College, New Delhi prior to his superannuation. He is an avid scholar, writer and speaker on air power, strategy, national and international security matters. He has authored the book "Indian Air Power: Contemporary and Future Dynamics". He is presently the Consulting Editor (Air) with Medals and Ribbons.



**Air Marshal (Dr)
Diptendu Choudhury**

INTEGRATING AUTONOMOUS SYSTEMS AND ROBOTICS IN THE INDIAN ARMY

"We must field and integrate robotics at the speed of relevance, or risk fighting tomorrow's wars with yesterday's limitations."

Warfare has entered an era in which decisive advantage will increasingly come not from replacing soldiers with machines, but from integrating people, sensors, software and autonomous systems into a single fighting architecture. For the Indian Army, this is an operational necessity rather than a technological compulsion. The Line of Actual Control (LAC) and Line of Control (LC) demand persistent surveillance, rapid reaction and resilience in difficult terrain. Counter terrorism operations impose a premium on risk reduction, and recent conflicts have demonstrated the growing importance of drones, loitering munitions, electronic warfare (EW), autonomous logistics and machine assisted decision making.

The central challenge is no longer whether the Army should acquire robots and autonomous systems, but **how should it organise, command, train, sustain and employ them as an integral component of combat power.** Platforms have progressed faster than doctrine and organisational absorption. Translating scattered technological gains into a coherent, doctrinally embedded capability, one in which manned and unmanned elements fight as a single integrated force rather than as parallel systems, will determine whether autonomy becomes a genuine force multiplier or remains a collection of impressive but disconnected demonstrations.

Strategic Rationale for Autonomy

The case for autonomous systems in the Indian Army rests on three primary considerations: **enhancing operational capability, achieving technology advantage, and casualty reduction.**



Swarm Drones (Credit defenceexp.com)

First, and most viscerally, autonomous systems allow the Army to assign what military planners describe as **'dull, dirty, and dangerous' missions to machines rather than soldiers.** In counter terrorism and urban area operations, room clearing and building intervention tasks have historically exposed troops to grave risk from concealed threats. Robotic platforms that can first enter a hostile structure, equipped with sensors and weapons, allow human operators to remain at a safe standoff distance while retaining decision authority over lethal action. Similarly, in high altitude oxygen poor sectors, robotic mules, quadruped load carriers and Unmanned Aerial Vehicles (UAVs) reduce physical strain and the risk of altitude related injury and mission fatigue.¹

Second, **autonomy** changes the speed and scale of the intelligence cycle and **promises efficiency gains in kinetic**

¹ Oneindia News, "Unmanned & Unstoppable: The Army's Shift Towards Robotics & Autonomous Warfare," oneindia.com, February 18, 2025.

actions, surveillance and reconnaissance, information processing, decision making, and logistics. Robotics and autonomous systems are **kinetic force multipliers in their own right**, not merely enablers standing behind the fighting soldier, and the emerging surveillance and decision support architecture is the critical foundation for this integration. The operational value lies not in owning a larger inventory of drones, but in **compressing the sensor to decision time and, where authorised, sensor to shooter cycles**.

This works in two related ways. The first is **informational**; by improving battlefield transparency and compressing the Observe-Orient-Decide-Act loop, persistent autonomous sensors, loitering platforms, and Artificial Intelligence (AI) assisted analytics let commanders see further, decide faster, and direct fires with greater precision than a purely human sensor to shooter chain allows. The second is **directly kinetic**; Manned-Unmanned Teaming (MUM-T), armed quadrupeds, loitering munitions, and semi-autonomous strike platforms extend the reach and lethality of a formation in actual combat, delivering effects from stand-off ranges while giving commanders multiple synchronised options for the application of

force. **Predictive maintenance systems, AI assisted logistics, and automated inventory management** further promise to compress the overhead the Army devotes to sustaining forward deployed formations in remote and high altitude locations.

Third, there is a **competitive dimension that is not unique to India**. Recent conflicts, from Eastern Europe to West Asia, have demonstrated that modern engagements are frequently decided before troops make physical contact, through drone strikes, precision engagements and EW. Indian military planners have explicitly drawn lessons from these conflicts and from **Operation Sindoor**, concluding that victory increasingly belongs to the force that senses first, decides fastest, and acts with precision.² The United States reached a similar conclusion after watching near peer competitors narrow a technological gap during its post 2001 focus on counter insurgency campaigns, prompting the Pentagon's "Third Offset Strategy" and, within the US Army, a dedicated Robotics and Autonomous Systems (RAS) Strategy built around

human-machine teaming and '**decision dominance**.'³ Russia's stated goal of replacing 30% of its military technology with robotic and autonomous systems, and China's pursuit of **dominance in "intelligentized" warfare** through long range, precise, unmanned platforms, underline that this is a genuinely multi actor race rather than a localised dynamic.⁴

Emerging Ecosystem: The Decade of Transformation

The Indian Army's approach to autonomous systems appears nested within a formal institutional programme known as the *Decade of Transformation* (2023–2032), a comprehensive modernisation initiative built around **five pillars: Jointness and Integration, Force Restructuring, Modernisation and Technology Infusion, Streamlined Systems and Processes, and Advanced Human Resource Management**.⁵ Within this framework, the Army has established sixteen specialised technology clusters intended to explore emerging fields including robotics, AI, and quantum

² Indian Aerospace and Defence Bulletin, "Technology, Integration & Indian Army's Operational Edge," *iadbin*, January 24, 2026.

³ US Army Training and Doctrine Command, *Army Capabilities Integration Center (ARCIC), Robotic and Autonomous Systems Strategy*, approved by the Vice Chief of Staff of the Army, 27 February 2017; see also US-China Economic and Security Review Commission assessments of Chinese "intelligentized warfare" thinking.

⁴ *Ibid.*

⁵ Indian Aerospace and Defence Bulletin, "Technology, Integration & Indian Army's Operational Edge," *iadbin*, January 24, 2026.



MUJEE' Robotic Dog 'Sanjay', during Army Day Parade In Kolkata, January 2025 (Photo ANI)



Indian Army signs MOU with IIT, Guwahati, 05 February 2025

computing, alongside “Indian Army Cells” embedded at premier technical institutions such as the Indian Institute of Science (IISc) and the Indian Institute of Technologies (IITs) to incubate defence focused start-ups. These cells have already contributed to the incubation of more than thirty defence start-ups working on AI, robotics, and electric vehicle technologies.⁶

Complementing this is a dedicated **Army AI roadmap for 2025–27**, aligned with India's broader National AI Strategy and the *Atmanirbhar Bharat* initiative, and supported by bodies such as DRDO's Centre for Artificial Intelligence and Robotics (CAIR) in Bengaluru and the Defence AI Project Agency, which provides central guidance and execution oversight for AI projects across the Armed Forces.⁷ This institutional scaffolding signals an attempt to treat technology absorption as a continuous, structured process rather than a series of episodic showcase projects. However, execution has been

rehearsals in New Delhi, where rifle mounted robotic dogs marched alongside troops. Reports suggest that over one hundred such military grade quadrupeds have already been inducted into various Army formations, and are being used for perimeter security, asset protection, and the handling of chemical, biological, radiological, nuclear, and explosive (CBRNE) materials.⁸ While autonomous ground platforms have made an appearance in the logistics domain, their effectiveness as part of MUM-T in combat echelons has the potential to generate decisive battlefield advantage.

A distinctive feature of India's approach is the emphasis on indigenous development rather than simple import substitution. The **Svan M2**, developed by the IIT Kanpur incubated start-up, xTerra Robotics, is described as India's first commercially developed robotic dog, featuring twelve degrees of freedom for stair climbing and rough terrain navigation. Hyderabad based Zen Technologies, with AI Turing Technologies, has developed “**Prahasta**,” an **autonomous quadruped** capable of carrying weapons from 9mm pistols to 7.62mm rifles, combining LiDAR sensing with reinforcement learning based navigation to move through unstructured environments without continuous reliance on GPS. Addverb Technologies, backed by Reliance Industries, has introduced “**Trakr**,” a **twelve-actuator quadruped** providing 360 degree situational awareness for autonomous patrolling.⁹

Aerial Autonomy: Drones, Loitering Munitions, and Swarms

If ground robotics represents the Indian Army's most alluring autonomy push, aerial systems represent its most operationally mature. Since 2023, the Army has received **swarm drone and loitering munitions capabilities** from Bengaluru based NewSpace Research and Technologies, with testing reportedly demonstrating the ability to strike targets at ranges up to fifty kms with high precision.¹⁰

Following **Operation Sindoor**, the induction of **indigenous**

uneven, particularly on the doctrinal side that must ultimately bind these platforms to fighting formations.

Ground Robotics: Quadrupeds and Mules

The most visible manifestation of the Army's autonomy push has been the induction of quadruped “robot dog” platforms, popularly termed **robotic mules or Multi-Utility Legged Equipment (MULEs)**. These systems made a prominent public appearance at the Army Day Parade in Jaipur in January 2026 and again during Republic Day 2026

⁶ WION, “Tech Absorption in Indian Army: AI, Robotics, Quantum Computing and Advanced Materials,” *wionews.com*, 2026.

⁷ PWOnlyIAS, “Indian Army AI Roadmap 2026-27,” *pwonlyias.com/current-affairs/indian-army-ai-roadmap/*, July 21, 2025.

⁸ PWOnlyIAS, “Indian Army AI Roadmap 2026-27,” *pwonlyias.com/current-affairs/indian-army-ai-roadmap/*, July 21, 2025.

⁹ Indian Defence Research Wing, “India Accelerates Deployment of Autonomous Systems in Counter-Terrorism Operations: Robot Dogs, Armed Drones, and Humanoids Take Centre Stage,” *idrm.org*, April 2026.

¹⁰ *Ibid.*

loitering munitions such as the Nagastra-IR has reinforced this shift toward autonomous strike and Intelligence Surveillance and Reconnaissance (ISR) capability, complementing precision upgrades to systems such as the Pinaka multi-barrel rocket launcher.¹¹ The Israeli-origin Heron TP serves as a critical high altitude reconnaissance asset along the LAC, while DRDO's indigenous Rustom-II which was officially closed as a 'mission mode' project in early 2024 after failing to fully meet the strict Joint Services Qualitative Requirements (JSQRs) for altitude and endurance, has undergone flight testing, incorporating electro-optical sensors, synthetic aperture radar, and satellite communication links for persistent surveillance in contested and electronically denied environments.¹²

Organisationally, the Army has raised Bhairav Light Commando Battalions to integrate armed drones, loitering munitions, and real time intelligence feeds into rapid tactical strike formations bridging conventional infantry and elite Special Forces, itself an early instance of the doctrinal restructuring.¹³

Battlefield Surveillance, Management, and Decision Support

Platforms are only as useful as the network that senses, thinks, and communicates on their feed, and this is where the Army's autonomy push is arguably the most critical. Project Sanjay, a turnkey battlefield surveillance system built by Bharat Electronics Limited with DRDO's CAIR, plans to fuse inputs from ground based and aerial sensors at a dedicated Surveillance Centre into a single Common Surveillance Picture, transmitted across the Army Data Network and satellite links for continuous battle space monitoring.¹⁴

A complementary *Situational Awareness Module for the Army (SAMA)*, built under the wider Army Information and Decision Support System (AIDSS), needs to consolidate these feeds into role based visualisation for commanders. The Army is attempting to integrate a system referred to as *Trinetra* with the long standing Battlefield Surveillance System to sustain a common picture during live operations.¹⁵

This sensor layer feeds the *Command Information and Decision Support System (CIDSS)*, envisaged as the hub binding four functions, namely operations, intelligence, logistics, and terrain, into a single decision making architecture, with subsystems including the Battlefield Surveillance System, the Artillery Command Control and Communications System, the Air Defence Control and Reporting System, and the Battlefield Management System (BMS), the last of which is intended to extend secure, low latency connectivity down to the individual soldier and close the "sensor to shooter loop."¹⁶

EW is integrated into the same architecture, so that jamming, signal intercept, and spectrum management feed a single common picture as ground and aerial sensors rather than operating as a separate silo.¹⁷ The operational payoff of fusion was reportedly harvested in Operation Sindoor, when AI driven multi sensor fusion enabled the identification, prioritisation, and engagement of targets with a claimed success rate of approximately 94%.¹⁸

Implementation has nonetheless lagged ambition. Full fielding of the BMS was originally targeted for 2017 but has faced sustained delays from bureaucratic friction and continued reliance on imported hardware.¹⁹

Doctrinal Integration: Fusing Manned and Robotic Formations

Fielding capable platforms is the easier half of this transformation; the complex half is rewriting the doctrine that governs how they fight alongside soldiers. Most Indian inductions, robotic mules, armed quadrupeds, loitering munitions, have been absorbed

¹¹ Oneindia News, "Unmanned & Unstoppable: The Army's Shift Towards Robotics & Autonomous Warfare," [oneindia.com](https://www.oneindia.com), February 18, 2025.

¹² Indian Aerospace and Defence Bulletin, "Technology, Integration & Indian Army's Operational Edge," [iadb.in](https://www.iadb.in), January 24, 2026.

¹³ Oneindia News, "Unmanned & Unstoppable: The Army's Shift Towards Robotics & Autonomous Warfare," [oneindia.com](https://www.oneindia.com), February 18, 2025.

¹⁴ Indian Defence Research Wing, "India Accelerates Deployment of Autonomous Systems in Counter-Terrorism Operations: Robot Dogs, Armed Drones, and Humanoids Take Centre Stage," [idrw.org](https://www.idrw.org), April 2026.

¹⁵ Dr. Syama Prasad Mookerjee Research Foundation, "Bharat's AI-Driven Defence Transformation," [spmrf.org](https://www.spmrf.org), March 5, 2026; S.P.'s Land Forces, "S/ANJAY Battlefield Surveillance System," [spsmai.com/experts-speak](https://www.spsmai.com/experts-speak), February 14, 2025.

¹⁶ Ibid.

¹⁷ S.P.'s Land Forces, "Indian Army's Decision Support Architecture," [spslandforces.com/story/?id=166](https://www.spslandforces.com/story/?id=166); Observer Research Foundation, "The Indian Army Is Finally Making Progress on Digitisation," [orfonline.org](https://www.orfonline.org), December 19, 2024.

¹⁸ Ibid.

¹⁹ The Diplomat, "India's Use of Artificial Intelligence During the Indo-Pak Four-Day Crisis," [thediplomat.com](https://www.thediplomat.com), October 14, 2025, citing statements by Lt. Gen. Rajiv Kumar, Director General, Corps of Electronics and Mechanical Engineers.

into existing formations largely as **additive equipment**, operated within legacy tactics rather than as fully integral members of the fighting element. Realising autonomy as a genuine force multiplier requires **force employment concepts built from the outset around MUM-T**, where robotic platforms are assigned roles, tasks, and rules of engagement within the same tactical plan as the infantry section, armoured troop, or artillery battery they operate alongside, rather than being bolted on as a supporting attachment.

This calls for **doctrinal change at several levels simultaneously**. **Tactically**, standard operating procedures need to specify when a quadruped or drone leads and when the human element leads, how control is handed between operator and platform in contact, and how a section commander integrates an unmanned asset's sensor feed into their own decision cycle in real time, rather than as a separate reporting channel. In **training**, this means combined arms exercises that field manned and robotic elements together from the outset, rather than testing platforms in isolation and introducing them to units only after fielding, so that trust and interoperability are built through repetition. Organisationally, it argues for **embedding robotic and autonomous elements within existing combat units and their command structures**, rather than raising them as separate specialist formations.

Fusion also has a technical dimension that doctrine must anticipate. Manned and unmanned elements need a shared common operating picture, compatible communications, and pre-agreed protocols for autonomous systems to hand off targets, cede control, or request human authorisation for lethal action, so that the CIDSS architecture translates into battle drill level practice rather than remaining a headquarters level construct. Absent this doctrinal work, the **Army risks accumulating an impressive but loosely coupled inventory of autonomous platforms** that behaves, in practice, as a collection of standalone systems rather than as the integrated force multiplying whole the technology is capable of producing.

Lessons from the US Army's Robotics and Autonomous Systems Strategy

India's effort is worth reading alongside the

United States' own programme, formalised by the US Army Capabilities Integration Center (ARCIC). That strategy was framed around **three future operating environment challenges, the need for greater speed of action, the growing use of RAS by adversaries, and increasingly complex, contested battlespaces**. This led to **five capability objectives**:

- Improving situational awareness through battalion level unmanned systems.
- Lightening the combatant's physical and cognitive load through platforms such as the Squad Multipurpose Equipment Transport, to carry up to 1000 pounds for a squad.
- Sustaining the force through "Leader-follower" autonomous convoy technology addressing the vulnerable "last tactical mile".
- Facilitating movement and manoeuvre through semi-autonomous combat vehicles operating ahead of manned formations.
- Protecting the force through standoff systems for route clearance and explosive-ordnance disposal.²⁰

Several of these objectives have informed India's own priorities. The US Squad Multipurpose Equipment Transport is a direct conceptual parallel to India's robotic mules in Ladakh and Siachen, while Leader-follower convoys speak to the same last mile resupply problem Indian planners face in high altitude sectors. Notably, the **US strategy was built from the outset around explicit force employment concepts for MUM-T at battalion and below**, precisely the doctrinal integration India's own effort still needs to complete.

Challenges to Integration

Notwithstanding genuine momentum, several structural challenges stand between current progress and a mature, decisive institutional autonomous systems capability. **Doctrine and organisational absorption** is foremost; fielding new technology platforms is different from embedding them within coherent operational doctrine, command structures, and combined arms tactics.²¹ For battlefield synergy, raising specialised units for operating new technology systems will always be **sub optimal when compared with integrating information age technologies within existing organisational structures**, suitably

²⁰ S.P.'s Land Forces, "Indian Army's Decision Support Architecture," spandforces.com/story/?id=166; Observer Research Foundation, "The Indian Army Is Finally Making Progress on Digitisation," orfonline.org, December 19, 2024.

²¹ US Army Training and Doctrine Command, Army Capabilities Integration Center (ARCIC), *Robotic and Autonomous Systems Strategy*, approved by the Vice Chief of Staff of the Army, 27 February 2017; see also US-China Economic and Security Review Commission assessments of Chinese "intelligentized warfare" thinking, Indian Aerospace and Defence Bulletin, "Technology, Integration & Indian Army's Operational Edge," iadb.in, January 24, 2026.

adapted for efficient war fighting through extensive field experimentation. The initial step is for **formation architecture** to integrate RAS as a formation capability.

Training and human-machine teaming matter equally. Soldiers must be trained not merely to operate autonomous platforms but to trust, supervise, and override them appropriately, a cultural shift as much as a technical one. Ensuring commanders retain confidence in AI assisted decision making, especially where tools such as the CIDSS inform fire control or targeting, demands sustained investment in explainable AI, so that recommendations can be understood and contested rather than accepted as an opaque black box.²²

Cyber-security and EW resilience is an additional concern. Autonomous systems are only as reliable as the **networks and sensors that feed them**, and adversaries capable of spoofing, jamming, or hijacking these can turn a force multiplying asset into a liability, motivating initiatives such as the Army's "Cyber Shield" programme.²³

Terrain diversity and platform customisation complicate scaling further. A platform optimised for Siachen's cold desert conditions will not necessarily perform in the humidity and vegetation density of the Northeast or the confined spaces of urban Kashmir, arguing for an indigenous, modular design philosophy.

Ethical and legal considerations around lethal autonomy are unavoidable as armed quadrupeds and eventually humanoid systems move toward carrying and

potentially employing weapons. India's stated policy posture has favoured binding international agreements within the UN Convention on Certain Conventional Weapons framework to regulate lethal autonomous weapons systems, while investing in explainable AI and embedding humanitarian law principles into targeting algorithms.²⁴

Finally, **supply chain and component dependence** persists. Even indigenously designed platforms often depend on foreign sourced sensors, actuators, and computing hardware, meaning genuine self-reliance requires deeper investment in India's domestic semiconductor and precision actuator manufacturing base.

The Path Forward

The Army should **continue to privilege staged, modular development** over attempts at single dramatic breakthroughs. The incremental progression from basic quadruped mules to armed reconnaissance platforms eventually to humanoid systems reflects a sound engineering philosophy that should be persevered even as timelines are managed realistically.

Formation Architecture will need to encompass the **four tiers of Corps, Division, Brigade and Battalion**. Towards this:

- At **Corps level**, an **RAS Operations and Fusion Cell** should be established within the existing operations/intelligence architecture rather than creating a separate independent headquarters. The Corps should hold capabilities that are uneconomic to duplicate at lower levels, like long endurance ISR, specialised EW payloads, heavier UGVs, autonomous logistics systems and high performance computing/data services. The governing principle should be

centralised intelligence and standards, decentralised employment. It should provide the network, common operating picture, specialist support and reinforcement when required.

- **Every Division** should have a **deployable RAS Group/Troop**, integrated with operations, intelligence, signals, artillery, engineers and logistics. It should maintain a pool of medium range ISR drones, counter UAS systems, robotic logistics platforms, ground reconnaissance systems and technical support teams. The Division should also become the **principal RAS training and experimentation headquarters**. Its exercises should routinely test MUM-T, cross unit handover, degraded communications, electronic attack and autonomous logistics.

- The **Brigade** should be the **principal formation for integrating RAS** into combined arms manoeuvre. A small **RAS Troop/Detachment** should be part of the Brigade's operations architecture, supported by standardised control equipment and maintenance support. Its equipment should be modular including, tactical ISR drones, small loitering systems, counter UAS sensors and effectors, small UGVs for reconnaissance, robotic load carriers and autonomous/semi-autonomous logistic vehicles, where terrain permits.
- The **Brigade RAS element** should be **capable of distributing systems** to battalions and subsequently recovering, re-tasking or reinforcing them. Critically, the same architecture should permit **controlled handover of an asset from one battalion to another**.

- The **decisive level** is the **battalion**. If

²² S.P.'s Land Forces, "Indian Army's Decision Support Architecture," spslandforces.com/story/?id=166; Observer Research Foundation, "The Indian Army Is Finally Making Progress on Digitisation," orfonline.org, December 19, 2024.

²³ PWOnlyIAS, "Indian Army AI Roadmap 2026-27," pwonlyias.com/current-affairs/indian-army-ai-roadmap/, July 21, 2025.

²⁴ Ibid.

RAS is not routine at battalion and below, the transformation will remain headquarters centric. Every infantry, mechanised infantry and armoured unit should therefore have an organic RAS Platoon/Section in its structure. The baseline package should include small ISR drones at company level, a small UGV capability for reconnaissance, robotic load carriers and trained operators capable of interpreting the sensor picture. The battalion commander will need to have **one integrated RAS control architecture** rather than separate consoles for every manufacturer. The principle should progressively become one operator controlling multiple systems and collaborative autonomy.

A practical battle process would be to 'Sense, Classify, Decide, Act and Assess'. A drone or UGV detects an anomaly; AI assists classification; the commander decides the appropriate response; an authorised manned or unmanned asset acts; and the system assesses the result. Human command and accountability remain central to decisions involving lethal force.

RAS Digital Spine. RAS cannot be integrated effectively if every platform has its own proprietary controller, data format and communications architecture. The Army should therefore establish a **RAS Digital Spine** based on open interfaces, common identity and authentication, secure and interoperable data links, modular payloads, common operator interface, and operation in degraded communications environment.

Doctrine and training investment should be treated as co-equal with, not subordinate to, hardware induction, since a robotic mule or armed quadruped is only as effective as the fusion between it and the unit trained to employ it. This means writing MUM-T into force employment doctrine at unit and sub-unit level now, rather than retrofitting doctrine after platforms are fielded, and building combined manned-robotic exercises into the standard training calendar rather than treating platform trials as a separate track.

Resilience in cyber-security, GPS independent navigation, and component supply chains, deserves at least as much investment as headline generating platform capability, since systems that can be jammed, spoofed, or supply-denied provide false confidence

rather than real advantage. Sustained attention to the **ethical and legal dimensions of lethal autonomy** will remain essential for both international legitimacy and the trust of soldiers who will fight alongside these systems.

Conclusion

The Indian Army does not need a future in which robots replace soldiers. It needs a force in which soldiers command a larger, smarter and more resilient team of manned and unmanned systems. The technology ecosystem is developing rapidly. DRDO's autonomous systems portfolio, indigenous drone manufacturing, robotic ground systems and new technology enabled formations demonstrate that the hardware and innovation base is no longer the principal constraint. The decisive step now is organisational.

Corps should provide fusion, specialist capability and scale. Divisions should integrate, train and allocate. Brigades should orchestrate combined arms employment. Battalions should make RAS part of everyday combat drills. The objective is therefore not *more robots*. It is **more combat power per soldier**: greater awareness, greater reach, greater endurance and lower exposure.

If India can make that transition, from platform induction to formation level integration, autonomous systems will cease to be technology demonstrations and become what they should be, a **permanent and integrated component of Indian military power.**



Major General Ravi Murugan, PVSM, AVSM (Retd), an alumnus of National Defence Academy, Pune was commissioned into the 8th Battalion, The Brigade of Guards in June 1987. He has a Master's Degree in Science from Madras University as also an M Phil from Osmania University. In his 37 years of service, he has fulfilled multiple challenging roles across diverse operational areas. After command of his battalion, the officer commanded an Independent Armoured Brigade and subsequently, a Counter Insurgency Force in J&K. He was also the Defence & Military Attaché in the Embassy of India, Washington DC between June 2016 and July 2019. He has been the Additional Director General Military Operations (B) in Army Headquarters and commanded the Karnataka and Kerala Sub Area before retirement. He is presently in an advisory role with multiple companies and is the Associate Editor of Medals and Ribbons.



**Major General
Ravi Murugan**

WALKING THE ANCIENT SILK ROUTE

The Indian Army's
Summer Silk Route
Expedition 2026

Organised by Fire & Fury Corps, the Summer Silk Route Expedition retraced history across the Ladakh and Karakoram Ranges as it covered approximately 307 kms over twelve days, carrying nearly 25 kilograms of equipment across terrain ranging from lush alpine meadows to snow-covered passes approaching 18,000 feet. The expedition brought history into the present, demonstrating that the Silk Route remains a reminder of connections forged between people, cultures and regions across the Himalayas.

"The mountains never tell the same story twice. Every valley, every pass and every trail reveals a different face of Ladakh."

The journey began at **Nimu**, where the emerald waters of the Zaskar meet the mighty Indus before flowing West through the rugged mountains of Ladakh. It was here that ten members of the **Indian Army Summer Silk Route Expedition 2026** shouldered their rucksacks and set out to retrace one of the oldest caravan routes in Asia. Yet the journey would become far more than a test of endurance. It became an opportunity to experience the changing landscapes of Ladakh while walking a route where history still feels remarkably close.

Historic Significance of the Silk Route

The **Silk Route** was more than a network of ancient trade trails; it was a historic link connecting the Indian subcontinent with Central Asia. For centuries, caravans crossed the mountains of Ladakh carrying silk, pashmina, tea, precious



The Central portion of the Silk Route Expedition



Crossing Laxermo La on the Ladakh Range, one of the highest and most demanding stages of the expedition



The expedition team at Karakoram Pass after successfully retracing the historic Silk Route

stones and other goods. These routes enabled commerce across challenging terrain in Asia. Though the caravans have long disappeared, the route continues to preserve its legacy, winding through valleys, mountain passes and campsites that have changed little with time.

Ladakh occupied an important position in this network because of its location between India and Central Asia. Caravan trails passed through valleys and high mountain passes, linking settlements and trading centres. Sections through Hunder, Panamik, Penchimik and Sasoma formed part of the ancient route used by traders travelling between Ladakh and Central Asia. Beyond trade, these routes enabled movement and cultural influences.

The historical importance of the route is particularly evident towards the Northern frontier. The trail continued through the Saser Valley towards Daulat Beg Oldie and the Karakoram Pass. Daulat Beg Oldie stands on the historic Silk Route once used by caravans between India and Central Asia, while the Karakoram Pass witnessed centuries of commerce, exploration and cultural exchange.

Marching Into the High Passes

The first few days carried the expedition through **Phyang** and **Phyang Phu**, where Ladakh presented a

landscape few expect from the cold desert. Wide alpine meadows stretched beneath snow-covered peaks, crystal-clear streams crossed the trail and herds of yaks grazed peacefully across the valley.

These opening stages allowed the team to settle into the rhythm of mountain life. Before sunrise each morning, tents stirred quietly as boots were laced, rucksacks packed and steaming cups of tea offered welcome warmth before another day's march. By the time first light touched the surrounding ridges, the expedition was already moving. The camp at **Phyang Phu** marked the last of the green valleys. Ahead, the mountains slowly changed character as the trail climbed higher towards snow-covered slopes and the expedition's first major challenge.

Crossing Lasermo La

The approach to **Lasermo La** transformed the landscape completely. The green valley gradually disappeared beneath snow-covered slopes, while the air grew noticeably thinner with every step. At high altitude, progress is never hurried. Every member moved with a steady rhythm, understanding that patience and teamwork are often more important than speed.

The first sight of prayer flags fluttering in the mountain wind quietly announced the approach to the pass. Standing atop **Lasermo La**, the team looked across an endless panorama of snowfields, frozen alpine lakes and distant ridgelines stretching across the Himalayas. It was one of those rare moments when the mountains encouraged everyone to pause—not because they had reached a destination, but because the landscape demanded appreciation.

The descent towards **Hunder village** revealed an equally remarkable transformation. Snow gradually gave way to green meadows, glacial streams once again accompanied the trail and the valley opened into a landscape that felt almost like another season. The contrast between the high pass and the valley below was one of the expedition's most memorable experiences.

Following the Ancient Caravan Trail

From **Hunder**, the expedition continued through **Hunder Gompa**, **Panamik**, **Penchimik** and **Sasoma**, following sections of the ancient Silk Route once used by traders travelling between Ladakh and Central Asia. Every day's march revealed another face of Ladakh. Wide

meadows gave way to narrow valleys. Glacial streams disappeared beneath rocky terrain before emerging once again lower down the trail.

Beyond **Sasoma**, the expedition entered the Saser Valley and began the climb towards **Saser La**. Conversation became less frequent, not through fatigue alone, but because the landscape demanded quiet attention. Every step was deliberate, every halt purposeful and every member remained mindful of the person walking behind him. Descending through **Saser Brangsa, Half Link** and **Gyapshan**, the route gradually entered the stark wilderness leading towards **Daulat Beg Oldie**.

Despite the physical demands, the mountains offered their own rewards. Every difficult climb was followed by a valley, every snowfield by a flowing stream. Every long day's march ended with a campsite that revealed another unforgettable view.

As darkness settled each evening, conversation slowly faded away. Beyond the tents, the mountains stood in silhouette beneath a sky scattered with countless stars. There was nothing to say. After a full day on the trail, everyone simply sat together quietly admiring the landscape before turning in for the night. Looking back, those peaceful evenings became just as memorable as the mountain passes.

The Final March

The final days saw the expedition climbing from **Gyapshan** to **Daulat Beg Oldie** and to the historic **Karakoram Pass**—one of the most iconic gateways of the ancient Silk Route. **Daulat Beg Oldie**, amongst the highest and most remote military outposts in the world, stands on the historic Silk Route. Today, it symbolizes endurance, heritage, and India's unwavering presence in the high Himalayas.

Nestled amidst the mighty Karakoram

Range, the **Karakoram Pass** has witnessed India's rich historical ties with Central Asia and symbolises the strategic significance of this high-altitude frontier.

Over twelve days, the expedition had crossed snowbound passes, walked through alpine meadows, followed forgotten caravan trails and experienced some of the most remote landscapes in the Himalayas. More importantly, it had strengthened the values that every successful mountain expedition depends upon—discipline, resilience and unwavering teamwork.

The **Indian Army Summer Silk Route Expedition 2026** had traversed from Nimu to Phyang and Phyang Phu, then across Lasermo La, down to Hunder and Hunder Gompa; thereafter along the Nubra River from T-Mor to Penchimik followed by the strenuous climb from Sasoma to Saser La; then sliding down the slippery slopes to Saser Brangsa, Half Link and Gyapshan, and the final climb from Daulat Beg Oldie to the Karakoram Pass. Its greatest achievement was not simply reaching the

destination. It was in retracing a route where history, geography and human endurance continue to meet. The **Silk Route** may no longer echo with the bells of trading caravans, but its mountains continue to reward those willing to walk them.

Long after the snow has melted and the footprints have disappeared, one memory will remain with every member of the team—the quiet evenings spent watching the silhouettes of the mountains against the fading light, where words seemed unnecessary and the Himalayas spoke for themselves.

For the ten members of the **Summer Silk Route Expedition 2026**, the journey ended at **Karakoram Pass**. The memories, however, will travel much further.

"The landscape here was stark, vast and uncompromising. Standing at Karakoram Pass, there were no loud celebrations; only smiles and firm handshakes. And the quiet satisfaction shared by everyone who knew they had achieved something truly special."



Lieutenant Manish Kumar, an alumnus of Rashtriya Military School, Dholpur, has been shaped by a strong foundation of discipline, teamwork and service. A keen sportsperson, he has actively participated with accomplishments in volleyball, football, cricket and boxing, fostering resilience and camaraderie. An NCC Air Wing C Certificate holder, he also brings two years of prior experience as an IIR professional with an outsourcing company associated with Amazon. Commissioned from the Officers Training Academy, Chennai, his journey brought him to Ladakh, where participation in the Silk Route Expedition deepened his appreciation of the region's rich history, landscapes and vibrant cultural heritage.



Lieutenant
Manish Kumar

COLONEL JOJAN THOMAS, ASHOKA CHAKRA (POSTHUMOUS)

REMEMBERING A FRIEND, A VALIANT LEADER

Jojan Thomas was born on 22 July 1965 in Kuttoor village of Thiruvalla district, Keralam, into a family deeply rooted in military traditions. He was the eldest of four siblings, born to Captain PA Thomas, an Army veteran, and Smt Aleyamma Thomas. The spirit of service ran strong in the family—both his younger brothers also went on to serve in the Armed Forces.

There are some friendships that begin almost by accident and then quietly accompany us through the defining years of our lives. My friendship with Colonel Jojan Thomas was one such. For twenty-two years, we served together in different capacities—as young infantry officers, fellow aviators, comrades in the same Regiment, and above all, as friends. His journey ended in the forests of Machhal in North Kashmir on 22 August 2008, where he laid down his life fighting terrorists and was posthumously awarded the Ashoka Chakra.

Yet, whenever I think of Jojan, my mind travels not to that fateful morning, but to a bitterly cold afternoon in Siachen in April 1986. Jojan had been commissioned into 11 JAT Regiment in March 1986. I had already reached the Central Glacier in the Siachen sector when Jojan was inducted a few weeks later. Expectedly, every young officer carried his own full backpack while being inducted into the glacier. It was both a rite of passage and a test of endurance.



Top. Colonel Jojan Thomas with his wife Beena.

Bottom. Cadet Jojan Thomas (extreme right) at Officers Training Academy, Chennai

That afternoon, the temperature hovered around minus twenty degrees Celsius. Winds of nearly 80 kms an hour lashed the glacier. Around four o'clock, Jojan finally walked into our snow tent at the staging camp enroute to G-3 Post. He was completely exhausted. I welcomed him with a steaming mug of tea while he tried to catch his breath. Casually, I lifted his backpack—and almost dropped it. It was far heavier than any young officer's pack ought to have been.

"What on earth have you packed?" I asked. "Books," he replied with seriousness. He genuinely believed that during his tenure on the glacier he would find enough spare time to read. That was Jojan. Most officers packed an extra sweater or another pair of socks. Jojan packed books. He possessed an insatiable curiosity and believed that every moment was an opportunity to learn. I persuaded him to leave most of those books behind because the climb ahead would be even more demanding. Thankfully, he accepted the advice. Yet I have never forgotten

the determination he showed in carrying such a heavy load.

That small incident revealed almost everything about the man he would become—determined, intellectually curious, quietly confident and never one to complain. Jojan had passed out of the Officers Training Academy, Chennai, with high merit. His professionalism was evident from the very beginning.

Our tenure on the Central Glacier proved to be one of the most difficult in the battalion's history. Nature was a more formidable enemy than any opposing force. Avalanches, hidden crevasses and enemy fire claimed nearly twenty-five lives from our battalion during that deployment. Every casualty was deeply personal. Shared hardship forged bonds that lasted a lifetime.

When the battalion de-inducted from Siachen, we moved to Dehradun. It was there that our friendship deepened. Around this time, he became engaged to Beena, who was in Kerala. In January 1989, I decided to attend their wedding at Tiruvalla. It was an adventure in itself. I boarded my first commercial flight—an Air India flight from Delhi to Kochi. Since I had arrived almost a week before the wedding, I spent several days exploring the beautiful state of Kerala before making my way to Tiruvalla.

I reached a day before the wedding, eager to meet Jojan. To my utter surprise, the marriage had already taken place. The wedding had been preponed by a day. Today, such confusion would be unimaginable. In those days, there were no mobile phones. A telegram had indeed been sent, but naturally it reached after I had already commenced my journey. There was simply no way anyone could contact me.

Although I had missed the ceremony, I had the pleasure of meeting Beena for the

first time. One could sense her warmth, grace and quiet strength. After a late-night feast with the family, I wished the newlyweds a life full of happiness and returned, carrying with me another memory that still brings a smile to my face. Soon afterwards, Beena joined Jojan in Dehradun and embraced Regimental life with remarkable ease. Like every Army wife, she became an integral part of our extended Regimental family.

Within a year, I left the battalion to join the Army Aviation Corps. After completing my flying training, I returned to the battalion when it was deployed at Lam in Jammu and Kashmir. Jojan had by then rejoined the unit. Their young daughter Meghana had arrived—a delightful bundle of joy who became the centre of their lives.

Our careers seemed to run in parallel. I soon moved to an Aviation Flight in Agra. Jojan later joined Army Aviation after obtaining his permanent commission and served for several years as an Army Aviator before returning to

the infantry. His versatility as both an infantry officer and an aviator reflected his willingness to master every challenge placed before him. He later attended the prestigious Defence Services Staff College at Wellington before returning to command appointments that prepared him for higher responsibilities.

By 2006, Colonel Jojan Thomas had assumed command of 45 Rashtriya Rifles, one of the Army's finest counter-terrorism units operating in the challenging terrain of North Kashmir. Those who served under him remember a Commanding Officer (CO) who led from the front, shared every hardship with his men and inspired confidence simply by his presence. Brigadier D Anbu (later Vice Chief of Army Staff and Army Commander), his Brigade Commander had tremendous regard for Jojan's dedication, commitment and courage.

Despite increasingly demanding appointments, we remained in touch. One conversation in early August 2008



Jojan Thomas being promoted while serving in Sikkim Scouts



The family - wife Beena, daughter Meghana, son Philemon and Col Jojan Thomas (extreme right)

remains etched permanently in my memory. Jojan called me after an especially demanding phase of operations. Like every CO serving in the Rashtriya Rifles, he was looking ahead to life after command. He asked whether I could help in getting a good posting once his command tenure concluded.

I reassured him that the Military Secretary's Branch would certainly do justice to an officer of his calibre and after command in such a difficult location. It was an ordinary conversation between two old friends. Neither of us knew it would be our last.

Barely a week later, I received a telephone call from Srinagar. Colonel Jojan Thomas had been killed in action in a fierce encounter with terrorists. For several moments I simply could not believe what I had heard.

The details that later emerged only reinforced what all of us who knew Jojan would have expected. Acting on precise intelligence regarding terrorist presence in the forests of Machhal in Kupwara district, he personally led a Quick Reaction Team during the early hours of 22 August 2008. In the close-quarter battle that followed, he eliminated two terrorists, suffered multiple gunshot wounds and, despite being mortally wounded, engaged and neutralised a third terrorist in hand-to-hand combat before finally succumbing to his injuries. It was

courage of the highest order, recognised by a grateful nation with the award of the Ashoka Chakra. His citation read as under:

On 22nd August 2008, at about 3.30 am, Colonel Jojan Thomas, Commanding Officer of 45 Rashtriya Rifles Battalion deployed in Jammu and Kashmir, established contact with a group of terrorists. Colonel Thomas immediately rushed to the area with available troops, and soon a fierce firefight ensued. Leading from the front, Colonel Thomas eliminated two terrorists from close quarters. In the process, he sustained severe gunshot wounds. In spite of this, he engaged the third terrorist in a fierce hand-to-hand fight before eliminating him. Colonel Jojan Thomas displayed exemplary leadership and exceptional

gallantry in eliminating three hardcore terrorists and made the supreme sacrifice for the nation.

For his exemplary leadership, unparalleled courage beyond the call of duty, and supreme sacrifice in the highest traditions of the Indian Army, Col Jojan Thomas, is awarded India's highest Gallantry Award in peace time the "Ashoka Chakra".

I immediately flew to Bengaluru to receive the mortal remains of my friend. Nothing prepares a soldier for that final farewell. As I stood beside Jojan, draped in the National Flag, with Beena by his side, twenty-two years of memories unfolded before me.

- The young officer struggling into the snow tent at Siachen.
- The oversized backpack full of books.
- The laughter in Dehradun.
- The wedding I almost attended.
- The proud father holding little Meghana.
- The fellow aviator.
- The CO who led from the front.

All those years seemed to pass in an instant. Among the hardest moments of my military life was trying to console Beena. She adored Jojan beyond words. Like countless military wives, she had accepted long separations, uncertainty and danger as part of Army life. Nothing, however, prepares a family for the ultimate sacrifice.

Even while commanding 45 Rashtriya Rifles, Jojan dreamt of giving his children every opportunity that life could offer. One of his cherished ambitions was to see Meghana become a commercial pilot. He sent her

overseas for flying training, which she completed successfully. On her return to India, however, she encountered an unexpected medical hurdle while seeking her commercial flying licence. It was a setback that deeply disappointed Jojan.

Life, however, has a remarkable way of rewarding perseverance. After Jojan's passing, Beena refused to let that dream fade away. With extraordinary determination and patience, she stood by Meghana through every challenge until the medical issues were resolved. Today, Meghana proudly flies with Air India Express—a living fulfilment of her father's dream. Every time I see her in uniform, I cannot help but think how immensely proud Jojan would have been.

Their son, Philemon, was only ten years old when he lost his father. Few children are prepared for such a loss, yet he grew up quietly carrying forward the very values that defined Jojan—discipline, integrity, resilience and an unwavering sense of responsibility. Today, an MBA graduate, he has become the pillar of strength in Beena's life. When she was allotted a petrol bunk in 2016, Philemon chose to stand beside her, helping manage the business with maturity, dedication and sincerity. In many ways, he has become her trusted confidant and dependable right hand. Watching him today, I see the same quiet commitment and strength of character that distinguished his father. Though fate denied him the privilege of growing up under his father's guidance, he has honoured Colonel Jojan Thomas's legacy in the finest possible way—through the life he has chosen to lead.

Beena herself transformed personal grief into quiet strength. Widowed at a young age, she could easily have allowed tragedy to define her life. Instead, she chose courage. She rebuilt her family with dignity, raised two exceptional children,

established herself as a successful entrepreneur and devoted herself to philanthropic work that continues to touch many lives. In doing so, she has preserved not only Jojan's memory but also the values for which he lived and ultimately laid down his life. If Jojan's courage inspired soldiers on the battlefield, Beena's resilience has inspired many beyond it.

The nation remembers Colonel Jojan Thomas as an Ashoka Chakra awardee. The Army remembers him as a fearless commanding officer. 11 JAT remembers him as one of its finest sons. His men remember a leader who never asked them to go where he would not go himself. I remember something even simpler—**a gentleman, a man of quiet integrity, a soldier who wore his rank lightly but carried responsibility heavily, a friend whose humility matched his courage.**

When I first met Jojan in a snow tent on the Central Glacier in April 1986, he

was carrying a backpack far heavier than any young officer should have. Much of that weight came from books, because he believed he would find time to read amidst the harshest battlefield on earth. Forty years later, I realise he carried something even heavier throughout his life—the burden of duty. He bore it with quiet dignity until the very end. On 22 August 2008, in the forests of Machhal, he ensured that his men and his mission had prevailed. Such men never truly die. They become part of the regimental spirit, part of the Army's collective memory, and part of the nation's conscience.

To me, however, he will always remain the young lieutenant who walked into that snow tent exhausted, smiling, carrying too many books—and, though none of us knew it then, carrying within him the courage, character and sense of duty that would one day earn him India's highest peacetime gallantry award.



Lieutenant General BS Raju, PVSM, UYSM, AVSM, YSM (Retd), was commissioned into 11 JAT in December 1984. An alumnus of Sainik School Bijapur and the National Defence Academy, he has served in some of the Army's most challenging operational environments, including Siachen, Jammu & Kashmir and the Line of Control. He commanded 15 JAT, Uri Brigade, Counter Insurgency Force (Victor) and Chinar Corps, Srinagar. He served as Director General of Military Operations and subsequently as the Vice Chief of Army Staff. He is also a qualified helicopter pilot and has served with the United Nations in Somalia. General Raju retired as the General Officer Commanding-in-Chief, South Western Command on 31 October 2023.



Lt Gen BS Raju

GLORY AT THE GLASGOW GAMES

Indian Armed Forces Sportspersons Steal the Show

The Commonwealth Games Glasgow 2026 provided another powerful demonstration of India's growing sporting strength—and of the exceptional contribution being made by the Indian Armed Forces to the country's sporting ambitions.

When the Tricolour rose in Glasgow, it carried not only the aspirations of 1.4 billion Indians, but also the discipline, resilience and determination synonymous with the Indian Armed Forces. Athletes representing the Army, Navy and Air Force competed against the best in the Commonwealth, delivering performances of the highest order across boxing, athletics, weightlifting, judo and para-sport.

India concluded its Glasgow campaign with 39 medals—13 gold, 17 silver and 9 bronze. Of these, athletes from the Armed Forces accounted for 18 medals, nearly 46 per cent of India's total haul. The Indian Army alone contributed 16 medals, while Navy athletes secured two medals. Behind these numbers lies a larger story: the Armed Forces are not merely supporting athletes after they reach the international level. Increasingly, they are identifying talent, developing it systematically, providing world-class training and taking athletes all the way to the podium. At the centre of this transformation is the Army Sports Institute (ASI), Pune.



Naib Subedar Gulveer Singh, 1st Indian to win silver in 10000m and bronze in 5000m

Army Sports Institute: From Talent to Triumph

Established in 2001 under the Army's Mission Olympics programme, ASI was conceived as a premier sports training establishment to identify and develop sporting talent within the Army. Over the years, its mandate has evolved dramatically. Today, ASI represents a complete athlete-development ecosystem—bringing together talent identification, specialised coaching, sports science, strength and conditioning, sports medicine, nutrition, psychology, recovery and competition planning. The objective is no longer simply to produce good athletes. It is to produce Olympic champions. The Commonwealth Games in Glasgow have provided compelling evidence supporting this development ecosystem.

The success of ASI is particularly visible in boxing, but its influence extends across athletics, weightlifting, wrestling, fencing, diving and archery. Its athletes have repeatedly represented India at the Olympics, Asian Games,

Commonwealth Games and World Championships. The journey of Olympic champion Lieutenant Colonel Neeraj Chopra, PVSM, VSM remains one of the most powerful examples of the institution's philosophy: identify potential early, provide the right environment, build the athlete scientifically and give talent the opportunity to mature into excellence.

The Real Strength: The Boys Sports Company

The most important feature of the ASI model, however, lies not at the elite end of the pyramid but at its foundation—the Boys Sports Company. Established in 2006 under Mission Olympics, the Boys Sports Company was created with a simple but transformational idea: catch sporting talent young and provide it with the environment required to become an international athlete. Boys in the 8–14 age group are identified through open selection and are provided structured sporting training alongside formal education. This is where the ASI model is fundamentally different.

The institute does not wait for an athlete to become a national champion before investing in him. It goes looking for potential—often in villages, small towns, remote regions and communities where sporting talent exists but opportunity does not. A young boy who may possess exceptional speed, coordination, strength, reflexes or competitive temperament is given the chance to enter a structured pathway. He becomes a sports cadet. He receives education, accommodation, nutrition, medical care and intensive coaching. More importantly, he enters an environment where sporting excellence becomes a way of life. The programme effectively creates a bridge between grassroots India and the Olympic podium.

This philosophy has already produced

athletes who have gone on to win Commonwealth and Olympic medals. The journeys of athletes such as Jeremy Lalrinnunga and Achinta Sheuli demonstrate how talent identified at a young age can be progressively developed through the Boys Sports Company and ASI into international success.

From Boys Sports Company to Girls Sports Company

The same philosophy was extended to girls. The establishment of the Girls Sports Company at ASI marked an important evolution in the Army's sporting ecosystem. The programme was opened to girls in 2024, creating a structured path for young female athletes to receive education, training and high-performance support. This is strategically important for Indian sport. India cannot become a global sporting power without a significantly larger pool of high-quality female athletes. The Girls Sports Company provides precisely that foundation—bringing young girls into a disciplined, scientifically supported sporting environment at an age when technique, movement patterns, physical capacities and competitive habits can be developed systematically. The Glasgow results underline the importance of this approach.

Boxing: The Crown Jewel of the ASI Model

If one sport best captures the transformation taking place at ASI, it is boxing. Indian boxing produced its best-ever Commonwealth Games performance in Glasgow, winning 10 medals—seven gold and three silver. The Indian Army made a spectacular contribution to that achievement. The Army boxing contingent comprised 11 boxers, of whom eight won medals—six

gold and two silver. An extraordinary 73 per cent of the Army's boxing contingent returned from Glasgow with a medal. Even more significant was the performance of the Army's women boxers. Four Army women boxers entered the ring in Glasgow—and all four returned as Commonwealth Games champions:

- **Havildar Sakshi Chaudhary** - Gold Medal, 51 kg
- **Naib Subedar Preeti Pawar** - Gold Medal, 54 kg
- **Naib Subedar Jaismine Lamboria** - Gold Medal, 57 kg
- **Havildar Arundhati Choudhary** - Gold Medal, 70 kg

The four-gold sweep was a remarkable statement about the depth of the Army's women's boxing programme. The medals in Glasgow were not created in the weeks before the Games. They were built over the last couple of years in training halls, through thousands of rounds of sparring, strength sessions, technical corrections, recovery protocols, nutritional planning and competition simulations. Most importantly, they were built through a system.

What Makes the ASI Boxing Model Different?

High-performance boxing requires far more than a talented athlete and a good coach. Modern boxing is a multidisciplinary science. At ASI, technical coaching is complemented by strength and conditioning, sports medicine, physiotherapy, nutrition, recovery, performance analysis and psychological preparation. The objective is to eliminate avoidable variables. The boxer must enter the ring knowing that preparation has taken care of everything



Indian Army sportspersons of Commonwealth Games 2026 with General Dhiraj Seth, Chief of Army Staff (photo ADGPI)

outside the contest. This approach has produced extraordinary consistency. At a recent World Boxing Cup, all nine ASI boxers who competed finished on the podium—three gold, four silver and two bronze—an extraordinary 100 per cent medal conversion rate. Such consistency is not accidental. It is the result of an institutional culture where performance is measured, analysed, corrected and improved continuously. The Glasgow performance therefore represents not an isolated success, but the latest manifestation of a high-performance system that has been steadily strengthened over the years.

The Army Beyond Boxing

The Glasgow story of the Armed Forces was much larger than boxing. Army athletes delivered outstanding performances across disciplines. Naib Subedar Gulveer Singh won silver in the men's 10,000m and bronze in the 5,000m, becoming the only Indian athlete to win two medals at the Games. Naib Subedar Sarvesh Kushare won silver in the high jump, while Havildar Ajaya Babu secured silver in weightlifting and set a Commonwealth Games record in the snatch with a 149 kg lift. Army athletes also contributed strongly in judo and para-athletics, reinforcing the breadth of the Services' sporting programme. The Indian Navy also made a valuable contribution to India's medal tally,

demonstrating that the sporting ecosystem of the Armed Forces extends beyond the Army.

The collective Armed Forces performance—18 medals—was a powerful reminder that the military has become one of the most important pillars of Indian high-performance sport.

The Armed Forces Advantage

Why does the military consistently produce athletes capable of competing at the highest level? The answer lies partly in the culture of the Services. Discipline is not imposed only during training; it is embedded in everyday life. An athlete in the Armed Forces has access to structured routines, institutional support, training infrastructure, medical facilities, coaching and a competitive environment. The Services also provide athletes with something equally important: security and stability. This becomes especially important for young talent emerging from economically disadvantaged backgrounds. The sporting system can remove many of the barriers that prevent talented youngsters from progressing—nutrition, accommodation, education, equipment, coaching and financial uncertainty.

ASI as a High-Performance Establishment

The Glasgow performance has strengthened ASI's position as one of India's leading high-performance establishments. Besides the quality of its infrastructure, its strength is the integration of the athlete's journey. The ASI ecosystem increasingly resembles the model followed by the world's best sporting institutions: **identify, develop, specialise, monitor, recover, compete and repeat**. The institute is also moving towards deeper integration of sports science and technology. Athlete performance is increasingly viewed through data rather than intuition alone. Training loads, recovery, biomechanics, nutrition, injury prevention and psychological readiness all form part of the performance equation. This is the process adopted by ASI, as is being followed globally.

The Olympic Dream

The Commonwealth Games are important, but for ASI and the Services Sports Control Board, the ultimate objective is the Olympic Games. The Boys Sports Company provides the grassroots pipeline. The Girls Sports Company expands the talent base. ASI develops

athletes into national and international competitors. High-performance systems then prepare them to compete against the best in the world. The vision is therefore much larger than producing a Commonwealth champion. It is about creating an avenue where an eight-year-old sports cadet can one day stand on an Olympic podium. That path requires patience.

An Olympic athlete cannot be manufactured in one training cycle. It takes years of technical development, physical maturation, competition exposure, injury management, psychological growth and elite coaching. Perhaps the most powerful aspect of the ASI story is that the journey begins with a child. Somewhere in India, there is an eight-, ten- or twelve-year-old with extraordinary sporting ability who does not yet know what that ability can become. The role of the system is to find that child, the Boys and Girls Sports Companies nurture that talent. ASI transforms potential into performance, and the role of the athlete is to dream beyond what seems possible. Glasgow 2026 has shown what happens when these elements come together. The medals won by the Armed Forces are therefore not merely statistics. They are evidence of a sporting philosophy that is beginning to deliver at scale.

The Road Ahead

India's sporting ambitions are becoming increasingly bold. The country is looking towards the 2030s with the aspiration of becoming a genuine global sporting power and preparing for the Olympic opportunities that lie ahead. The answer will not come from one institution or one sport, it will come from ecosystems. The Indian Armed Forces already possess one of the country's strongest such ecosystems. Within that ecosystem, the ASI

has emerged as a particularly important centre of excellence. Its greatest contribution may not be the medal won today. It may be the young sports cadet training today who will win a medal a decade from now. That is the real significance of the Boys Sports Company and the Girls Sports Company. They are talent factories for India's future. And ASI is not merely preparing athletes for the next competition, it is building a generation capable of competing with the best in the world.

The Commonwealth Games Glasgow 2026 has therefore provided more than a moment of celebration. They have provided validation that the Armed Forces can be a formidable engine of India's sporting excellence. Validation that talent identified early and nurtured scientifically, can reach the highest level. Validation that disciplined

high-performance environments can transform potential into podium performance. And above all, validation of a simple but powerful belief: The Olympic dream does not begin at the Olympic Games.

It begins much earlier—in a village, on a field, in a boxing ring, on a track, or in a young athlete's first training session. At the ASI, that dream is being given a runway - from Sports Cadet to Champion, from Grassroots to Glasgow, and ultimately, from Glasgow to the Olympic podium. The Tricolour has already risen at the Commonwealth Games. The next ambition is to see it rise higher—on the world's greatest sporting stage. The Olympic dream is no longer just a dream. At ASI, it is becoming a carefully planned, scientifically developed and increasingly achievable reality.



Colonel Mohan Rao was commissioned into the SIKH LIGHT INFANTRY in September 2004. He has tenanted important appointments such as Instructor at the Indian Military Academy, Dehradun, and a graded staff appointment in a Rashtriya Rifles Sector Headquarters. He commanded his unit along the Line of Control in Jammu & Kashmir. He has also played squash for India. Currently he is posted as the Commandant of Army Sports Institute, Pune.



Col Mohan Rao

THEMATIC AND SECTORAL FUNDS

We have heard the famous slogan "Mutual Funds Sahi Hai". Starting our investments from Mutual Funds, we know them as one of the important investment products which you cannot ignore. There are several types of mutual funds available, varying by the assets, the theory and framework in which the fund managers invest. One such well-structured category which has more of a concentrated portfolio is the Thematic and Sectoral Mutual Funds category.

Thematic and sectoral mutual funds are among the most exciting categories within equity investing. Unlike diversified equity funds, which invest across multiple sectors of the economy, these funds deliberately concentrate their portfolios around a **particular sector, industry, theme or long-term economic trend**. This concentration can create significant wealth-creation opportunities when an investor identifies a powerful growth cycle. However, the same concentration can also result in **sharp volatility and prolonged periods of underperformance when the chosen sector or theme falls out of favour**.

For investors, therefore, the important question is not simply, "Which thematic or sectoral fund will give the highest return?" A more meaningful approach is to understand these funds through the framework of the 5W1H - What, Why, Who, When, Where and How.

WHAT are Thematic and Sectoral Funds?

At their core, both thematic and sectoral funds are **equity-oriented mutual funds that invest with a specific investment focus**. Under Securities and Exchange Board of India's (SEBI) current categorisation framework, a **sectoral fund** must invest at least **80% of its total assets in equity and equity-related instruments of a particular sector**, while a **thematic fund** must invest at least **80% in a particular theme**. SEBI's February 2026 categorisation framework also specifies that a theme may combine two or more sectors.

Sectoral Funds: A Narrower Investment Approach. A sectoral fund focuses primarily on one particular sector of the economy. For example, a banking fund may invest in banks and other companies directly associated with financial services, while a technology fund focuses on companies operating in the

THEMATIC FUND	SECTORAL FUND
Thematic funds are mutual funds that invest in equity. The stocks making up the mutual funds can belong to diverse sectors but are united by a common theme like Nifty 50, infrastructure development, rural development, smart cities etc.	Like the thematic fund, a sectoral fund is a mutual fund with at least 80% of the total asset value invested in the equity of the sector in question. Sectors may be power, PSUs, banking, oil and gas, FMCG, pharma, etc.

(Credit: stochoe.in)

technology ecosystem. The common sectoral opportunities include:

- Banking and financial services
- Information technology
- Pharmaceuticals and healthcare
- Fast Moving Consumer Goods (FMCG) and consumption
- Energy
- Infrastructure
- Automobiles and related businesses

The performance of such a fund is therefore closely linked to the economic cycle and business conditions affecting that specific sector. **Sector-specific schemes can offer higher return potential but are generally riskier than diversified funds because returns depend heavily on the performance of the selected industry.**

Thematic Funds: Investing in a Larger Idea. A thematic fund is relatively broader. Instead of focusing on only one industry, it invests in companies that can benefit from a common economic, structural, social or technological theme. For example, an **infrastructure theme** can include companies from several sectors like Cement, Steel, Engineering, Capital goods, Power and Construction. Similarly, a **manufacturing theme** may invest across industrial companies, engineering businesses, logistics providers and companies supplying equipment or components to manufacturers.

SEBI's investor guidance explains the distinction well. **Sectoral funds focus on a specific sector, while thematic funds are broader because they invest in different sectors that are connected by a common idea or trend.** A sector is a specific industry. A theme is a bigger story that may include multiple industries. To quote, in a **Technology Sectoral Fund**, the portfolio is primarily built around technology companies. Whereas the **Thematic Fund Digital Transformation** could potentially include IT companies, fintech businesses, digital platforms, electronics manufacturers and other companies benefiting from digitisation. Therefore, while both categories are concentrated compared with diversified equity funds, **thematic funds generally have the potential to offer**

somewhat broader diversification than pure sectoral funds.

WHY should Investors Consider Thematic and Sectoral Funds?

Every economy goes through structural changes. New technologies emerge, consumer behaviour evolves, government policies change and industries move through expansion and contraction cycles. **Thematic and sectoral funds allow investors to take a focused position on these developments.** The primary reason investors are attracted to these funds is the possibility of participating in a **powerful economic opportunity.** For investors, these funds enable:

- **Participation in Long-Term Structural Growth.** Some investment opportunities are not just short-term market trends. They represent structural transformations that may play out over many years, like digitisation, manufacturing expansion, renewable and conventional energy transformation, rising healthcare expenditure, infrastructure development and changes in consumption patterns. A thematic fund can allow an investor to participate in a broader economic transformation without having to individually identify and purchase every company that may benefit.
- **Professional Stock Selection.** An investor may believe strongly in a sector but may not know which individual companies are best positioned to benefit. A mutual fund manager can evaluate businesses, valuations, financial strength and changing opportunities within the investment universe. This reduces the need for an investor to make a direct bet on one or two individual stocks. However, it is important to remember that **professional management does not eliminate sectoral risk.** Even an

excellent portfolio may struggle if the entire sector faces weak earnings, adverse regulation, high valuations or an economic slowdown.

Potential for Higher Returns. Concentration can be a double-edged sword. When a particular sector enters a strong growth phase, a focused fund may outperform a diversified portfolio because a larger portion of its assets is exposed to that opportunity. A particular industry may experience strong earnings growth, favourable government policies, increased demand, improving margins and technological disruption. Companies connected to that sector may perform exceptionally well. But the reverse is equally true. If the investment thesis does not work, concentration can magnify losses.

A Tool for Portfolio Customisation. Thematic and sectoral funds can also be used as **satellite investments** meaning only 5% to 20% allocation in the entire portfolio. A diversified portfolio may form the investor's core, while a smaller allocation to a theme or sector may be used to express a particular

investment view. A diversified equity fund aims to provide exposure across a wider set of companies and sectors. A thematic or sectoral fund can then be added selectively to capture a specific opportunity. For most investors, therefore, these funds may be better viewed as a **complement to the core portfolio.**

WHO should Invest in Thematic and Sectoral Funds?

These funds are not automatically suitable for every investor. The ideal investor is not simply someone who has a high appetite for returns. The investor should also have the ability to withstand volatility and the patience to remain invested through an entire sector or theme cycle. **Investors who may consider thematic and sectoral funds should be experienced investors** who understand market cycles and recognise that sectors can remain out of favour for long periods. Thematic and sectoral investing requires a stronger understanding of economic cycles, industry fundamentals, valuations, Government policy and demand trends.





(credit: navi.com)

Patience is essential and the investors must have a long-term horizon as a good theme can take several years to play out. An investor may correctly identify a long-term opportunity but still experience disappointing returns if the investment is made when valuations are excessively high. There can be a significant difference between **identifying the right theme** and **making money from the theme at the right valuation and over the right time period**.

Because the portfolio is concentrated, volatility can be significantly higher than that of a diversified equity portfolio. So **investors with a high-risk appetite can consider such funds**. An investor should be mentally and financially prepared for sharp corrections, extended underperformance, large differences in year on year returns and periods when a previously popular sector loses investor interest.

Who Should Be More Careful? These funds may not be suitable as a major allocation for first-time equity investors, investors with a low risk tolerance, people investing for a short-term goal and investors who cannot tolerate significant fluctuations.

One of the biggest mistakes is to invest in a sector simply because it has delivered spectacular returns in the recent past. By the time a sector becomes the most discussed investment opportunity, valuations may already reflect a large part of the optimism.

WHEN should an Investor Invest?

This is perhaps the most difficult of the 5 W's.

Timing matters more in thematic and sectoral investment than in diversified equity investment as sector performance tends to be cyclical and the timing of investment is hence important. An investor should look at what is driving this sector or theme? Is the growth structural or merely cyclical? What will drive company earnings? Are valuations reasonable? The tip is to **invest when the investment thesis is strong**. A strong theme should ideally have a visible combination of **Opportunity, Earnings Potential, Reasonable Valuation and Long-Term Sustainability**.

Do Not Chase only Past Performance. Imagine a sector that has already delivered extraordinary returns over the previous two or three years. The natural tendency is to assume that the same returns will continue. But markets are forward-looking. A sector may have already experienced significant price appreciation, expansion in valuation multiples, excessive investor optimism and expectations that are difficult for companies to meet. As a result, even good business growth may not necessarily translate into equally good investment returns.

Use Staggered Investing Where Appropriate. Since accurately predicting the bottom or peak of a sector is extremely difficult, investors may consider spreading investments over time rather than making one large allocation based purely on a short-term market view. The objective should not be to perfectly time the market but to build exposure gradually when the long-term opportunity, valuation and portfolio requirement justify the allocation.

WHERE do These Funds Fit in an Investor's Portfolio?

Thematic and sectoral funds should generally be viewed in the context of the **entire portfolio**, not in isolation. A practical framework can be the **Core-and-Satellite Approach**, wherein the **Core Portfolio** may consist of diversified investment strategies designed to provide broad exposure to the equity market; and the **Satellite Portfolio** includes selective opportunities such as sectoral funds, thematic funds, tactical investment strategies and other specialised exposures. The satellite portion should be sized based on the investor's risk profile, financial goals and ability to withstand losses.

The key principle is **higher the concentration risk, the greater the need for discipline in portfolio allocation**. An investor should avoid building a portfolio where multiple funds appear different by name but are actually exposed to the same underlying theme. For example, holding a banking fund, a Public Sector Undertaking fund, an infrastructure fund and a financial-services-focused portfolio may create **more concentration than the investor initially realises**. So, **do not judge diversification merely by the number of funds you own**. Five different mutual funds do not necessarily mean five different investment exposures.

HOW should Investors Invest in Thematic and Sectoral Funds?

The answer lies in a five step disciplined process rather than a prediction.

- **Step 1: Understand the Investment Story.** Before investing, ask what exactly is the theme or sector? Which companies can the fund invest in? What are the key growth drivers? What could go wrong? Never invest based solely on a fund's recent return ranking.
- **Step 2: Read the Portfolio and Investment Mandate.** The name of a fund can sometimes create assumptions. Investors should examine the scheme's stated investment objective and portfolio to understand the market-cap exposure and the overlap with existing investments, which sectors it holds, how concentrated the portfolio is and whether the theme is broad or narrow.
- **Step 3: Evaluate the Fund, Not Just the Theme.** A great theme does not automatically mean every fund investing in that theme will perform equally. Investors should consider the investment philosophy, portfolio construction, the consistency with the stated mandate, expense ratio, risk characteristics, performance across different market conditions and the concentration. Most importantly, returns should be evaluated over meaningful periods rather than based only on the previous few months or one exceptional year.
- **Step 4: Decide the Allocation Before Investing.** One of the biggest behavioural mistakes is allowing a successful theme to become an

oversized portion of the portfolio simply because it has performed well. The question should not be: "How much can I make from this theme?" Instead, it should be: "How much of my portfolio am I willing to expose to the possibility that this theme may significantly underperform?"

Step 5: Review, But Do Not React Emotionally. Thematic and sectoral funds require periodic review because the investment thesis can change. A review should consider if the original investment thesis changed? Have valuations become excessive? Have regulatory or technological developments changed the opportunity? Has the allocation become disproportionately large? However, review should not become frequent emotional trading. A temporary correction is not necessarily a reason to exit, just as a sharp rally is not necessarily a reason to increase allocation.

A diversified fund asks: "Where can I find opportunities across the market?" A thematic or sectoral fund asks: "Do I believe this particular industry or long-term trend will create superior opportunities?" That difference is crucial. The real skill lies in applying the 5 W's and 1 H:

- **What** exactly am I investing in?
- **Why** do I believe this sector or theme has potential?
- **Who** is suitable for this level of concentration and risk?
- **When** does the valuation and investment cycle make sense?
- **Where** does this investment fit within the overall portfolio?
- **How** should the allocation be built, monitored and eventually rebalanced?

When these questions are answered thoughtfully, thematic and sectoral funds can move from being a return-chasing tool to becoming a purposeful part of a well-designed investment strategy.



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Babu Krishnamoorthy

COMBATING MISINFORMATION

HEALTH ADVICE ON SOCIAL MEDIA

Dr Renuka David explores the growing challenge of health misinformation on social media - why wellness advice is so easily misunderstood, how to distinguish evidence-based information from viral trends, and when it is important to consult a medical professional.

Visualise this! It is 7.30 am on a Monday morning and Ajay is scrolling through **Instagram** while waiting for his tea to boil. Relatable, right? A nutrition influencer is explaining why everyone should stop eating rice. The next video features a fitness coach recommending a particular 'detox' drink for fatty liver. Then comes someone explaining the benefits of a popular weight-loss injection. By the time he leaves for work, a very determined Ajay, has made three decisions - no more rice, a week-long detox, and a visit to a clinic for the injection. The alarming fact is... none of these decisions has come from his doctor. They had come from aimlessly (and by force-of-habit) scrolling through Social Media via his phone.

This is increasingly how many of us encounter health information today. A person sitting in a small town in Tamil Nadu can listen to a specialist in Mumbai or follow a dietician in Bengaluru. They can even learn about any lifestyle disease from a public health organisation. This access can be enormously empowering, but at what cost? Fact check is that health information can be simplified, exaggerated, commercialised, or completely misinterpreted before it reaches us.

The World Health Organization (WHO) uses the term 'infodemic' to describe an overwhelming amount of information, including false or misleading information. This can make it difficult for people to find reliable sources and advice. The concern therefore, is that any piece of information that may contain a grain of truth or be technically sound, could be presented without the context necessary to use it safely.

When Do You Take Facts Seriously?

We all know that protein is important for muscle health. But on social media, it quickly becomes, "Everyone needs two grams



(Credit Kapadia Multispeciality Hospital on Facebook)

of protein per kilogram of body weight every day." The latter is a recommendation that may or may not be appropriate for a particular individual. Because truth be spoken, only 0.8 gm/kg and 1.0 to 1.2 gm/kg protein is recommended for sedentary and older people. In fact, for weight loss or muscle building, 1.2 to 2.2 gm/kg is advisable depending on the training intensity. The same transformation happens everywhere. "Added sugar should be limited" becomes "fruit is bad because it contains sugar". "Exercise can improve health", becomes "this 10-minute workout will reverse diabetes". It is important to understand that any particular nutrient may have an important role in the body, but that does not mean taking large doses of it will prevent disease!

Why are we so easily persuaded? That's how social media works! Platforms are designed to keep us watching, sharing and returning. Content that is surprising, emotionally charged or highly confident can attract attention more easily than a careful explanation containing several caveats. There is also a psychological element. When we are worried about our health, certainty definitely feels comforting. A video saying 'five signs that your body is detoxing' may feel easier to understand than a concerned physician explaining that symptoms can have multiple causes and require assessment.

Personal stories are particularly persuasive. Think about influencers who say things like, "I stopped eating gluten and my bloating disappeared." Or "I took this supplement and my thyroid improved." Such experiences may be genuine, but is there sufficient backing of clinical evidence? In this scenario, we do not know what else changed, whether the person had a diagnosed condition, whether the improvement was temporary, or whether the same intervention would work or

cause harm for someone else who is blindsided by the influencer's results! WHO specifically recommends asking who made a health claim, what its source is, whether the information is current, and whether it is supported by reliable evidence.

The New Wellness Vocabulary

Some of the most successful wellness content uses scientific-sounding language. 'Inflammation' is a good example. In medicine, inflammation is a complex biological response with many causes and forms. Online, however, it can become an explanation for almost everything from fatigue and weight gain to skin problems and mood changes. Similarly, 'gut health', 'hormonal balance', 'toxins' and 'detox' are often used without defining what they actually mean. The danger is not in discussing these concepts, which are actually legitimate areas of concern. The danger lies in turning complex medical ideas into universal explanations and then selling a solution. The same caution applies to supplements. A product being labelled 'natural' does not automatically make it harmless, and a supplement that is useful for a person with a documented deficiency does not necessarily benefit someone who does not have that deficiency, but is coloured by all its cosmetic benefits!

Weight-loss injections are a particularly important example of how legitimate medical developments can be misunderstood online. Medications in the GLP-1 class and related treatments have established medical uses and can be appropriate for some patients under strict professional supervision. But social media can transform a prescription medicine into a lifestyle shortcut. 'Take this injection and lose weight' is a dangerous simplification. These medicines can have side effects, and require appropriate patient selection and dosing.

They are not suitable for everyone. The US Food and Drug Administration has warned about dosing errors and adverse events associated with compounded injectable semaglutide products and emphasises that patients should obtain appropriate prescriptions and medical guidance before use.

The same principle applies to antibiotics, steroids, thyroid medication, hormone preparations, sleeping pills and psychiatric medicines. A friend, influencer, or online testimonial cannot determine whether a prescription medicine is appropriate for anyone so influenced by them literally by word and action.

Then you have the diets that change each month. One month it is intermittent fasting, then it is carnivore eating, then fruit-only mornings, extreme low-carb diets, liquid diets, 'hormone-balancing' diets, detoxes or long lists of foods that supposedly cause inflammation. Some dietary approaches can be useful for particular people. The problem begins when a specific eating pattern is

presented as universally necessary. For most people, the fundamentals remain the same, which is adequate nutrition, dietary variety, appropriate portions, sufficient protein and fibre, regular physical activity, sleep and moderation. But this advice is not as viral as "Never eat these seven foods again". People with diabetes, kidney disease, liver disease, gastrointestinal conditions, eating disorders, pregnancy, certain allergies, or other medical conditions may need specific individualised dietary advice. For them, a diet copied from a celebrity or influencer can be inappropriate and very frightening.

Whom Should We Follow?

Does this mean that we should abandon social media? No. As a doctor, in my opinion, this means we should become more selective about whom we trust. For medical information, look for professionals whose qualifications are relevant to the subject they are discussing. A cardiologist is better placed to discuss heart disease than a



Health Influencers. Left image credit i2vea.com. Right image. Trainer recording fitness session (credit pexels.com)

generic wellness influencer. A dermatologist should be your preferred source for persistent skin disease. A psychiatrist or clinical psychologist is more appropriate for mental-health concerns than a motivational speaker. Viewers can also check whether a medical professional's stated qualifications match the subject on which they are giving advice. Institutions and public-health organisations are particularly useful for general information. The WHO, India's Ministry of Health and Family Welfare, government health departments, recognised medical institutions and established hospitals can provide useful starting points. Also remember that even a qualified doctor on **Instagram** cannot examine you personally. For life-changing alterations, online information may sometimes be insufficient and an in-person or telemedicine consultation could be thought about.

There is plenty of useful wellness content that can be enjoyed without turning every post into a medical decision. Learning about the importance of sleep, physical activity, balanced nutrition, hand hygiene, sun protection, stress management, and healthy routines is generally useful. Videos demonstrating safe exercise techniques can be helpful, provided the exercises are appropriate for your abilities. Recipes can inspire healthier eating. Educational content explaining what a medical condition is, how a screening test works, or what questions to ask a doctor can also be valuable. The important distinction is between education and treatment. For instance, a post can help you understand hypertension, but should not persuade you to start or stop blood-pressure medication.

When Should You Call Your Doctor?

The closer the advice gets to diagnosis, medication, dosage or treatment, the more important professional medical advice becomes. Seek medical guidance for persistent or unexplained symptoms, significant weight changes, chest pain, severe abdominal pain, breathing difficulties, neurological symptoms, prolonged fever, abnormal test results, pregnancy-related concerns, mental-health crises, or any symptom that worries you. Medical advice is also essential before starting or stopping prescription medication, taking high-dose supplements, beginning

an extreme diet, using weight-loss medicines or injections, or making major dietary or exercise changes because of a diagnosed condition. Emergency symptoms should never be managed through social media. Call emergency services or seek urgent medical care.

Simplifying the Way Forward

Ask yourself five-questions before taking a social media post seriously

1. *Who is saying this?* Is the person identifiable, appropriately qualified and speaking within their area of expertise?
2. *What is the evidence?* Are credible studies, medical guidelines or recognised health institutions cited?
3. *Is the claim too absolute?* Words such as 'always', 'never', 'cures', 'detoxes', 'guaranteed' and 'works for everyone' deserve caution.
4. *What is being sold?* If the information ultimately leads to a supplement, course, injection, consultation package or miracle product, consider whether there is a commercial incentive behind the claim.
5. *Does this advice apply to me?* Your age, medical history, medications, pregnancy status, allergies, laboratory results and other circumstances can change what is appropriate.

Digital health literacy should become part of modern wellness. Social media itself is not the enemy. In fact, it can make reliable health information accessible to millions as some healthcare professionals use social media to promote evidence-based health information and counter misinformation. The way forward is therefore not to stop listening to the internet, but to stop treating every post as a prescription.

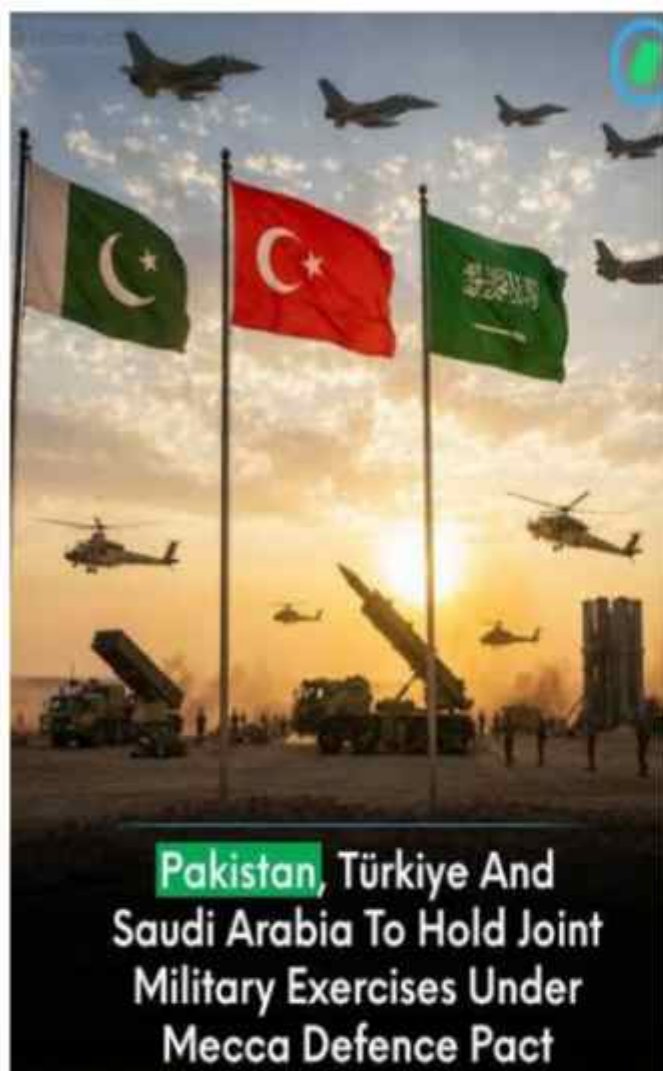


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Dr. Renuka David

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(Credit Instagram graphic)

THE MAKKAH JOINT DEFENCE AGREEMENT

AN ISLAMIC TRIUMVIRATE?

The signing of the Makkah Joint Defence Agreement by Saudi Arabia, Türkiye, and Pakistan on 07 August 2026 represents a significant realignment in West Asian security architecture that has raised eyebrows in India. By formally introducing a mutual defence provision, the pact establishes a tripartite axis combining Saudi capital and Islamic heft, Turkish military technology, arms production and NATO experience, and Pakistan's military manpower and nuclear status. What are its implications, in particular for us? With talk of countries like Egypt and Kuwait considering joining the group, does the Makkah announcement mark the emergence of an "Islamic NATO"? Should India worry that this now gives Islamabad a free pass to unleash terrorist attacks on us, believing that any retaliation from New Delhi will trigger the Alliance's wrath?

A careful analysis of whether the Makkah Joint Defence Agreement (whose actual text has not been made public) constitutes an operational military threat to India or merely a diplomatic and political development to which New Delhi should pay attention but not feel unduly alarmed, inclines me to lean towards the latter. A close examination of the joint press release by the three countries announcing their pact, the structure of the deal, the historical background, recent events, and the presumed strategic calculus of each signatory, confirms this conclusion.

Headlines inevitably invoke the collective defence framework, especially since the language used in Makkah, judging by the press release, seems to consciously echo the Article 5 formulation of the collective defence clause in the NATO accord, by declaring that "any armed attack against any one of the three states *shall* be regarded as an attack against them all" (note the "shall"). Still, calling the Makkah Agreement an "Islamic NATO" at this stage is premature. NATO's efficacy relies on a unified command structure, pre-assigned forces, and deep technological interoperability, whereas the

Makkah Agreement currently lacks an institutionalized doctrine, an integrated military headquarters, and any joint command mechanisms. Unless these evolve at a future stage (and the agreement does provide "for the enhancement of all aspects of defence co-operation among the three states"), we are not looking at a formal, viable military alliance. In any case, the three countries have publicly emphasised that their agreement is not aimed at targeting any other country and is purely defensive – an argument intended surely to alleviate any US concern about the pact being wielded against Israel. The same logic would apply to India.

And it is also important to appreciate that the signatories hold divergent strategic priorities. Saudi Arabia is primarily focused on hedging against Iranian regional aggression, missile threats from Yemen being unleashed by the Iranian-backed Houthi militia, and perceived vulnerabilities in Western security guarantees (which Riyadh understandably feels have proved inadequate during the recent hostilities). Türkiye seeks to expand its defence export markets, assert leadership in the Islamic world, and maintain operational



Bayraktar Akıncı unmanned combat drone pictured at the Saba Fışko Defense & Aerospace Exhibition, Istanbul, Türkiye, Oct. 27, 2022 (Reuters Photo)

autonomy while managing its delicate balances with NATO, Iran, and Russia, as well as warding off any future threat from Israel, one of whose leaders has already dubbed it “the new Iran”. Pakistan seeks external economic bailouts, diplomatic leverage against India, and technological upgrades for its military. Rather than a tightly integrated military alliance, the agreement seems to be conceived as operating primarily as a collective deterrence umbrella for West Asia, specifically the fallout of regional conflicts involving Iran. It formalizes a geopolitical relationship but, at least at this stage, does not create a military structure.

The fear that Pakistan can now sponsor cross-border terrorism against India under a Saudi-Turkish protective shield therefore misreads both the text of the agreement and the geopolitical realities of Riyadh and Ankara. Rather than establishing a new, strict military obligation, it institutionalises long-standing bilateral security, intelligence-sharing and defence-procurement ties among the three nations, and makes them trilateral ones rather than bilateral. Given Pakistan's already existing arrangements with Türkiye, this may be of greater significance for Ankara and Riyadh, whose bilateral partnership, after many rocky phases even in the recent past, is certainly deepened by the Makkah Agreement. At the same time, although

Pakistan has long maintained security ties with Saudi Arabia, its domestic economic troubles, reliance on Saudi bailouts, complicity with terrorism (from Osama bin Laden to assorted home-grown jihadist proxies) and strategic focus on India, have all prevented it from establishing itself as a dominant regional power player on equal terms.

The Saudis seem to have realised that in the changed circumstances revealed by the recent Iran War, they need to diversify their defence strategy beyond dependence on an unpredictable Washington no longer sure of its enthusiasm for overseas conflicts, and the old arrangements with Pakistan. A realistic look at the region suggests that overarching regional bodies like the Arab League, the Gulf Co-operation Council, and the

Organization of the Islamic Conference, have consistently struggled to act as effective security guarantors, as individual national self-interests routinely overshadow pan-Arab solidarity. As a result, real influence and security projection in the Middle East have increasingly shifted away from Arab states toward three non-Arab regional powers: Israel, Türkiye, and Iran. Of these, Israel and Iran are seen as destabilising factors and potential threats, which makes Türkiye the most viable partner for Saudi Arabia, despite its earlier support for forces like the Muslim Brotherhood who were considered a danger to the Gulf monarchies. Türkiye's defence production capacity and capabilities could help Saudi Arabia create a defence manufacturing industry of its own, a far higher priority than extending a helping hand yet again to Pakistan. Saudi Arabia is estimated to have expended some 86% of its stockpile of Patriot missiles (some 2400 out of 2800) during the first 44 days of the Iran War and to be hungry for replenishment.

There is another important consideration that should discourage visions of uniformed jihadists in Rawalpindi GHQ licking their chops with renewed delight at the prospect of preparing the next Lashkar-e-Toiba assault on India because of the Makkah pact. Mutual defence treaties under international law apply strictly to unprovoked external aggression. Terrorism originating from Pakistani soil, even if ostensibly conducted by “non-state actors”, followed by targeted Indian counter-terrorism strikes, does not constitute unprovoked aggression, and it seems unlikely that either Riyadh or Ankara would view Indian retaliatory action against terror infrastructure as a trigger for military intervention. It is true that Türkiye provided Pakistan with diplomatic

and rhetorical support in analogous circumstances during **Operation Sindoor**, but aside from the sale of drones, it still stopped short of tangible military assistance.

Furthermore, it is too early for India to concede Saudi Arabia entirely to the Pakistani camp. True, there have long been Islamic affinities between Riyadh and Islamabad, manifest, for instance, in declaratory support from Saudi Arabia for Pakistan over such issues as Kashmir, especially in forums like the Organization of the Islamic Conference. But at the same time, Riyadh's relationship with New Delhi has evolved into a multi-billion-dollar strategic partnership spanning energy, trade, and intelligence-sharing. Saudi Arabia has consistently refused to allow its bilateral ties with Islamabad to dictate the substance of its relations with India, and Crown Prince Mohammed bin Salman has no desire to imperil his nation's long-term economic vision by getting dragged into a South Asian military conflict on behalf of the Generals in Rawalpindi. Also, Pakistan's lack of operational involvement when Saudi Arabia requested troops to aid them in Yemen in 2015 and faced direct Iranian missile and drone strikes in 2026, and Saudi Arabia's passivity or indifference when Pakistan was embroiled in military conflict with Afghanistan, despite their existing bilateral defence commitments to each other, suggests that transactional defence agreements in the region often feature high-level political rhetoric hand-in-hand with operational hedging. It is also instructive that unlike Türkiye, Saudi Arabia remained silent during **Operation Sindoor**, signalling careful neutrality despite decades of military co-operation with Pakistan.

Still, even if the pact does not offer Pakistan a blank cheque for terrorism, India (and Pakistan's other neighbours)

cannot write it off as mere grandstanding. The Makkah pact undoubtedly cements Pakistan's active integration into a new, emerging Middle Eastern security architecture (I deliberately use the old formulation "Middle Eastern" rather than "West Asian" because Türkiye straddles both Asia and Europe). The real military substance of this trilateral arrangement that we must pay attention to lies in potential technology integration. Türkiye's advanced defence industry, funded by Saudi capital and co-produced or deployed in Pakistan, directly enhances Rawalpindi's conventional military capabilities in areas such as unmanned aerial vehicles, electronic warfare, and naval platforms. Additionally, a deepened trilateral intelligence-sharing framework enhances Pakistan's operational capacity, while creating a formal political bloc that can coordinate positions in international forums like the United Nations and the Organisation of Islamic Cooperation on

issues of vital security interest to us, including Kashmir and maritime security.

So what should New Delhi do in response? India's studied official silence since the Makkah Declaration was announced is instructive. We should neither panic over the trio's collective defence rhetoric, nor brush off a year-long negotiated agreement as inconsequential. We should, to recycle a trifecta of clichés, keep our eyes peeled, our ears cocked, and our powder dry.

One point for consideration could be that there is a case to welcome any step forward for regional stability, since India has a vested interest in peace and order in the Middle East, given its involvement in arrangements like the I2U2 (a quadrilateral partnership of India, Israel, the US and the UAE) and the IMEEEC (India-Middle East-Europe Economic Corridor). The emergence of "minilateral" arrangements is a way of bolstering multi-polarity and not inherently



The three leaders signing the Makkah Joint Defence Agreement (Photo Credit: Saudi Press Agency via AP)

something of which New Delhi would need to disapprove. At the same time, a calibrated Indian strategy requires engaging Saudi Arabia candidly but discreetly, via high-level diplomatic channels, to seek clear reassurances that the Makkah Agreement's defensive clauses apply exclusively to the dynamics of the West Asian theatre and cannot be weaponized by Pakistan to cover sub-conventional warfare. Concurrently, New Delhi must maintain a firm deterrence doctrine, making it clear that Indian responses to state-sponsored terrorism will remain resolute and unaffected by third-party arrangements.

However, we cannot remain indifferent to the risk of "losing" Saudi Arabia to a consolidating China-Turkiye-Pakistan axis. India should therefore double down on its bilateral economic, trade, and strategic partnerships with Saudi Arabia and the broader Gulf Cooperation Council, highlighting its role as the primary anchor of stability in the Indian Ocean region. After all, unlike Pakistan, we are the world's fastest-growing major economy, a significant market and investment destination, and a country with good relationships with all the countries in this drama, including Israel and Iran. Far from sulking, we should proceed with confidence, secure in the assumption that our presence looms so large that we simply cannot be ignored.

Finally, Indian defence intelligence and procurement planning must closely monitor military-industrial co-development between Turkiye and Pakistan, ensuring that indigenous defence research prioritizes neutralizing advanced drone technologies, electronic warfare systems, and joint naval platforms. This may require us to seek foreign partners who are well ahead of us in these areas. The process should not be delayed and should be fast-tracked despite the labyrinthine bureaucratic procedures through which defence procurement has been laboriously conducted ever since the Bofors scandal.

Ultimately, the Makkah Joint Defence Agreement should be understood less as a binding warfighting pact and more as a sophisticated instrument of strategic hedging tailored to a volatile region. By fusing Saudi capital, Turkish military technology, and Pakistani operational manpower into a unified framework of collective deterrence, the

three signatories have created a valuable political and economic shield, without assuming the operational burdens (or the entangling liabilities) of a true military alliance. Rather than signalling an immediate, integrated battle-front, the accord functions as a flexible mechanism for transactional security, allowing each actor to project power and deter external coercion while preserving its strategic autonomy.

This emergent triumvirate demands neither knee-jerk panic from us, nor strategic complacency. New Delhi's long-term interests are far better served by a pragmatic strategy and calibrated approach that anchors its security in firm counter-terrorism deterrence, deepens its indispensable economic and diplomatic partnerships across the Gulf, and accelerates indigenous defence innovation at home. By maintaining its own strategic flexibility and leveraging its rising geopolitical weight, India can comfortably navigate the balance of power in the wider Indian Ocean region, ensuring that the Makkah pact remains a diplomatic exercise in regional alignment rather than an existential threat to Indian security.

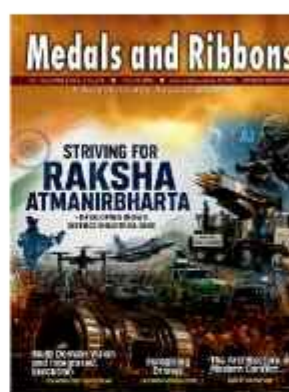
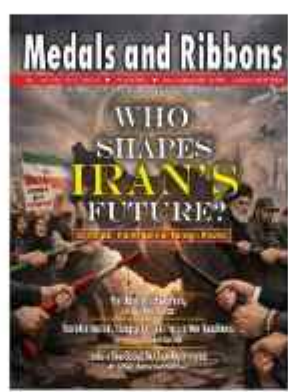
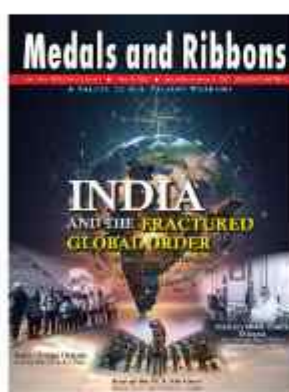
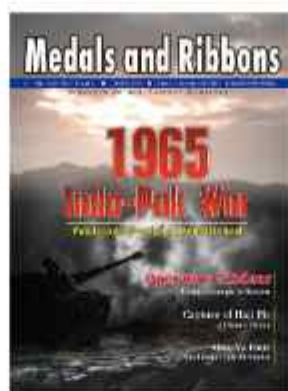
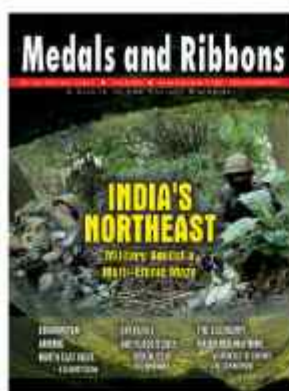


Dr. Shashi Tharoor, a Member of Parliament since 2009, has won the Lok Sabha Elections four times from Thiruvananthapuram, Kerala. A member of the Indian National Congress, Tharoor is a former diplomat and was formerly an Under-Secretary-General of the United Nations. Tharoor graduated from St. Stephen's College, Delhi, in 1975 and was conferred a doctorate in international relations and affairs from the Fletcher School of Law and Diplomacy, Tufts University a few years later in 1978. At the age of 22, he was the youngest person at the time to receive such an honour from the Fletcher School.

During the Manmohan Singh Government, Dr. Shashi Tharoor served as the Minister of State for External Affairs. An erudite scholar and intellectual, an acclaimed public speaker, Dr Tharoor is a Sahitya Akademi Award winner, who has authored many works of fiction and non-fiction since 1981. He is presently the Chairperson of the Parliamentary Standing Committee on External Affairs.



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